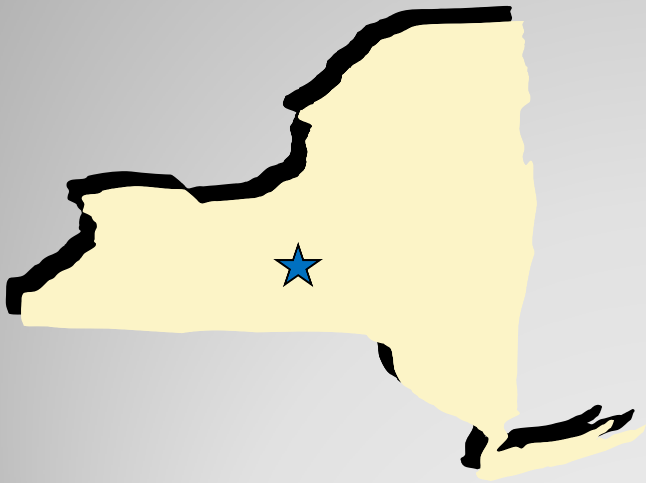
***PERIODIC REVIEW REPORT No. 1***
***September 2013 – September 2014***

# Clinton West Plaza (755015)
# Ithaca, Tompkins County, New York




***Prepared for:***

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E, Section A

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EA SCIENCE and TECHNOLOGY

December 2014

# Periodic Review Report No. 1
# September 13, 2013 – September 29, 2014
# Clinton West Plaza (755015)

## Ithaca
## Thompkins County, New York

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EA Project No. 14907.25

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| | |
|---|---|
| AMSL | Above mean sea level |
| AWQS | Ambient Water Quality Standard |
| *cis*-1,2-DCE | *cis*-1,2-dichloroethene |
| COC | Contaminant of concern |
| CP | Commissioners Policy |
| CVOC | Chlorinated volatile organic compound |
| DO | Dissolved oxygen |
| EA | EA Engineering, P.C., and Its Affiliate EA Science and Technology |
| EC | Engineering control |
| FER | Final Engineering Report |
| GES | Groundwater & Environmental Services, Inc. |
| HRC® | Hydrogen release compound |
| IC | Institutional control |
| IRM | Interim remedial measure |
| LCS | Lender Consulting Services, Inc. |
| NYSDEC | New York State Department of Environmental of Conservation |
| NYSDOH | New York State Department of Health |
| O&M | Operation and maintenance |
| ORP | Oxidation reduction potential |
| PCE | Tetrachloroethene |
| PDI | Pre-design investigation |
| PFE | Pressure field extension |
| PRR | Periodic Review Report |
| PVC | Polyvinyl chloride |
| RD | Remedial Design |
| RI | Remedial investigation |
| ROD | Record of Decision |
| SCG | Standards, Criteria, and Guidance |
| SCO | Soil Cleanup Objectives |
| SMP | Site Management Plan |

| | |
|---|---|
| SSDS | Sub-slab depressurization system |
| SSP | State Superfund Program |
| | |
| TAL | Target analyte list |
| TCE | Tricholorethene |
| | |
| VC | Vinyl chloride |
| VI | Vapor Intrusion |
| VOC | Volatile organic compound |

## EXECUTIVE SUMMARY

The New York State Department of Environmental Conservation (NYSDEC) tasked EA Engineering, P.C. and its affiliate EA Science and Technology (EA) to provide site management services from September 13, 2013 through September 29, 2014 at the Clinton West Plaza site (Site No. 755015) in Ithaca, Thompkins County, New York (Figure 1). This Work Assignment is being conducted under NYSDEC Standby Engineering Services Contract No. D007624-25.

Post-closure monitoring and maintenance program activities were conducted at the Clinton West Plaza site in January/February 2014 and again in July 2014 in accordance with the New York State Inactive Hazardous Waste Disposal Site Remedial Program and as stipulated in the Record of Decision (NYSDEC 2010)[1] and Site Management Plan (EA 2014)[2].

### ES.1 REMEDY EVALUATION

#### Groundwater Monitoring

Groundwater concentrations of primary chlorinated volatile organic compounds (CVOCs) continued to show an overall decreasing trend during the monitoring period. Decreases in molar concentration were observed at each monitoring point following remedial activities through 2013, which indicates that contaminant mass was being converted to innocuous end products (e.g., ethene). During this reporting period, there has been a slight increase in molar concentration of total chlorinated ethenes when compared with the last four monitoring events. However, total molar concentrations have remained below pre-remedial conditions during the period.

Based upon the data generated during this monitoring period, the enhanced anaerobic bioremediation groundwater remedy is continuing to provide effective mass reduction of CVOCs within the aquifer while progressing toward remedial endpoints.

#### Indoor Air Monitoring

Indoor air monitoring was not performed during the reporting period. Currently, on-site and off-site indoor air monitoring is planned to occur during the upcoming (December 2014) heating season. Results of the indoor air sampling will be issued to NYSDEC and New York State Department of Health (NYSDOH) upon completion of data validation.

#### Site Inspection and Maintenance

The site cover continues to provide protection to human health and the environment from subsurface contaminants at this time.

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[1] NYSDEC. 2010. Record of Decision, Clinton West Plaza, Ithaca, Thompkins County, Site Number 755015. December.

[2] EA. 2014. SMP. Final – Revision No.1 Clinton West Plaza, Thompkins County, New York. June.

Due to the restricted access to the existing sub-slab depressurization system (SSDS) a determination could not be made if the system was operational during the reporting period. Inspection of the system has not occurred since 2012. It is expected that the system is functional as it was originally installed in 2011 and was determined to be in good work order during the 2012 inspection. However, due to a recent vacancy of the building space access into the space was restricted.

## ES.2 RECOMMENDATIONS

- Site management tasks should continue during the next period. This includes semi-annual site inspections, maintenance (as needed), semi-annual groundwater monitoring and sampling, and annual off-site indoor air monitoring.

- To better understand the current development and status of the microbiological community structure additional groundwater data should be collected and evaluated.

- In order to provide a comprehensive evaluation of groundwater natural attenuation processes additional analytical suites should be included for the groundwater samples currently being collected.

- The on-site SSDS within the former dry cleaner operation should be inspected and tested for operational functionality within the next reporting period or at minimum prior to re-occupancy of the space.

- If sustained groundwater concentrations of chlorinated compounds (specifically dichloroethenes and vinyl chloride) persist over the next monitoring period a second substrate injection event may be warranted to further enhance bioremediation processes.

# 1. INTRODUCTION

A periodic review process is commonly implemented at environmental remediation sites to evaluate the effectiveness of the selected remedy and to determine if the remedy continues to be protective of human health and the environment, as set forth in the Site Management Plan (SMP). The objectives of the periodic review for sites in the State Superfund Program (SSP) are as follows:

- Evaluate if chosen remedy is performing properly and effectively and is protective of public health and the environment;
- Determine compliance with the Record of Decision (ROD) and the SMP;
- Evaluate treatment system and recommend repairs, if necessary;
- Evaluate the current state and condition of the remedy;
- Determine that the intent of the institutional controls (IC) continues to be met, the engineering controls (EC) remain in-place, and both are effective and protect public health and the environment; and
- Evaluate the operation and maintenance (O&M) costs of the remedy.

## 1.1 SITE BACKGROUND

The 2.49 acre site is commercially developed with an active 36,254 $ft^2$ shopping plaza that was constructed in 1970 and is currently owned by Clinton West, Ltd. The site is surrounded by residential neighborhoods and a retail property (Figure 2). A laundromat, Clinton West Laundry, was located at 609 West Clinton Street within the Clinton West Plaza, but is no longer operational and the space is vacant. Residential structures are located immediately southwest and east of the property. The site includes large parking areas paved with asphalt.

The Clinton West Plaza site was initially reported as a potential site with contamination after First Niagara Bank of Rochester, New York retained Lender Consulting Services, Inc. (LCS) of Buffalo, New York to conduct an Environmental Transaction Screening, Environmental Site Assessment Report in December 2005 (LCS 2006)[3]. The Environmental Site Assessment report concluded that a Phase II investigation was warranted to assess the environmental conditions on-site due to the former operational history of a dry cleaner at the site. LCS completed the Phase II subsurface investigation and supplemental subsurface investigations, and determined that soil and groundwater contamination associated with dry cleaning chemicals, notably tetrachloroethene (PCE), existed at the site. PCE is a solvent commonly used in the dry cleaning process. Based on the findings of the Phase II investigation, the site was listed on the NYSDEC

[3] LCS. 2006. *Subsurface Soil and Groundwater Investigation and Supplemental Subsurface Soil and Groundwater Investigation.* West Clinton Plaza, 609-625 West Clinton Street, Ithaca, New York. April. May.

Registry of Inactive Hazardous Waste Disposal Sites in New York State as a Class 2 site in December 2007.

## 1.2 REMEDIAL HISTORY

A remedial investigation (RI) was performed to characterize the nature and extent of contamination at the site. The RI/Feasibility Study Report prepared by Fagan Engineers (2009)[4] for the Clinton West Plaza site is summarized below:

- No on-site soil source for CVOCs was identified or delineated during the RI and the report suggests that CVOC soil concentrations detected greater than site standards, criteria, and guidance (SCGs) values were likely related to elevated CVOC groundwater concentrations.

- Groundwater concentrations of CVOCs have been reported greater than site SCGs dating back to 2006. Two groundwater sampling events (2008 and 2009) conducted during the RI identified a dissolved-phase CVOC plume in an area south of the former dry cleaners building.

- Soil vapor intrusion (VI) sampling identified an exceedance of NYSDOH Air Guideline for PCE within the current laundry facility.

- The Feasibility Study recommended the selection of Alternative 5, which included installation of a SSDS, a pre-design investigation, source area chemical-oxidation, injection of a hydrogen release compound (HRC®), implementation of ICs, and long-term monitoring.

NYSDEC issued a ROD for the Clinton West Plaza site in May 2010. The selected remedy detailed in the ROD included a Remedial Design (RD) program that would provide details necessary for the construction, and O&M of the overall remedial program. The selected remedy included injection of chemical-oxidants, enhanced anaerobic bioremediation, the installation of a sub-slab vapor mitigation system at the laundry tenant space, cover system over all vegetated areas, implementation of institutional controls in the form of an environmental easement, and development of a SMP should contamination remain in-place.

EA completed a supplemental pre-design investigation (PDI) in April 2011. Samples were collected from media that included subsurface soil, groundwater, and microbial populations and community structures. Further details on the historical and pre-design investigation results are provided in the Pilot Study Conceptual Design Report (EA 2011)[5]. Highlights from the pre-design investigation are summarized below.

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[4] Fagan Engineers. 2009. Remedial Investigation Feasibility Study Report, Clinton West Plaza, 609-625 West Clinton Street, Ithaca, New York. July.
[5] EA. 2011. Pilot Study Conceptual Design Report, Clinton West Plaza (755015), Ithaca, Thompkins County, New York. September.

- Subsurface soil samples collected during the pre-design investigation and during historical investigations south of the facility reported concentrations of VOCs that exceeded Site Cleanup Objectives (SCOs). The subsurface soil areas of concern identified were located within a low-permeability soil unit identified during soil boring advancement (e.g., gray clay) and were likely the result of dense non-aqueous phase liquid mass diffusion processes.

- CVOC groundwater impacts were identified in six wells at concentrations greater than applicable SCG values. The highest concentrations of total CVOCs ranged from 2,016 µg/L (TPMW-3) to 192.1 µg/L (MMW-01). Based upon groundwater data collected in May 2010, the estimated groundwater contaminant plume covered approximately 0.13 acre and extended to an approximate depth of 20 ft bgs.

- Analysis of the *in-situ* microbiological populations during the pre-design investigation indicated that community structure was dominated by methanogens, but also identified existing populations of known dechlorinating bacteria (i.e., *Dehalococcoides, Dehalobacter,* and *Desulfurmonas*).

- Analysis of natural attenuation parameters indicated that anaerobic conditions were present within the dissolved-phase groundwater plume and reductive dechlorination appeared to be occurring. The pre-design investigation data suggested that methanogensis was occurring at the site and that available hydrogen may have been a limiting factor in the development of favorable dechlorinating bacteria populations.

### 1.2.1 Summary of Remedial Actions

The site was remediated in accordance with the NYSDEC-approved Pilot Study Conceptual Design Report (EA 2011) and the Pre-Design Investigation and Pilot Study Program Letter Work Plan (EA 2010)[6].

The following is a summary of the remedial actions performed at the site:

1. Installation of a SSDS, as an interim remedial measure (IRM), as outlined in the ROD (NYSDEC 2010), in the Clinton West Laundry tenant space located at 609 West Clinton Street.

2. Injection of 3,600 lbs of HRC® substrate at 36 injection points at a loading rate of 5 lbs/ft using direct-push technology to a depth of 25 ft bgs.

3. Preparation for execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the site.

[6] EA. 2010. Pre-Design Investigation and Pilot Study Program Letter Work Plan. December.

4. Other major remedial elements including all ICs listed here:

    - Compliance with an Environmental Easement and the SMP.

    - All ECs must be operated and maintained as specified in the SMP.

    - All ECs on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP.

    - Groundwater and indoor air monitoring must be performed as defined in the SMP.

    - Data and information pertinent to site management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP.

5. Development and implementation of a SMP for long-term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) ICs and ECs, (2) monitoring, (3) operation and maintenance, and (4) reporting;

Remedial activities were completed at the site in February and November 2011. Baseline and post-injection groundwater monitoring has been performed from October 2011 through July 2014. No contaminated materials were removed from the site.

#### 1.2.1.1 Vapor Intrusion Cleanup Remedy

Results of the RI indicated that due to the presence of CVOCs in groundwater and soil vapor, potential existed for human health exposure via the vapor intrusion (VI) pathway. Site contaminants addressed through the remedy selection process were PCE, trichloroethene (TCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), and vinyl chloride (VC). As outlined in the ROD (NYSDEC 2010), the selected remedial alternative required the installation of a SSDS to mitigate the potential for VI at the Clinton West Laundry facility. The design and installation of this element of the ROD were conducted as an IRM to mitigate the potential for human health exposure to site related contaminants. Since 2011, off-site soil VI monitoring has been continued at one residential structure located to the southeast of the former dry cleaners location.

NYSDEC initiated the IRM using an existing standby Remedial Contractor, Groundwater & Environmental Services, Inc. (GES), to perform the SSDS installation activities. A pre-design pressure field extension (PFE) test was completed on December 9, 2010. Based on the PFE test, EA issued a memo to NYSDEC indicating that SSDS would be a suitable technique to mitigate the potential for VI at the Clinton West Laundry facility. Following NYSDEC approval, GES, under the supervision of EA, installed the system fan, interior and exterior piping, and exterior system discharge on February 7, 2011.

#### 1.2.1.2 Soil and Groundwater Cleanup Remedy

Based on the approved Pilot Study Conceptual Design Report (EA 2011), and Pre-Design Investigation and Pilot Study Program Letter Work Plan (EA 2010), EA completed the subsurface injection of an organic substrate (HRC®) to stimulate direct anaerobic reductive dechlorination of CVOCs present in groundwater at the site.

In order to enhance *in-situ* anaerobic reductive dechlorination of CVOCs in groundwater, a sufficient mass of organic substrate was required to meet electron acceptor demands of both native (inorganic) and CVOCs within the targeted treatment zone. HRC® is an ester of glycerol, a three-carbon polyalcohol, and lactic acid. Once injected into the subsurface, HRC® slowly releases lactic acid, which undergoes fermentation, generating molecular hydrogen and a series of carboxylic acids that act as electron donors for utilization by bacteria that carryout reductive dechlorination.

Groundwater samples were collected from a network of 11 monitoring wells within the targeted treatment zone during six monitoring events (three monthly, followed by three quarterly events from November 2011 through October/November 2012). Data were compared to results from a baseline monitoring event, as well as previous investigations completed in October 2011 prior to the substrate injection. Further details on the enhanced anaerobic bioremediation process and implementation at the site are provided in the Enhanced Anaerobic Bioremediation Pilot Study Summary Report (EA 2013)[7].

#### 1.2.1.3 Remaining Contamination

During the post-remedial action performance monitoring period, concentrations of CVOCs were consistently reported in treatment zone monitoring locations located south and southwest of the treatment zone. Results from post-injection groundwater sampling indicated that concentrations of PCE and TCE were significantly (92 – 100 percent reductions) reduced within the treatment zone. PCE and TCE were not detected at other monitoring locations within the treatment zone, suggesting that the substrate injection process did not displace impacted groundwater to areas inside or outside of the target treatment zone.

However, groundwater analytical results from the October/November 2012 sampling event indicated that site contaminants of concern (COCs) remained at concentrations greater than their relevant SCGs. Additionally, daughter compounds commonly produced during the anaerobic reductive dechlorination process were consistently detected at site monitoring wells during post-injection monitoring. Groundwater data show that these compounds increased in concentration following the injection event and steadily decreased sequentially at each monitoring location.

Although, site-related COCs were identified within subsurface soil during previous investigations, soil samples were collected from depth intervals within the saturated zone and,

[7] EA. 2013. Enhanced Anaerobic Bioremediation Pilot Study Summary Report. Clinton West Plaza (755015) Ithaca, Tompkins County, New York. March.

therefore, are likely not solely representative of the subsurface soil conditions, but include the contaminant fraction from groundwater. Under the remedial action performed at the Clinton West Plaza site, potential impacts to soil were addressed as part of the groundwater remedial action. Based on the previous soil sampling data and reductions in CVOC concentrations observed in groundwater, residual contamination in subsurface soil is expected to be minimal and treated concurrently with groundwater. It was anticipated that future groundwater monitoring would identify the potential and significance of residual soil contamination. If groundwater monitoring results indicated a potential for a continuing soil source additional injection events could be implemented under the SMP (EA 2014).

Since contaminated groundwater remains at the site after completion of the remedial action, ECs and ICs were required to protect human health and the environment. These ECs and ICs are fully described in the SMP. Long-term management of these ECs and ICs, and residual contamination will continue to be inspected/monitored under the SMP (EA 2014).

#### 1.2.1.4 Final Engineering Report

The Final Engineering Report (FER) (EA 2013a)[8] was completed in September 2013 and details the remedial activities conducted at the Clinton West Plaza site.

#### 1.2.1.5 Site Management Plan

The SMP (EA 2013a)[9] was originally completed in September 2013 and detailed the future management of the Clinton West Plaza site. The SMP (EA 2014) was revised in June 2014 to include the addition of the sub-slab depressurization system operation management plan as an appendix. A full copy of the SMP (EA 2014) is provided in Appendix A.

## 1.3 SITE GEOLOGY AND HYDROGEOLOGY

The site is located in the Appalachian Uplands Physiographic Province where local topographic features result from glacial and fluvial processes. The site is located 1.5 mi south of Cayuga Lake and is approximately 300 ft northeast of Six Mile Creek which flows northward to Cayuga Inlet and Lake. The site topography and surrounding area is relatively flat.

The upper foot of soil is comprised primarily of topsoil, sand, and gravel, underlain by a layer of brown clay with fine sands, trace silts, and some organics to depths ranging from 2 to 7 ft below ground surface (bgs). Underlying the brown clay unit is a layer of brown sand with trace silts ranging from 1 to 6 ft in thickness (averaging approximately 2.5–3 ft in thickness). Underlying the brown sand unit is a distinct gray clay unit, which was observed to the termination depths of a majority of the soil borings (approximately 16–20 ft bgs). The gray clay unit was typically 10+ ft in thickness. A brown fine to medium sand was observed below the gray clay in western

[8] EA. 2013. Clinton West State Superfund Site. Thompkins County, Ithaca, New York. NYSDEC Site No. 755015. September
[9] EA. 2013. SMP. Final. Clinton West Plaza, Thompkins County, New York. September.

portions of the site. Additionally, a peat layer was encountered at approximately 19 ft bgs in the southernmost portion of the site.

Groundwater has been encountered on-site at depths ranging from approximately 2 ft bgs to 5 ft bgs. Groundwater depth at the site is considered shallow and could potentially be influenced by temporal changes and seasonal precipitation events. Based on groundwater gauging data, shallow groundwater has been estimated to generally flow south-southwest towards Six Mile Creek. However, localized groundwater flows radially from the site. Based on the hydraulic gradient between six monitoring well sets within the area of the groundwater contaminant plume, the average groundwater gradient was calculated at -0.009 ft/ft. This represents a relatively flat groundwater gradient and profile.

## 1.4 SITE MANAGEMENT OBJECTIVES

The SMP (EA 2014) was prepared to manage remaining contamination at the site until the Institutional Control (IC) is extinguished in accordance with Environmental Conservation Law Article 71, Title 36. Environmental monitoring points at the Clinton West Plaza site have been maintained and sampled during the monitoring period in accordance with the SMP (EA 2014). This included collection of groundwater samples at various locations across the site, periodic inspection of the SSDS, indoor air monitoring, and decommissioning of site-related monitoring wells. Sampling locations, sampling methodology, list of analytes, analytical methods, inspection methodology, and site maintenance objectives are documented in the SMP (EA 2014).

The objectives of the monitoring and maintenance program are to:

- Collect representative groundwater samples and evaluate the data to confirm that the remedy continues to be effective in protecting public health and the environment.

- Collect indoor air and sub-slab soil vapor samples and evaluate the data to monitor the potential for VI at nearby residences and assess the effectiveness of the existing SSDS and determine necessity.

- Periodically inspect the site and provide routine maintenance, as necessary.

- Document and report this information to the NYSDEC.

## 1.5 PERIODIC REVIEW REPORT

The purpose of this Periodic Review Report is to summarize the results of the September 2013 – September 2014 semi-annual groundwater monitoring and site inspection events; evaluate the effectiveness of the remedial actions implemented at the site; and to provide sufficient documentation that the remedy remains in place, is performing properly and effectively, and is protective of public health and the environment. Specifically, this report provides the following information:

- Results of groundwater monitoring
- Evaluation of the current groundwater quality conditions
- Results of site inspections
- Maintenance activities performed to date.

This report also documents any problems or changes necessary for the site to be in compliance with the SMP including removal of institutional/engineering controls that are no longer applicable; modifications in monitoring requirements, as applicable; or a Corrective Action Work Plan and schedule, as necessary.

# 2. EVALUATION OF REMEDY PERFORMANCE, EFFECTIVENESS, AND PROTECTIVENESS

## 2.1 MONITORING PLAN COMPLIANCE REPORT

This PRR assesses whether the Clinton West Plaza site has been remediated and managed as set forth in the SMP (EA 2014) and ROD (NYSDEC 2010). The Monitoring Plan includes a description of the methods and rationale to be used for assessing the remedy effectiveness, including the following elements:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air).
- Assessing compliance with applicable NYSDEC SCGs, particularly ambient groundwater standards.
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

## 2.2 GROUNDWATER MONITORING AND SAMPLING

Groundwater monitoring and sampling has been continuously performed at the site since completion of the groundwater remedial action (enhanced bioremediation) in 2011. During the reporting period (September 2013 through September 2014), two groundwater monitoring and sampling events were completed at the site. Prior to groundwater sampling activities, monitoring wells were gauged to measure groundwater depth, determine pontentiometric surface elevations, and evaluate groundwater flow paths. The table below identifies the monitoring well network that is included in the monitoring plan for the site, a summary of dates that the monitoring wells were sampled during the reporting period, and the current status of each monitoring well.

**Monitoring Plan - Monitoring Wells**

| Well ID | Sampling Date | | Well Status/Notes |
|---|---|---|---|
| | Jan./Feb 2014 | July 2014 | |
| MW-14 | X | X | Good condition. |
| MMW-01 | X | X | Good condition. |
| MMW-02 | X | X | Good condition. |
| MMW-03 | X | X | Repairs made in Feb. 2014. |
| MMW-04 | X | X | Good condition. |
| TPMW-3 | X | X | Good condition. |
| TPMW-4 | X | X | Good condition. |
| TPMW-6 | X | X | Good condition. |
| TPM-01 | X | X | Repairs made in Feb. 2014 |
| TPM-02 | X | X | Good condition. |
| TPM-03 | X | X | Good condition. |
| NOTE: "X" indicates that the well was sampled. | | | |

Local groundwater flow direction based on groundwater elevation data collected both historically and during the reporting period is generally in a south-southwest direction towards Six Mile Creek. Interpreted groundwater contour maps illustrating the direction of groundwater flow for each of the groundwater gauging events are shown in Figures 3 and 4, respectively. A summary of groundwater gauging data are provided in Table 1. Groundwater depth at the site is considered shallow and could potentially be influenced by temporal changes and seasonal precipitation events. Groundwater depths during the reporting period ranged from 3.02 ft below top of casing (btoc) in January 2014 to 9.51 ft btoc in July 2014. The greatest groundwater elevation changes were recorded at monitoring wells TMP-03 and TMP-02 between July and January 2014 at 5.45 ft and 1.40 ft, respectively. These two monitoring points are 1 inch piezometers installed to depths greater than 20 ft bgs and are considered temporary monitoring locations. A copy of the daily field reports and photo logs completed during monitoring and sampling activities are provided in Appendix B. Additionally, monitoring well gauging, purging, and sampling forms are provided in Appendix C.

### 2.2.1 Chlorinated Volatile Organic Compounds

During the reporting period concentrations of CVOCs were consistently reported in monitoring well locations TPMW-3, TPMW-4, and MMW-01. As presented in Figure 5, primary CVOC concentrations are summarized at each monitoring location and include historical data from October 2011 prior to remedial activities. A summary of VOCs detected in groundwater samples collected from site monitoring wells is provided in Table 2. Data usability summary reports are provided in Appendix D.

The results of the remedial activities performed at the site indicated that groundwater CVOC concentrations of PCE and TCE were significantly reduced within the targeted treatment zone. Groundwater reductions of the primary CVOCs (PCE and TCE) ranged from 92 to 100 percent at former source area monitoring wells TPMW-3 and TPMW-4 based on comparison with baseline groundwater data.

During this reporting period, PCE and TCE were not detected at any of the site monitoring wells with the exception of an estimated detection at TPMW-3 (0.83 J µg/L) in July 2014. Additionally, PCE has not been detected at monitoring location TPMW-4 since the January 2012 monitoring event. The continued non-detection of PCE and TCE compounds indicates that the enhanced bioremediation remedial approach has remained effective for treatment of primary CVOCs. Figure 6 presents the interpreted total CVOC groundwater plumes over a two year period dating back to June 2012.

Daughter compounds (*cis*-1,2-DCE and VC) commonly produced during the anaerobic reductive dechlorination process were also consistently detected at monitoring well locations TPMW-3, TPMW-4, and MMW-01. These two compounds makeup approximately 100 percent of the total CVOCs concentrations observed in the groundwater plume depictions (Figure 6). Groundwater data generated during this reporting period show an increasing trend for *cis*-1,2-DCE and VC at these monitoring locations. Historically, performance monitoring data identified an overall decreasing trend for *cis*-1,2-DCE and VC through June 2013. Continued detections of these daughter compound concentrations would suggest that dechlorination processes are still actively occurring in site groundwater.

Progress to operational endpoints for daughter compounds is typically much slower than for the primary CVOCs. The time required to develop the appropriate subsurface conditions and for growth of microbial population capable of complete degradation may be on the order of several years at many sites. Therefore, the remedial technology may require prolonged process monitoring and system maintenance. Microbial populations capable of anaerobic dechlorination of the highly chlorinated compounds (e.g., PCE and TCE to *cis*-DCE) are thought to be fairly ubiquitous in many subsurface environments. However, the ability of these dechlorinators to compete with other native microbial populations or to complete the degradation of these compounds to innocuous end products sometimes becomes an issue at some sites.

### 2.2.2 Molar Concentration

In addition to evaluating groundwater concentration trends, molar concentrations have been evaluated to determine *in-situ* changes in CVOC parent/dechlorination products. The molecular weights of primary CVOCs (PCE and TCE) and dechlorination products (*cis*-1,2-DCE, VC, and ethene) differ from each other, with dechlorination products having progressively lower molecular weights. Because of molecular weight variability, the reductive transformation of a mass of PCE, will not yield an identical mass of TCE (e.g., anaerobic dechlorination of 100 μg/L of PCE would produce 84 μg/L of TCE). Conversion of conventional groundwater concentrations (e.g., μg/L) to molar concentrations (micromoles per liter [μM/L]) enables assessment of the degree to which reductive transformation is occurring, because transformation of 1 mole of PCE yields 1 mole of TCE and so forth throughout the daughter compounds. The conversion is calculated by dividing the reported conventional groundwater concentration by the molecular weight of the compound. Decreases in the molar concentration of total chlorinated ethenes indicate that chlorinated ethene mass is being lost and that significant transformation of these compounds to non-toxic end products (ethene/ethane) is occurring.

Figure 7 presents a summary of the molar concentration of total chlorinated ethenes (PCE, TCE, *cis*-1,2-DCE, and VC) at monitoring points both within and at the leading edge of the groundwater plume. Decreases in molar concentration were observed at each monitoring point over the course of the performance monitoring period following remedial activities through June 2013, which indicates that contaminant mass was converted to innocuous end products (e.g., ethene). It was observed that total molar concentrations did initially increase at monitoring points TPMW-3, TPMW-4, and MMW-01 during the first three months post-injection and then decreased to concentrations lower than baseline conditions through June 2013.

During this reporting period, there has been a slight increase in molar concentration of total chlorinated ethenes when compared with the last four monitoring events. However, total molar concentrations have remained below baseline conditions with the exception of molar concentrations observed in January 2014 at monitoring well MMW-01. Monitoring well MMW-01 is a downgradient monitoring well and therefore could be seeing an increase in molar concentration as more contaminated groundwater moved through this zone/area of the site.

### 2.2.3 Monitored Natural Attenuation Parameters

An evaluation of monitored natural attenuation parameters was limited to water quality readings generated during active groundwater sampling. In general, if dissolved oxygen (DO) concentrations are < 1 mg/L and oxidation/reduction potential (ORP) reading are negative (-100 millivolts) then it can be inferred that anaerobic conditions exist at a site. The DO and ORP readings recorded during the groundwater sampling events are provided on the purging forms in Appendix C.

## 2.3 INDOOR AIR MONITORING

Indoor air monitoring was not performed during the reporting period. Currently, on-site and off-site indoor air monitoring is planned to occur during the upcoming (December 2014) heating season. Results of the indoor air sampling will be issued to NYSDEC and NYSDOH upon completion of data validation.

## 2.4 MONITORING WELL DECOMMISSIONING

Six groundwater monitoring wells were selected for decommissioning because they were located up-gradient or cross-gradient of the defined groundwater contamination plume, provided no applicable data, and did not represent the boundaries for the groundwater contamination plume. Groundwater samples were collected from MW-07, MW-08, MW-09, and MW-12 in October 2008 and no site contaminants were detected at concentrations exceeding the NYSDEC Ambient Water Quality Standards (AWQS) for Class GA waters. Additionally, these groundwater monitoring wells were not required for further long term monitoring under the post-remedial action SMP. EA and its subcontractor Geologic NY, Inc. decommissioned the monitoring wells in accordance with New York State Department of Environmental Conservation Commissioner's Policy (CP) CP-43[10]. The monitoring wells were decommissioned in February and July 2014. The table below identifies the monitoring well identification and month when decommissioning occurred.

**Site Monitoring Wells Decommissioned**

| Well ID | Well Status/Notes |
|---|---|
| MW-07 | Decommissioned Feb. 2014 |
| MW-08 | Decommissioned Feb. 2014 |
| MW-09 | Decommissioned Feb. 2014 |
| MW-10 | Decommissioned Jul. 2014 |
| MW-11 | Decommissioned Jul. 2014 |
| MW-12 | Decommissioned Feb. 2014 |

[10] NYSDEC. 2009. Commissioner Policy–43 Groundwater Monitoring Well Decommissioning Policy. 3 November.

## 2.5 CONFIRM COMPLIANCE WITH MONITORING PLAN

The following table identifies the SMP monitoring plan requirements on an annual basis and demonstrates that compliance with the monitoring plan has been or is scheduled to be achieved prior to the end of the 2014 calendar year.

| | **Required Frequency*** | | |
|---|---|---|---|
| **Monitoring Program Activity** | **Semi-Annually** | **Annually** | **Compliance Dates** |
| Groundwater Monitoring/Sampling | X | | 2014 - 2015 |
| Indoor Air Monitoring (on-site and off-site) | | X** | 2014 - 2015 |
| *The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH<br>** SMP notes that indoor air will be monitored as recommended by NYSDEC/NYSDOH; Currently, scheduled to be completed in Dec. 2014 | | | |

## 2.6 CONFIRM THAT PERFORMANCE STANDARDS ARE BEING MET

Table 2 provides a summary of groundwater results for the reporting period. Overall, site groundwater concentrations of primary CVOCs (PCE/TCE) have remained below SCGs. Daughter compounds (*cis*-1,2-DCE/VC) remained at concentrations that exceed their respective SCGs and showed a slight increasing trend since June 2013. Total CVOC mass continues to remain less than baseline conditions in the former source area. A minor increase in total mass was observed in January 2014 which then decreased to a level below baseline mass in July 2014 at the downgradient leading edge of the contaminant plume. It is expected that additional CVOC mass will be removed from the groundwater system through natural attenuation processes evident at the site.

## 2.7 SITE INSPECTION

The site was inspected during semi-annual groundwater monitoring and sampling events. During the fall of 2013 (October/November) the tenant that occupied the laundry store front within the Clinton West Plaza building ceased operations and moved out of the space. The storefront windows and doors were boarded up from the outside at the space. At the time of this PRR no new tenant has re-occupied the space.

### 2.7.1 Site Cover

The site cover system and surrounding areas were observed to be in good condition during the inspections. No ground intrusive work was noted at the site or within the immediate vicinity of the site during site inspections.

### 2.7.2 Sub-Slab Depressurization Systems

It is unknown if the SSDS was operational during the reporting period. As mentioned earlier, the space was vacated by the former laundry facility tenant and boarded up by the property owner. Access to the SSDS was restricted and therefore no inspections were completed for the SSDS. It is assumed that the system would be functional should the space be re-occupied by a new tenant. An inspection of the SSDS is scheduled for December 2014.

## 2.8 SITE MAINTENANCE

During the reporting period minor repairs were made at two monitoring locations. No other ongoing site maintenance activities were required at the site during the reporting period.

## 2.9 INSTITUTIONAL CONTROLS/ENGINEERING CONTROLS CERTIFICATION PLAN REPORT

As previously noted the SMP is included under Appendix A of this PRR and includes the Institutional and Engineering Controls Plan. The SMP was revised in June 2014 to include the SSDS management plan as Appendix G of the document. Institutional controls (IC) and engineering controls (EC) at the Clinton West Plaza site currently include the following:

- EC – Cover system that includes the existing overburden soil, asphalt pavement areas, concrete sidewalks, and concrete building slabs/foundations that prevent incidental contact or ingestion of subsurface soil at the majority of the site. An excavation work plan (EWP) included as an appendix to the SMP, identifies the procedures and protocols required to be implemented should the cover system be breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed;
- EC – Operation and maintenance of the SSDS at the laundry facility space of the site building;
- EC – Criteria for completion of remediation/termination of remedial systems;
- IC – Compliance with the Environmental Easement and SMP;

### 2.9.1 IC/EC Requirements and Compliance

Determination of compliance with the IC/ECs at the Clinton West Plaza site is made on the following criteria:

- The IC/EC applied at the site are in place and unchanged since completion of the remedial activities and issuance of the SMP;
- No changes or occurrences of activity have impaired or impacted the ability of such controls to protect human health and the environment, or constitute a violation or failure to comply with any element of the SMP for such controls;

- Access to the Clinton West Plaza site will continue to be provided to the Department for evaluation of the remedy, including access to the site monitoring network and other controls (e.g., SSDS) for continued monitoring and/or maintenance.

#### 2.9.2 IC/EC Certification Form

The IC/EC certification form has been included as Appendix E of this PRR.

# 3. COST EVALUATION

## 3.1 SUMMARY OF COSTS

Total costs for site management services, including groundwater monitoring and sampling, site inspection, monitoring well maintenance, and monitoring well decommissioning was $37,046 for the reporting period. A breakdown of major costs for September 2013 through September 2014 is provided in the table below.

| **Site Management Activity** | **Cost Incurred for the period of Sept. 2013 – Sept. 2014** |
|---|---|
| Monitoring, Sampling, Inspection, Oversight, Supplies/Equipment, Travel, and Reporting (EA) | $32,970 |
| Analytical Laboratory (Chemtech Consulting Group and Spectrum Analytical, Inc.) | $2,160 |
| Data Validation (EDS, Inc.) | $586 |
| Monitoring Well Decommissioning (Geologic NY, Inc.) | $1,140 |
| Monitoring Well Repairs (Geologic NY, Inc.) | $190 |

The monitoring, sampling, inspection, oversight and reporting costs, which are billed by EA, include costs associated with project management, quality assurance, and periodic reporting throughout the reporting period. These monitoring and reporting costs are based on fiscal data generated and tracked by an EA internal financial management system and includes travel expenses, equipment/supply costs, and other direct charges.

The costs associated with monitoring well decommissioning and repairs were billed by Geologic NY, Inc. and include labor and materials used to maintain and/or decommission monitoring locations located at and within the vicinity of the Clinton West Plaza site. The costs associated with monitoring well decommissioning are considered “one-time” expenditures and are not reflective of typical site management service required to maintain the operational status of the remedy.

The analytical costs, billed by Chemtech Consulting Group of Mountainside, NJ and Spectrum Analytical Labs of Warwick, RI covered semi-annual groundwater analyses. Under the next performance monitoring period Chemtech will be providing all analytical services for the groundwater monitoring and sampling program. Data generated during the reporting period was validated by Environmental Data Services, Inc. of Williamsburg, VA.

# 4. RECOMMENDATIONS

## 4.1 GROUNDWATER MONITORING

Groundwater results generated during this reporting period have shown a continued decreasing trend for the primary CVOCs, which were below respective SCG during both monitoring and sampling events. Daughter compounds continued to remain stable with a slight increasing trend over the reporting period. Continued groundwater monitoring and sampling will allow for further assessment of the capability and efficiency of *in-situ* microbiological communities to complete the dechlorination process for these daughter compounds.

Groundwater quality indicates that conditions are still favorable for anaerobic natural attenuation processes to further degrade residual chlorinated compounds within the groundwater system.

## 4.2 INDOOR AIR MONITORING

On-site and off-site indoor air monitoring is currently scheduled for the upcoming heat season (December 2014). Indoor air monitoring results will be provided to NYSDEC and NYSDOH upon completion of data validation.

## 4.3 SITE INSPECTION AND MAINTENANCE

### 4.3.1 Site Cover

The site cover system and surrounding areas were observed to be in good condition with no ground intrusive work being noted during the inspections.

### 4.3.2 Sub-Slab Depressurization Systems

Due to the restricted access to the SSDS a determination could not be made if the system was operational during the reporting period. Inspection of the system has not occurred since 2012. Access the building space, to test the system for operational functionality and to ensure that once the space becomes occupied that the system will be activated, is scheduled for December 2014. The SSDS provides mitigation from vapor intrusion and ensures protectiveness for human health and the environment.

## 4.4 SUMMARY

The following actions are recommended for future site management activities at the Clinton West Plaza site:

- Site management tasks should continue. This includes semi-annual site inspections and groundwater monitoring and sampling. The next inspection and groundwater sampling events are currently scheduled for March 2015 and August 2015.

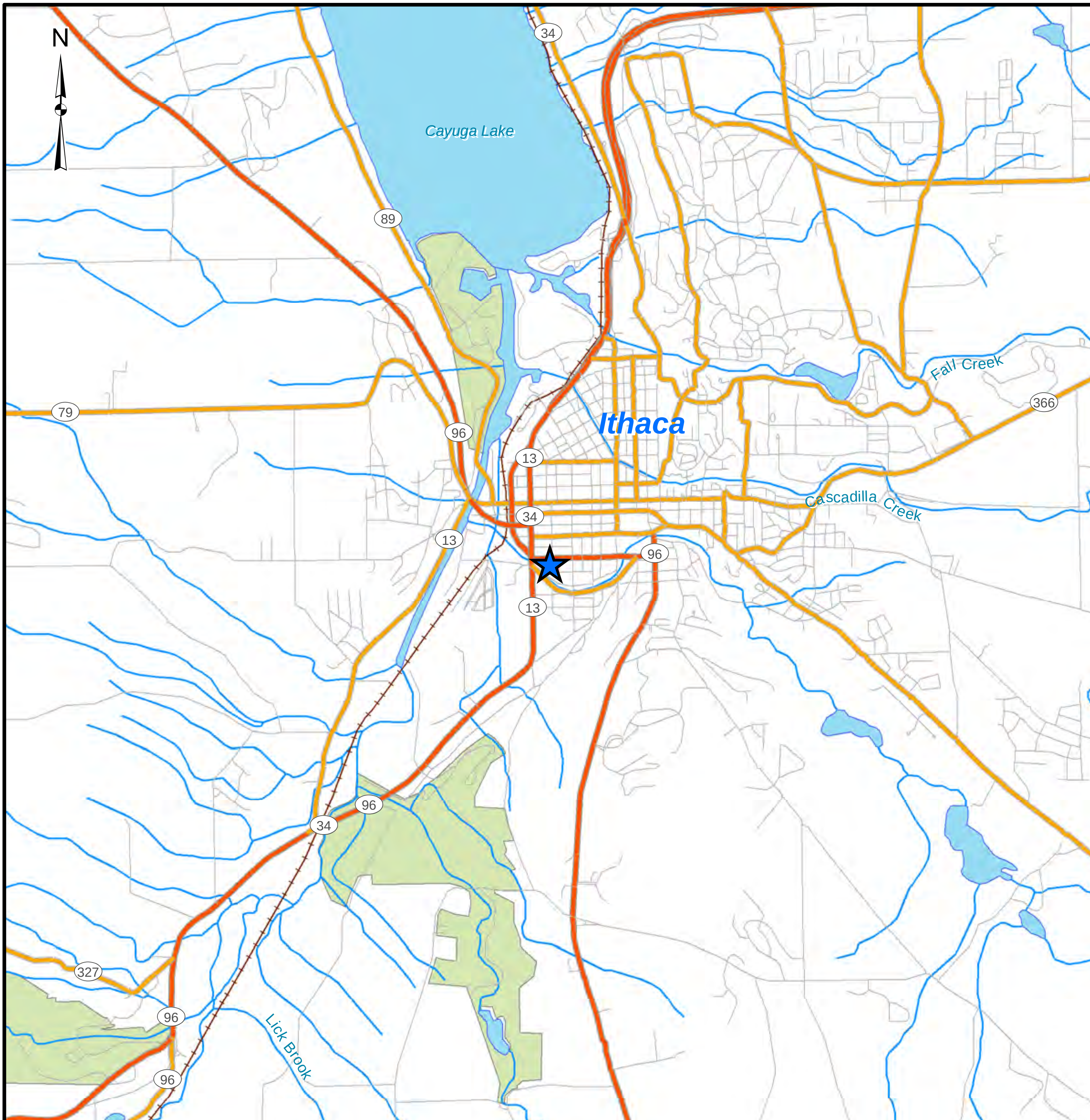
- To better understand the current development and status of the microbiological community structure, biotrap samplers should be deployed and analysis conducted. Optional analyses used to evaluate microbial activity and the potential for anaerobic dechlorination of CVOCs include molecular analysis for specific microbial species. Anaerobic reductive dechlorination is limited to few metabolic classifications of bacteria. These groups include methanogens, sulfate-reducing bacteria, and dechlorinating bacteria. Generation of this data will allow for an assessment of the potential for "DCE stall" and will aid in the determination or need for further substrate injections and/or bioaugmentation to fully remediate site groundwater to applicable SCGs.

- In order to provide a comprehensive evaluation of the potential for natural attenuation to further degrade chlorinated contaminant mass, additional groundwater data should be generated during the next reporting period including groundwater analysis for: methane/ethane/ethene, nitrate, sulfate, metabolic acids, and total organic carbon.

- The SSDS will be inspected and tested for operational functionality within the next reporting period or at minimum prior to re-occupancy of the space. An inspection is currently scheduled for December 2014.

- Based upon the on-site and off-site indoor air monitoring scheduled to take place in December 2014, NYSDEC and NYSDOH will make recommendations regarding the continuation of the indoor air monitoring program.

- If sustained groundwater concentrations of chlorinated compounds (specifically dichloroethenes and vinyl chloride) persist over the next monitoring period a second substrate injection event may be warranted to further enhance bioremediation processes.




Legend
- Highway
- Major Road
- Local Road
- Park
- Rivers & Streams
- Surface Water Body

0 1 2 Miles

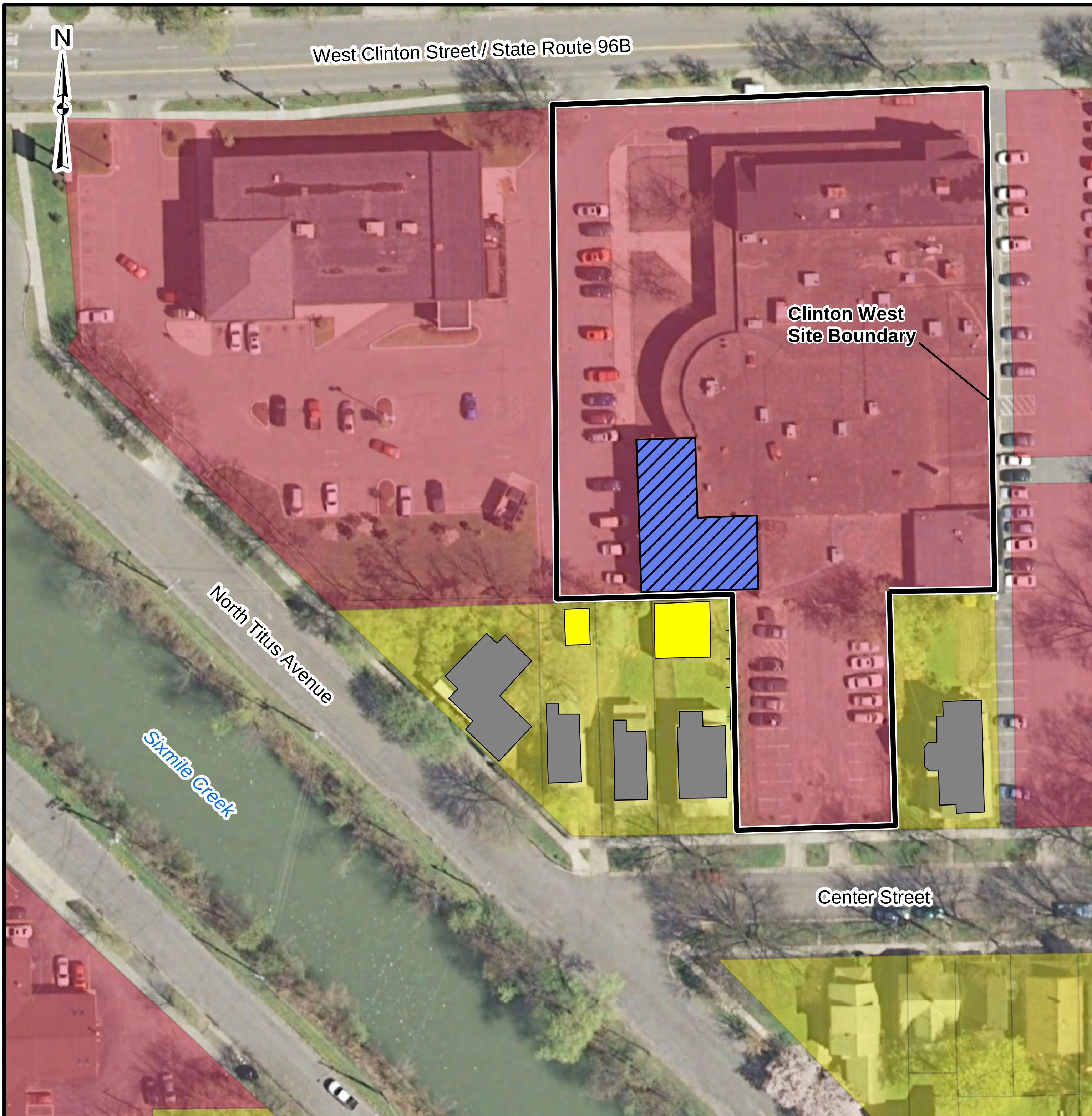
1 in = 1 miles

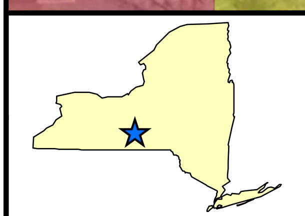
Source: ESRI Street Maps USA

CLINTON WEST PLAZA (755015)
PERIODIC REVIEW REPORT
ITHACA, NEW YORK

FIGURE 1
Site Location Map

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | DECEMBER 2014 | 14907.25 | 1490725_GIS/ PROJECTS/PRR |



**Legend**

| Select Structures | Zoning |
|---|---|
| Dry Cleaners | Commercial |
| Residence | Residential |
| Utility Building | |

Feet: 0, 70, 140

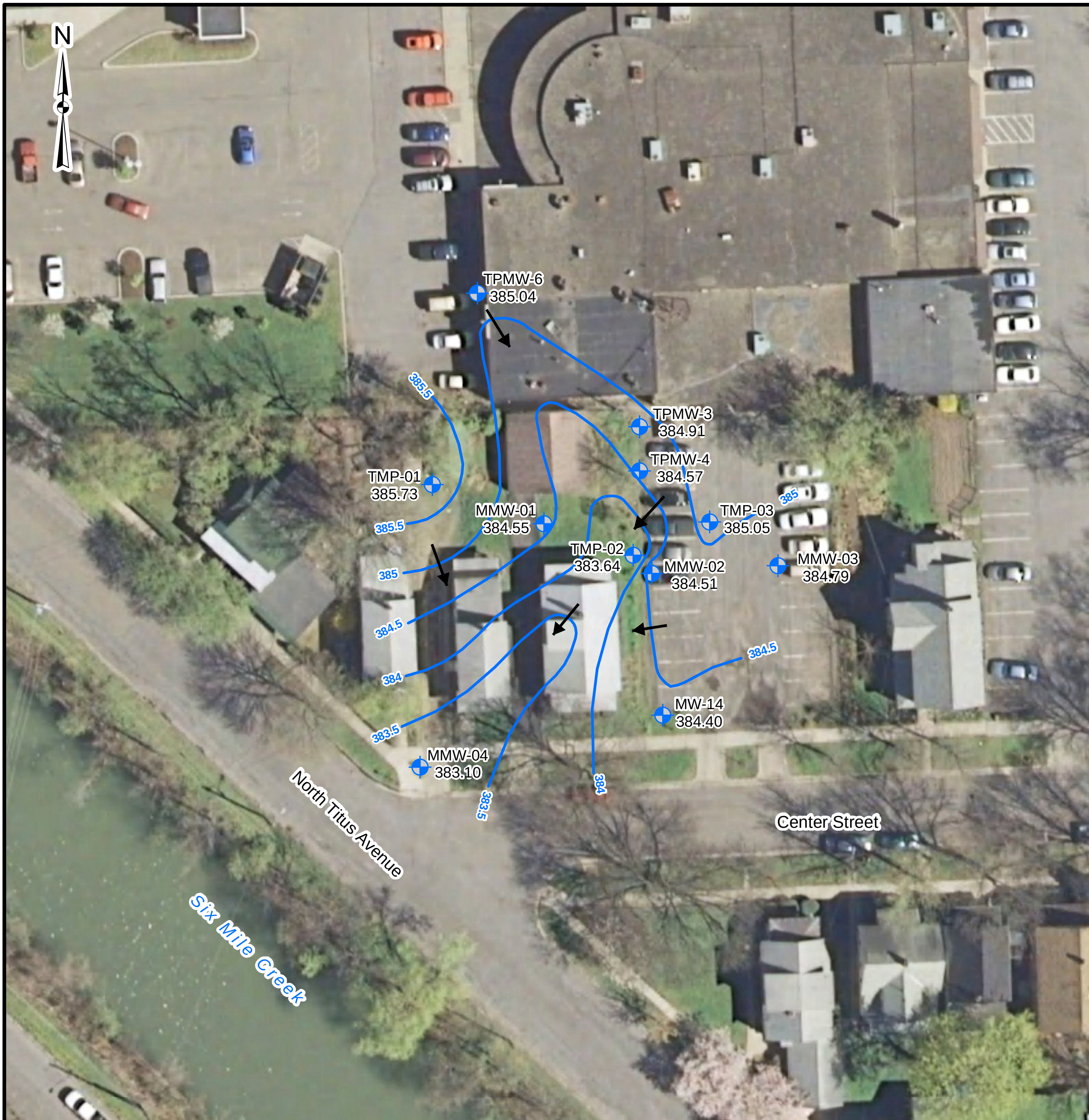
1 inch = 70 feet

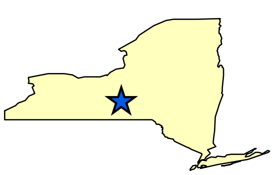
Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007; Property Parcels: Tompkins County 2010

CLINTON WEST PLAZA (755015)
PERIODIC REVIEW REPORT
ITHACA, NEW YORK

FIGURE 2
Site and Surrounding Area

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | DECEMBER 2014 | 14907.25 | 1490725_GIS/ PROJECTS/PRR |



**Legend**

- Groundwater Monitoring Well
- Interpolated Groundwater Elevation Contour (ft amsl)
- Interpreted Groundwater Flow Direction

Feet
0 25 50 100

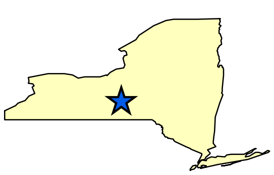
1 inch = 50 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007

CLINTON WEST PLAZA (755015)
PERIODIC REVIEW REPORT
ITHACA, NEW YORK

FIGURE 3
Interpreted Groundwater
28 January 2014

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | ALK | CJS | RSC | AS SHOWN | DECEMBER 2014 | 14907.25 | 1490725_GIS/ PROJECTS/PRR |

**Legend**

Groundwater Monitoring Well

Interpolated Groundwater Elevtion Contour (ft amsl)

Interpreted Groundwater Flow Direction

Feet

0 25 50 100

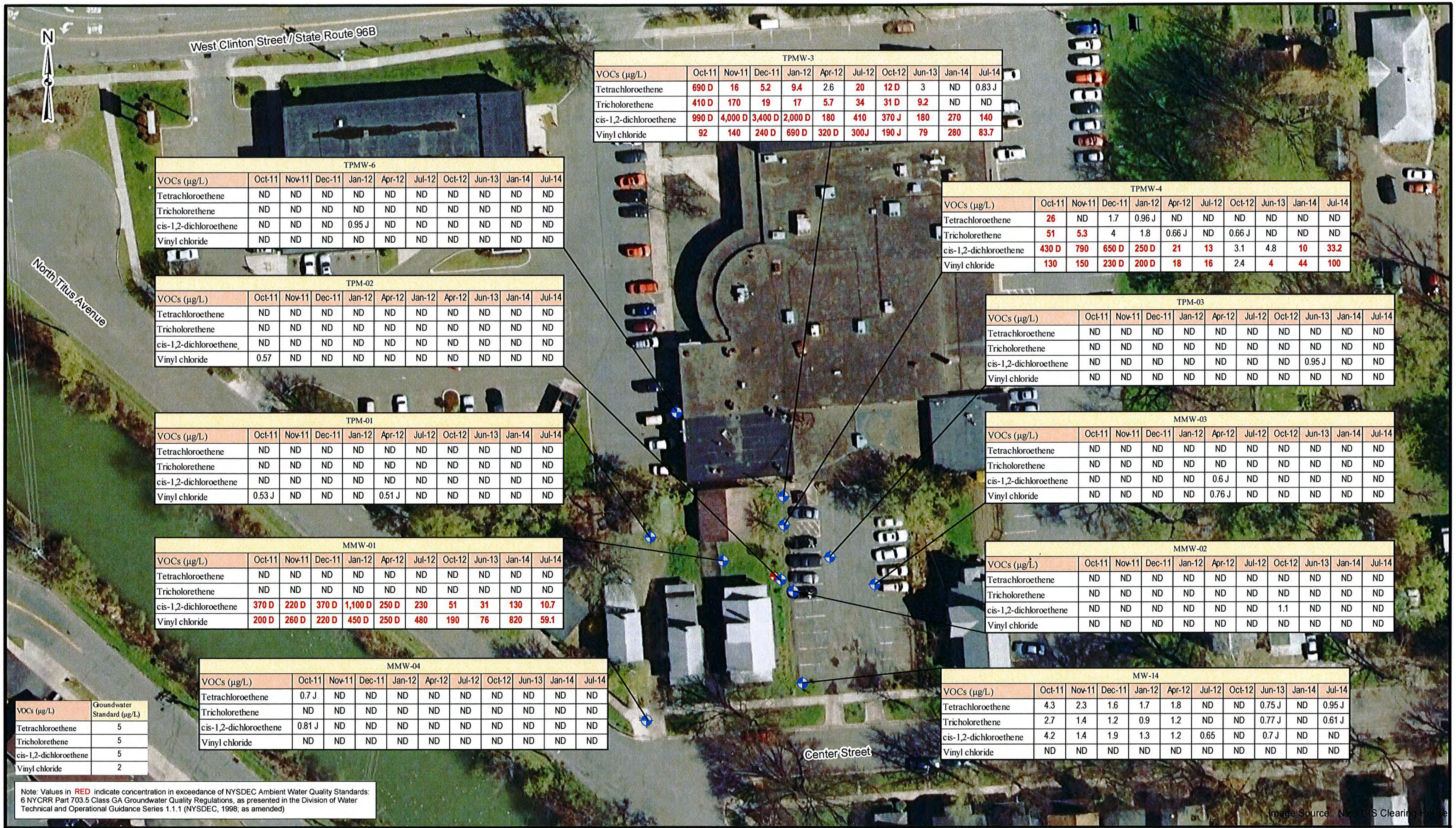
1 inch = 50 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007

CLINTON WEST PLAZA (755015)
ENHANCED ANAEROBIC BIOREMEDIATION
PILOT STUDY SUMMARY REPORT
ITHACA, NEW YORK

FIGURE 4
Interpreted Groundwater Contours 31 October 2012

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | ALK | CJS | RSC | AS SHOWN | DECEMBER 2014 | 14907.25 | 1490725_GIS/ PROJECTS/PRR |




| TPMW-3 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | 690 D | 16 | 5.2 | 9.4 | 2.6 | 20 | 12 D | 3 | ND | 0.83 J |
| Tricholorethene | 410 D | 170 | 19 | 17 | 5.7 | 34 | 31 D | 9.2 | ND | ND |
| cis-1,2-dichloroethene | 990 D | 4,000 D | 3,400 D | 2,000 D | 180 | 410 | 370 J | 180 | 270 | 140 |
| Vinyl chloride | 92 | 140 | 240 D | 690 D | 320 D | 300J | 190 J | 79 | 280 | 83.7 |

| TPMW-6 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tricholorethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | 0.95 J | ND | ND | ND | ND | ND | ND |
| Vinyl chloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| TPMW-4 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | 26 | ND | 1.7 | 0.96 J | ND | ND | ND | ND | ND | ND |
| Tricholorethene | 51 | 5.3 | 4 | 1.8 | 0.66 J | ND | 0.66 J | ND | ND | ND |
| cis-1,2-dichloroethene | 430 D | 790 | 650 D | 250 D | 21 | 13 | 3.1 | 4.8 | 10 | 33.2 |
| Vinyl chloride | 130 | 150 | 230 D | 200 D | 18 | 16 | 2.4 | 4 | 44 | 100 |

| TPM-02 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jan-12 | Apr-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tricholorethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl chloride | 0.57 | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| TPM-03 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tricholorethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | ND | ND | ND | ND | 0.95 J | ND | ND |
| Vinyl chloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| TPM-01 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tricholorethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl chloride | 0.53 J | ND | ND | ND | 0.51 J | ND | ND | ND | ND | ND |

| MMW-03 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tricholorethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | ND | 0.6 J | ND | ND | ND | ND | ND |
| Vinyl chloride | ND | ND | ND | ND | 0.76 J | ND | ND | ND | ND | ND |

| MMW-01 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tricholorethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | 370 D | 220 D | 370 D | 1,100 D | 250 D | 230 | 51 | 31 | 130 | 10.7 |
| Vinyl chloride | 200 D | 260 D | 220 D | 450 D | 250 D | 480 | 190 | 76 | 820 | 59.1 |

| MMW-02 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tricholorethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | ND | ND | ND | 1.1 | ND | ND | ND |
| Vinyl chloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| MMW-04 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | 0.7 J | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tricholorethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | 0.81 J | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl chloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| MW-14 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 | Jun-13 | Jan-14 | Jul-14 |
| Tetrachloroethene | 4.3 | 2.3 | 1.6 | 1.7 | 1.8 | ND | ND | 0.75 J | ND | 0.95 J |
| Tricholorethene | 2.7 | 1.4 | 1.2 | 0.9 | 1.2 | ND | ND | 0.77 J | ND | 0.61 J |
| cis-1,2-dichloroethene | 4.2 | 1.4 | 1.9 | 1.3 | 1.2 | 0.65 | ND | 0.7 J | ND | ND |
| Vinyl chloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| VOCs (µg/L) | Groundwater Standard (µg/L) |
|---|---|
| Tetrachloroethene | 5 |
| Tricholorethene | 5 |
| cis-1,2-dichloroethene | 5 |
| Vinyl chloride | 2 |

Note: Values in RED indicate concentration in exceedance of NYSDEC Ambient Water Quality Standards: 6 NYCRR Part 703.5 Class GA Groundwater Quality Regulations, as presented in the Division of Water Technical and Operational Guidance Series 1.1.1 (NYSDEC, 1998; as amended)

| CLINTON WEST PLAZA (755015)<br>PERIODIC REVIEW REPORT<br>ITHACA, NEW YORK | | FIGURE 9<br>Chlorinated Volatile Organic Compounds<br>Detected in Groundwater Samples<br>October 2011 - July 2014 | | | Feet: 0 25 50 100<br>1 inch = 50 feet | | |
|---|---|---|---|---|---|---|---|
| PROJECT MGR:<br>RSC | DESIGNED BY:<br>DCC | CREATED BY:<br>CJS | CHECKED BY:<br>RSC | PROJECT NO:<br>14907.25 | DATE:<br>DECEMBER 2014 | SCALE:<br>AS SHOWN | FILE NO:<br>1490725_GIS/<br>PROJECTS/PRR |

**Legend**

- Groundwater Monitoring Well
- Temporary Monitoring Well

| | |
|---|---|
| VOCs | Volatile Organic Compounds. |
| µg/L | Micrograms per Liter (parts per billion) |
| ND | Not Detected. |
| NS | Not Sampled. |
| J | Value is an estimate. |
| D | Value is the result of a dilution. |

Note: Baseline Sampling was performed October 2011.
Substrate Injections were completed prior to the November 2011 sampling event.


CLINTON WEST PLAZA (755015)
PERIODIC REVIEW REPORT
ITHACA, NEW YORK

FIGURE 6
Interpreted Total Chlorinated Volatile Organic Compound Groundwater Plumes

Feet
0 25 50 100
1 in = 50 feet

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | PROJECT NO: | DATE: | SCALE: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | ALK | ALK | RSC | 14907.25 | DECEMBER 2014 | AS SHOWN | 1490725_GIS/ PROJECTS/PRR |

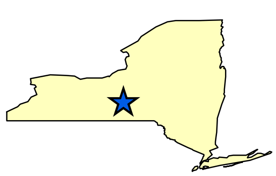
**Legend**

Groundwater Monitoring Well

**Total VOC Concentration (µg/L)**

- 500 µg/L
- 50 µg/L
- 5 µg/L

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007

**Legend**

- Pilot Study Treatment Area
- Groundwater Monitoring Well

Feet
0 25 50 100

1 inch = 50 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007

CLINTON WEST PLAZA (755015)
PERIODIC REVIEW REPORT
ITHACA, NEW YORK

FIGURE 7
Chlorinated Volatile Organic Compounds Molar Concentrations in Groundwater: October 2011 – October 2012

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | DECEMBER 2014 | 14907.25 | 1490725_GIS/ PROJECTS/PRR |

# TABLE 1 GROUNDWATER ELEVATION DATA

| Monitoring Well Identification | Top of PVC Riser Elevation (ft AMSL) | Depth to Groundwater (ft btoc) | Depth to Well Bottom (ft btoc) | Groundwater Table Elevation (ft AMSL) |
|---|---|---|---|---|
| 28-Jan-2014 & 4-Feb-2014* | | | | |
| MW-14 | 389.02 | 4.62 | 13.75 | 384.40 |
| MMW-01 | 388.44 | 3.89 | 19.44 | 384.55 |
| MMW-02 | 388.62 | 4.11 | 19.42 | 384.51 |
| MMW-03* | 388.49 | 3.70 | 19.48 | 384.79 |
| MMW-04 | 388.48 | 5.38 | 29.48 | 383.10 |
| TPMW-3 | 389.25 | 4.34 | 12.20 | 384.91 |
| TPMW-4* | 389.10 | 4.53 | 14.59 | 384.57 |
| TPMW-6 | 389.42 | 4.38 | 13.83 | 385.04 |
| TPM-01 | 388.75 | 3.02 | 24.52 | 385.73 |
| TPM-02 | 391.96 | 8.32 | 28.25 | 383.64 |
| TPM-03 | 389.11 | 4.06 | 21.52 | 385.05 |
| 8-Jul-2014 | | | | |
| MW-14 | 389.02 | 4.66 | 13.75 | 384.36 |
| MMW-01 | 388.44 | 3.40 | 19.44 | 385.04 |
| MMW-02 | 388.62 | 3.90 | 19.42 | 384.72 |
| MMW-03 | 388.49 | 3.84 | 19.48 | 384.65 |
| MMW-04 | 388.48 | 6.56 | 29.48 | 381.92 |
| TPMW-3 | 389.25 | 3.40 | 12.20 | 385.85 |
| TPMW-4 | 389.10 | 3.92 | 14.59 | 385.18 |
| TPMW-6 | 389.42 | 3.95 | 13.83 | 385.47 |
| TPM-01 | 388.75 | 3.26 | 24.52 | 385.49 |
| TPM-02 | 391.96 | 6.92 | 28.25 | 385.04 |
| TPM-03 | 389.11 | 9.51 | 21.52 | 379.60 |

NOTE: PVC = Polyvinyl chloride
AMSL = Above mean sea level
btoc = Below top of casing
Horizontal Datum NAD 83(1996) - New York State Plane Coordinate System, Central Zone, U.S. foot
Vertical Datum NAVD 1988, U.S. foot

TABLE 2 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES JANUARY-FEBRUARY 2014

| Parameters List USEPA Method 8260B | MW ID | TPMW-3 | | TPMW-4 | | TPMW-6 | | TPM-01 | | TPM-02 | | TPM-03 | | MMW-01 | | NYSDEC AWQS (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lab ID | N0129-04A | | N0162-02A | | N0129-06A | | N0129-01A | | N0129-02A | | N0129-03A | | N0129-07A | | |
| | Screened Interval | 6 - 16 ft bgs | | 6 - 16 ft bgs | | 6 - 16 ft bgs | | 18 - 28 ft bgs | | 18.22 - 28.22 ft bgs | | 14.54 - 24.54 ft bgs | | 10 - 20 ft bgs | | |
| | Sample Type | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | |
| | Sample Date | 1/29/2014 | | 2/4/2014 | | 1/29/2014 | | 1/29/2014 | | 1/29/2014 | | 1/29/2014 | | 1/29/2014 | | |
| cis-1,2- Dichloroethene | (µg/L) | **270** | | **10** | U | (<0.48) | U | (<0.48) | U | (<0.48) | U | (<0.48) | U | **130** | | *5 (s)* |
| Toluene | (µg/L) | (<0.80) | U | (<0.32) | | (<0.32) | U | (<0.32) | U | (<0.32) | U | (<0.32) | U | (<3.2) | U | *5 (s)* |
| Vinyl chloride | (µg/L) | **280** | | **44** | | (<0.50) | U | (<0.50) | U | (<0.50) | U | (<0.50) | U | **820** | | *2 (s)* |

| Parameters List USEPA Method 8260B | MW ID | MMW-02 | | MMW-03 | | MMW-04 | | MW-14 | | DUPLICATE[a] | | TRIP BLANK | | TRIP BLANK 2 | | NYSDEC AWQS (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lab ID | N0129-09A | | N0162-01A | | N0129-08A | | N0129-10A | | N0129-05A | | N0129-11A | | N0162-03A | | |
| | Screened Interval | 10 - 20 ft bgs | | 10 - 20 ft bgs | | 10 - 20 ft bgs | | 20 - 30 ft bgs | | 6 - 16 ft bgs | | NA | | NA | | |
| | Sample Type | Groundwater | | Groundwater | | Groundwater | | Groundwater | | QA/QC - Duplicate | | QA/QC - Trip Blank | | QA/QC - Trip Blank | | |
| | Sample Date | 1/29/2014 | | 2/4/2014 | | 1/29/2014 | | 1/29/2014 | | 1/29/2014 | | 1/29/2014 | | 2/4/2014 | | |
| cis-1,2- Dichloroethene | (µg/L) | (<0.48) | U | (<0.48) | U | (<0.48) | U | (<0.48) | U | **250** | | (<0.48) | U | (<0.48) | U | *5 (s)* |
| Toluene | (µg/L) | (<0.32) | U | 0.64 | J | (<0.32) | U | (<0.32) | U | (<0.80) | U | (<0.32) | U | (<0.32) | U | *5 (s)* |
| Vinyl chloride | (µg/L) | (<0.50) | U | (<0.50) | U | (<0.50) | U | (<0.50) | U | **250** | | (<0.50) | U | (<0.50) | U | *2 (s)* |

NOTE: NYSDEC = New York State Department of Environmental Conservation
AWQS = Ambient Water Quality Standard
µg/L = Micrograms per liter
J = Analyte detected below the practical quantification limit (PQL)
U = Analyte was analyzed for, but not detected below the laboratory reporting limit
D = Indicates the compound concentration is the result of a dilution.
(g) = NYSDEC Ambient Water Quality Standards guidance value
(s) = NYSDEC Ambient Water Quality Standards standard value
Analytical data results provided by Mitkem Analytical.
Bold values indicate that the analyte was detected greater than the NYSDEC Ambient Water Quality Standards.
DUPLICATE sample was collected at TPMW-3.

TABLE 2 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES JULY 2014

| Parameters List USEPA Method 8260B | MW ID | TPMW-3 | | TPMW-4 | | TPMW-6 | | TPM-01 | | TPM-02 | | TPM-03 | | MMW-01 | | NYSDEC AWQS (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lab ID | F3043-08 | | F3043-07 | | F3043-14 | | F3043-11 | | F3043-12 | | F3043-13 | | F3043-01 | | |
| | Screened Interval | 6 - 16 ft bgs | | 6 - 16 ft bgs | | 6 - 16 ft bgs | | 18 - 28 ft bgs | | 18.22 - 28.22 ft bgs | | 14.54 - 24.54 ft bgs | | 10 - 20 ft bgs | | |
| | Sample Type | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | |
| | Sample Date | 7/8/2014 | | 7/8/2014 | | 7/9/2014 | | 7/9/2014 | | 7/9/2014 | | 7/9/2014 | | 7/8/2014 | | |
| Acetone | (µg/L) | 4.4 | J | (<0.5) | UJ | (<0.5) | U | 3.7 | J | 7.8 | | (<0.5) | U | (<0.5) | UJ | *50 (g)* |
| 2- Butanone | (µg/L) | (<1.3) | U | (<1.3) | U | (<1.3) | U | (<1.3) | U | 6.3 | | (<1.3) | U | (<1.3) | U | --- |
| 1,1- Dichloroethene | (µg/L) | 0.81 | J | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | *5 (s)* |
| cis-1,2- Dichloroethene | (µg/L) | **140** | | **33.2** | | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | **10.7** | | *5 (s)* |
| trans-1,2- Dichloroethene | (µg/L) | 1.1 | | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | *5 (s)* |
| Tetrachloroethene | (µg/L) | 0.83 | J | (<0.20) | UJ | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | UJ | *5 (s)* |
| Trichloroethene | (µg/L) | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | *5 (s)* |
| Vinyl chloride | (µg/L) | **83.7** | | **100** | | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | **59.1** | | *2 (s)* |

| Parameters List USEPA Method 8260B | MW ID | MMW-02 | | MMW-03 | | MMW-04 | | MW-14 | | DUPLICATE[a] | | TRIP BLANK | | NYSDEC AWQS (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lab ID | F3043-05 | | F3043-06 | | F3043-09 | | F3043-02 | | F3043-10 | | F3043-15 | | |
| | Screened Interval | 10 - 20 ft bgs | | 10 - 20 ft bgs | | 10 - 20 ft bgs | | 20 - 30 ft bgs | | 6 - 16 ft bgs | | NA | | |
| | Sample Type | Groundwater | | Groundwater | | Groundwater | | Groundwater | | QA/QC - Duplicate | | QA/QC - Trip Blank | | |
| | Sample Date | 7/8/2014 | | 7/8/2014 | | 7/9/2014 | | 7/8/2014 | | 7/9/2014 | | 7/9/2014 | | |
| Acetone | (µg/L) | (<0.5) | UJ | (<0.5) | UJ | (<0.5) | U | (<0.5) | UJ | 4.2 | J | (<0.5) | UJ | *50 (g)* |
| 2- Butanone | (µg/L) | (<1.3) | U | (<1.3) | U | (<1.3) | U | (<1.3) | U | (<1.3) | U | (<1.3) | U | --- |
| 1,1- Dichloroethene | (µg/L) | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | *5 (s)* |
| cis-1,2- Dichloroethene | (µg/L) | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | **32.8** | U | (<0.20) | U | *5 (s)* |
| trans-1,2- Dichloroethene | (µg/L) | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | *5 (s)* |
| Tetrachloroethene | (µg/L) | (<0.20) | UJ | (<0.20) | UJ | (<0.20) | U | 0.95 | J | (<0.20) | U | (<0.20) | UJ | *5 (s)* |
| Trichloroethene | (µg/L) | (<0.20) | U | (<0.20) | U | (<0.20) | U | 0.61 | J | (<0.20) | U | (<0.20) | U | *5 (s)* |
| Vinyl chloride | (µg/L) | (<0.20) | U | (<0.20) | U | (<0.20) | U | (<0.20) | U | **110** | U | (<0.20) | U | *2 (s)* |

NOTE: NYSDEC = New York State Department of Environmental Conservation
AWQS = Ambient Water Quality Standard
µg/L = Micrograms per liter
J = Analyte detected below the practical quantification limit (PQL)
U = Analyte was analyzed for, but not detected below the laboratory reporting limit
D = Indicates the compound concentration is the result of a dilution.
(g) = NYSDEC Ambient Water Quality Standards guidance value
(s) = NYSDEC Ambient Water Quality Standards standard value
Analytical data results provided by Mitkem Analytical.
Bold values indicate that the analyte was detected greater than the NYSDEC Ambient Water Quality Standards.
DUPLICATE sample was collected at TPMW-4.

# Appendix A

# Site Management Plan

# CLINTON WEST PLAZA
## TOMPKINS COUNTY, NEW YORK
**Site Management Plan**

## NYSDEC Site Number: 755015

**Prepared for:**
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A
625 Broadway
Albany, New York 12233-7017

**Prepared by:**
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Syracuse, New York 13211-2158
(315) 431-4610

**Revisions to Final Approved Site Management Plan:**

| Revision # | Submitted Date | Summary of Revision | DEC Approval Date |
|---|---|---|---|
| 1 | June 12, 2014 | Addition of Sub-slab Depressurization System Operation Management Plan to Appendix E | June 13, 2014 |
| | | | |
| | | | |
| | | | |

**JUNE 2014**

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| | |
|---|---|
| bgs | Below ground surface |
| *cis*-1,2-DCE | *cis*-1,2-dichloroethene |
| CVOC | Chlorinated volatile organic compound |
| DER | Division of Environmental Remediation |
| EA | EA Engineering, P.C. and its affiliate EA Science and Technology |
| EC | Engineering control |
| EPA | U.S. Environmental Protection Agency |
| EWP | Excavation Work Plan |
| HASP | Health and Safety Plan |
| HRC | Hydrogen release compound |
| IC | Institutional control |
| IRM | Interim remedial measure |
| LCS | LCS, Inc. |
| NYS | New York State |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOH | New York State Department of Health |
| PCE | Tetrachloroethene |
| PFE | Pressure field extension |
| QA | Quality assurance |
| QAPP | Quality Assurance Project Plan |
| QC | Quality control |
| RI | Remedial investigation |
| ROD | Record of Decision |
| SCG | Standards, criteria, and guidance |
| SCO | Soil Cleanup Objective |
| SMP | Site Management Plan |
| SSDS | Sub-slab depressurization system |
| TCE | Trichloroethene |
| $\mu g/m^3$ | Micrograms per cubic meter |
| µg/L | Micrograms per liter |

| | |
|---|---|
| VC | Vinyl chloride |
| VI | Vapor intrusion |
| VOC | Volatile organic compound |

# SITE MANAGEMENT PLAN

# 1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

## 1.1 INTRODUCTION

This document is required as an element of the remedial program at Clinton West Plaza (hereinafter referred to as the “site”) under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with the Record of Decision (ROD) (NYSDEC 2010a)[1].

### 1.1.1 General

EA Engineering, P.C., and its affiliate EA Science and Technology (EA) were tasked by the NYSDEC to manage and perform the remediation of a 2.49 acre property located at 609–625 West Clinton Street in the City of Ithaca, Tompkins County, New York (Figure 1). The Remedial Party, EA, was required to investigate and remediate contaminated media at the site. A figure showing the site location and boundaries of this 2.49-acre site is provided in Figure 2. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement currently being prepared by the NYSDEC to be subsequently included in Appendix A and B following recording with the Tompkins County Clerk’s office.

After completion of the remedial work described in the Pilot Study Conceptual Design Report (EA 2011)[2], residual Volatile Organic Compound (VOC) contamination was left in the subsurface at this site, which is hereafter referred to as ‘remaining contamination.” This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the Institutional Control (IC) is extinguished in accordance with Environmental Conservation Law Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in NYS.

This SMP was prepared by EA in accordance with the requirements in NYSDEC Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation (NYSDEC 2010b)[3], and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the ICs and engineering controls (ECs) that are required by the Environmental Easement for the site.

[1] NYSDEC. 2010a. ROD. Clinton West Plaza, Site Number 755015, City of Ithaca, New York. May.
[2] EA. 2011. Pilot Study Conceptual Design Report. Clinton West Plaza (755015) Ithaca, Tompkins County, New York. September.
[3] NYSDEC. 2010b. DER-10 Technical Guidance for Site Investigation and Remediation. May.

### 1.1.2 Purpose

The site contains contamination left after completion of the remedial action. ECs have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. An Environmental Easement to be recorded with the Tompkins County Clerk will require compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the Environmental Easement. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the remedial action, including: (1) implementation and management of all ECs and ICs; (2) media monitoring; (3) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (4) defining criteria for termination of groundwater treatments.

To address these needs, this SMP includes three plans: (1) an EC/IC Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial treatment.

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement to be subsequently placed in Appendix A. Failure to properly implement the SMP is a violation of the Environmental Easement.

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and, thereby, subject to applicable penalties.

### 1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement (Appendix A) for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

## 1.2 SITE BACKGROUND

### 1.2.1 Site Location and Description

The 2.49 acre site is commercially developed with an active 36,254 $ft^2$ shopping plaza that was constructed in 1970 and is currently owned by Clinton West, Ltd. (Tax Map ID Number: 79-6-8.2). The site is surrounded by residential neighborhoods and a retail property (Figure 2). A laundromat, Clinton West Laundry, was located at 609 West Clinton Street within the Clinton West Plaza, Ithaca, New York, but is no longer operational and the space is vacant. Residential structures are located immediately southwest and east of the property. The site includes large parking areas paved with asphalt. The boundaries of the site are more fully described in Appendix B – Metes and Bounds, to be subsequently included in the SMP following recording with the Tompkins County Clerk's office.

### 1.2.2 Site History

The Clinton West Plaza site was initially reported as a potential site with contamination after First Niagara Bank of Rochester, New York retained LCS, Inc. (LCS) of Buffalo, New York to conduct an Environmental Transaction Screening, Environmental Site Assessment Report in December 2005 (LCS 2006)[4]. The Environmental Site Assessment report concluded that a Phase II investigation was warranted to assess the environmental conditions on-site due to the former operational history of a dry cleaner at the site. LCS completed the Phase II subsurface investigation and supplemental subsurface investigations, and determined that soil and groundwater contamination associated with dry cleaning chemicals, notably tetrachloroethene (PCE), existed at the site. PCE is a solvent commonly used in the dry cleaning process. Based on the findings of the Phase II investigation, the site was listed on the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State as a Class 2 site (Site No. 755015).

### 1.2.3 Geologic Conditions

The site is located in the Appalachian Uplands Physiographic Province where local topographic features result from glacial and fluvial processes. The site is located 1.5 mi

[4] LCS. 2006. *Subsurface Soil and Groundwater Investigation and Supplemental Subsurface Soil and Groundwater Investigation.* West Clinton Plaza, 609-625 West Clinton Street, Ithaca, New York. April. May.

south of Cayuga Lake and is approximately 300 ft northeast of Six Mile Creek which flows northward to Cayuga Inlet and Lake. The site topography and surrounding area is relatively flat.

The upper foot of soil is comprised primarily of topsoil, sand, and gravel, underlain by a layer of brown clay with fine sands, trace silts, and some organics to depths ranging from 2 to 7 ft below ground surface (bgs). Underlying the brown clay unit is a layer of brown sand with trace silts ranging from 1 to 6 ft in thickness (averaging approximately 2.5–3 ft in thickness). Underlying the brown sand unit is a distinct gray clay unit, which was observed to the termination depths of a majority of the soil borings (approximately 16–20 ft bgs). The gray clay unit was typically 10+ ft in thickness. A brown fine to medium sand was observed below the gray clay in the western soil borings. Additionally, a peat layer was encountered at approximately 19 ft bgs in the southernmost soil boring. Two cross-sections, included as Figure 3, illustrate subsurface lithology based on data collected from April 2011.

Groundwater has been encountered on-site at depths ranging from approximately 2 ft bgs to 5 ft bgs. Groundwater depth at the site is considered shallow and could potentially be influenced by temporal changes and seasonal precipitation events. Based on groundwater gauging data, shallow groundwater has been estimated to generally flow south-southwest towards Six Mile Creek. However, localized groundwater flows radially from the Clinton West Plaza. Based on the hydraulic gradient between six monitoring well sets within the area of the groundwater contaminant plume, the average groundwater gradient was calculated at -0.009 ft/ft. This represents a relatively flat groundwater gradient and profile. Groundwater flow direction in the observed subsurface lithology would tend to be along flow pathways of least hydraulic resistance. Flow along these pathways would be significantly higher than within the silt and clay units. The groundwater elevation data and flow patterns observed have been consistent with previous investigations. The direction of groundwater flow, as interpolated from data collected in October 2012, is illustrated on Figure 4.

## 1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

A remedial investigation (RI) was performed to characterize the nature and extent of contamination at the site. The results of the RI are described in detail in the following reports:

A review of the RI/Feasibility Study Report prepared by Fagan Engineers (2009)[5] for the Clinton West Plaza site is summarized below:

- No on-site soil source for chlorinated volatile organic compounds (CVOCs) was identified or delineated during the RI and the report suggests that CVOC soil

[5] Fagan Engineers. 2009. Remedial Investigation Feasibility Study Report, Clinton West Plaza, 609-625 West Clinton Street, Ithaca, New York. July.

concentrations detected greater than site standards, criteria, and guidance (SCGs) values were likely related to elevated CVOC groundwater concentrations.

- Groundwater concentrations of CVOCs have been reported greater than site SCGs dating back to 2006 (LCS)[5]. Two groundwater sampling events (2008 and 2009) conducted during the RI identified a dissolved-phase CVOC plume in an area south of the former dry cleaners building.

- Soil vapor intrusion (VI) sampling identified an exceedance of the New York State Department of Health (NYSDOH) Air Guideline for PCE within the current laundry facility.

- The Feasibility Study recommended the selection of Alternative 5, which included installation of a sub-slab depressurization system (SSDS), a pre-design investigation, source area chemical-oxidation, injection of a hydrogen release compound (HRC)®, implementation of ICs, and long-term monitoring.

EA completed a supplemental pre-design investigation in April 2011. Samples were collected from media that included subsurface soil, groundwater, and microbial populations and community structures. Further details on the historical and pre-design investigation results are provided in the Pilot Study Conceptual Design Report (EA, 2011)[2]. Highlights from the pre-design investigation are summarized below.

- A review of soil data presented in the RI report revealed that the two subsurface soil samples collected in areas south of the former dry cleaning facility and at depths ranging between 8 and 16 ft bgs had reported VOC concentrations above soil cleanup objectives (SCOs).

- Subsurface soil samples collected during the pre-design investigation south of the facility and at depths below 8 ft had reported concentrations of VOCs above site SCOs (Figure 5). The subsurface soil areas of concern identified were located within a low-permeability soil unit identified during soil boring advancement (e.g., gray clay) and are likely the result of dense non-aqueous phase liquid mass diffusion processes.

- Groundwater impacts were identified in six wells at concentrations greater than applicable SCG values. These impacts are summarized in Table 1 and depicted on Figure 6. The highest concentrations of total CVOCs were detected at TPMW-3 (2,016 µg/L), TPMW-4 (728.8 µg/L), MMW-01 (192.1 µg/L), and MW-16 (40 µg/L). Based upon groundwater data collected in May 2010, the estimated groundwater contaminant plume covered approximately 0.13 acre and extended to an approximate depth of 20 ft.

- Analysis of the *in-situ* microbiological populations during the pre-design investigation indicated that community structure was dominated by methanogens, but also identified existing populations of known dechlorinating bacteria (i.e., Dehalococcoides, Dehalobacter, and Desulfurmonas).

- Analysis of natural attenuation parameters indicated that anaerobic conditions are present within the dissolved-phase groundwater plume and reductive dechlorination appeared to be occurring. The pre-design investigation data suggested that methanogensis was occurring (e.g., elevated methane and ethane/ethene concentrations, negative oxidation-reduction potential, neutral pH, decreased nitrate and sulfate concentrations, etc.) at the site and that available hydrogen may have been a limiting factor in the development of favorable dechlorinating bacteria populations.

- Soil VI evaluations were completed at five residential structures located on Center Street and North Titus Avenue. One indoor air and one sub-slab vapor sample was collected from the basement of each structure, with the exception of the laundry facility where only an indoor air sample was collected.

- As an interim remedial action required by the ROD (NYSDEC 2010a)[1], a SSDS was installed at the laundry facility on February 7, 2011. The approved system, including a system fan, interior and exterior piping, and exterior system discharge was installed by a NYSDEC standby contractor under the supervision of EA. The installation and management of this system is detailed in Appendix E.

- Sub-slab vapor concentrations of PCE ranged from 0.38 J micrograms per cubic meter ($\mu g/m^3$) to 15 $\mu g/m^3$ and indoor air concentrations ranged from non-detect to 12 $\mu g/m^3$ within the residential structures. The NYSDOH air guideline value for PCE is 100 $\mu g/m^3$.

- Sub-slab vapor concentrations of trichloroethene (TCE) within the residential structures ranged from non-detect to 26 $\mu g/m^3$ and no detections of TCE were reported greater than the laboratory method detection limit in indoor air samples. The NYSDOH air guideline value for TCE is 5 $\mu g/m^3$.

- Based on the VI results, NYSDOH issued individual letters to the respective homeowners, which described the purpose of the sampling and analytical results and presented the States' recommendations for future action, if warranted. Due to the confidentiality of these letters and privacy of the homeowners, no additional VI information is included within this report. The locations of these vapor intrusion evaluations are depicted on Figure 7.

## 1.4 SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved Pilot Study Conceptual Design Report (EA 2011)[2] and the Pre-Design Investigation and Pilot Study Program Letter Work Plan (EA 2010a)[6].

The following is a summary of the remedial actions performed at the site:

1. Installation of a SSDS, as an interim remedial measure (IRM), as outlined in the ROD (NYSDEC 2010a)[1], in the Clinton West Laundry tenant space located at 609 West Clinton Street.

2. Injection of 3,600 lbs of HRC® substrate at 36 injection points at a loading rate of 5 lbs/ft using direct-push technology to a depth of 25 ft bgs (Figure 8).

3. Preparation for execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the site.

4. Other major remedial elements including all ICs listed here: see later section for list of common ICs.

5. Development and implementation of a SMP for long-term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) ICs and ECs, (2) monitoring, (3) operation and maintenance, and (4) reporting;

Remedial activities were completed at the site in February and November 2011. Baseline and post-injection groundwater monitoring was performed from October 2011 through November 2012. No contaminated materials were removed from the site.

### 1.4.1 Interim Remedial Measure and Site-Related Treatment System

Results of the RI indicated that due to the presence of CVOCs in groundwater and soil vapor, potential existed for human health exposure via the VI pathway. Site contaminants addressed through the remedy selection process were PCE, TCE, *cis*-1,2-dichloroethene (*cis*-1,2-DCE), and vinyl chloride (VC). As outlined in the ROD (NYSDEC 2010a)[1], the selected remedial alternative required the installation of a SSDS to mitigate the potential for VI at the Clinton West Laundry facility. The design and installation of this element of the ROD were conducted as an IRM to mitigate the potential for human health exposure to site related contaminants.

NYSDEC initiated the IRM using an existing standby Remedial Contractor, Groundwater & Environmental Services, Inc. (GES), to perform the SSDS installation activities. A

[6] EA. 2010a. Pre-Design Investigation and Pilot Study Program Letter Work Plan. December.

pre-design pressure field extension (PFE) test was completed on December 9, 2010. Based on the PFE test, EA issued a memo to NYSDEC indicating that SSDS would be a suitable technique to mitigate the potential for VI at the Clinton West Laundry facility. Following NYSDEC approval, GES, under the supervision of EA, installed the system fan, interior and exterior piping, and exterior system discharge on February 7, 2011.

During design and installation activities, EA provided technical assistance on design requirements and system sizing, as well as on-site oversight support and system installation documentation. The Mitigation System Installation Record is included as Appendix C. No additional long-term treatment systems were installed as part of the site remedy.

### 1.4.2 Enhanced Anaerobic Bioremediation

Based on the approved Pilot Study Conceptual Design Report (EA 2011)[2] and Pre-Design Investigation and Pilot Study Program Letter Work Plan (EA 2010a)[8], EA completed the subsurface injection of an organic substrate to stimulate direct anaerobic reductive dechlorination of CVOCs present in groundwater at the site.

In order to enhance *in-situ* anaerobic reductive dechlorination of CVOCs in groundwater, a sufficient mass of organic substrate was required to meet electron acceptor demands of both native (inorganic) and CVOCs within the targeted treatment zone. HRC® is an ester of glycerol, a three-carbon polyalcohol, and lactic acid. Once injected into the subsurface, HRC® slowly releases lactic acid, which undergoes fermentation, generating molecular hydrogen and a series of carboxylic acids that act as electron donors for utilization by bacteria that carryout reductive dechlorination.

Groundwater samples were collected from a network of 11 monitoring wells during six monitoring events (three monthly followed by three quarterly events from November 2011 through October/November 2012). Data were compared to results from a baseline monitoring event, as well as previous investigations completed in October 2011 prior to the substrate injection.

During the baseline groundwater sampling event conducted in October 2011, it was noted that monitoring well MW-17 was compromised due to a broken flush-mount cover. The J-plug and polyvinyl chloride riser were also broken, which exposed the monitoring well to surface run-off. This monitoring well was historically used to evaluate upgradient groundwater conditions and was installed as part of a historical investigation. Additionally, no site contaminants were ever detected during previous sampling events. Due to its location, non-detections, and the availability of alternate upgradient monitoring wells located at the site, the monitoring well was decommissioned on February 22, 2012 in accordance with NYSDEC Commissioners Policy 43 (CP-43). Upon completion of the decommissioning activities EA issued NYSDEC a letter report (EA 2012)[7] detailing the procedures and included a photo log of the work.

The field sampling procedures and protocols, number of environmental samples collected, as well as the quality assurance (QA)/quality control (QC) procedures, were provided in the Pilot Study Conceptual Design Report (EA 2011)[2]. In addition, field investigation activities were conducted consistent with EA's Generic Health and Safety Plan (HASP) developed for work assignments conducted under standby Contract D007624 (EA 2006)[8].

Further details on the enhanced anaerobic bioremediation process and implementation at this site are provided in the Enhanced Anaerobic Bioremediation Pilot Study Summary Report (EA, 2013)[9].

### 1.4.3 Remaining Contamination

During the performance monitoring period, concentrations of CVOCs were consistently reported in treatment zone monitoring locations TPMW-3, TPMW-4, and MMW-01; and at monitoring locations MMW-04 and MW-14 located south and southwest of the targeted treatment zone. However, results from post-injection groundwater sampling indicate that concentrations of PCE and TCE have been significantly reduced within the targeted treatment zone. Concentrations of PCE and TCE at TPMW-3 were reduced by 98 and 92 percent, respectively. Concentrations of PCE and TCE were both reduced by 100 percent (non-detect) at TPMW-4. PCE and TCE were not detected at other monitoring locations within the treatment zone, which suggests that the substrate injection process did not displace impacted groundwater to areas inside or outside of the target treatment zone.

However, groundwater analytical results from the October/November 2012 sampling event indicate that site contaminants of concern remain at concentrations greater than their relevant SCGs at TPMW-3, TPMW-4, and MMW-01. Concentrations of PCE (12 µg/L), TCE (31 µg/L), *cis*-1,2-DCE (370 µg/L), *trans*-1,2-dichloroethene (7.9 µg/L), and VC (190 µg/L) remain at TPMW-3 greater than their respective SCGs. Concentrations of VC (2.4 µg/L) remain at TPMW-4 at a concentration greater than its SCG. Concentrations of *cis*-1,2-DCE (51 µg/L) and VC (190 µg/L) remain at MMW-01 at concentrations greater than their respective SCGs.

Daughter compounds (*cis*-1,2-DCE and VC) commonly produced during the anaerobic reductive dechlorination process were consistently detected at TPMW-3, TPMW-4, and MMW-01 during post-injection monitoring. Groundwater data show that these

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[7] EA. 2012. Letter Report. 29 February.
[8] EA. 2006. Generic Health and Safety Plan for Work Assignments. June.
[9] EA. 2013. Enhanced Anaerobic Bioremediation Pilot Study Summary Report. Clinton West Plaza (755015) Ithaca, Tompkins County, New York. March.

compounds increased in concentration following the injection event and steadily decreased sequentially at each monitoring location.

During the April 2012 performance monitoring event, additional monitoring wells were included to evaluate the potential for substrate influences in areas west of the pilot study treatment zone and within area where historical CVOCs had been detected. Monitoring well MW-16 is located due west of the site and near a sewer line corridor. MW-16 was not originally included in the process and performance monitoring program as this monitoring well is located to the west of the targeted treatment zone outside of the expected area of influence. The reported concentration of PCE (11 micrograms per liter [µg/L]) at MW-16 is similar to that reported during the May 2011 pre-design investigation (18 µg/L). Additionally, no metabolic acids were reported in the additional monitoring points (MW-16, TPMW-1, and TPMW-5), indicating that substrate had not influenced groundwater quality conditions in this portion of the site.

Although, site-related contaminants of concern were identified within subsurface soil during previous investigations, soil samples were collected from depth intervals within the saturated zone and, therefore, are likely not representative of the subsurface soil, but include the contaminant fraction from groundwater. Under the remedial action performed at the Clinton West site, potential impacts to soil were addressed as part of the groundwater remedial design. Based on the previous soil sampling data and reductions in CVOC concentrations observed in groundwater, residual contamination in subsurface soil is expected to be minimal and treated concurrently with groundwater. Future groundwater monitoring will identify the potential and significance of residual soil contamination. If groundwater monitoring results indicate a potential for a continuing soil source additional injection events may be warranted under this SMP.

Table 2 and Figure 9 summarize the results of all groundwater samples collected at the site after completion of the remedial action that exceed the unrestricted use concentrations for VOCs. Since contaminated groundwater remains beneath the site after completion of the remedial action, ECs and ICs are required to protect human health and the environment. These ECs and ICs are described in the following sections. Long-term management of these ECs and ICs, and residual contamination will be performed under this SMP.

# 2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

## 2.1 INTRODUCTION

### 2.1.1 General

Since remaining contaminated groundwater/soil vapor exists beneath the site, ECs and ICs are required to protect human health and the environment. This EC/IC Plan describes the procedures for the implementation and management of all EC/ICs at the site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

### 2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the site.
- The basic implementation and intended role of each EC/IC.
- A description of the key components of the ICs set forth in the Environmental Easement.
- A description of the features to be evaluated during each required inspection and periodic review.
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan (EWP) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site.
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC.

## 2.2 ENGINEERING CONTROLS

### 2.2.1 Engineering Control Systems

#### 2.2.1.1 Cover System

Subsurface soil was not disturbed at the site during the implementation of the remedial action per the ROD. Exposure to remaining contamination in soil at the site is prevented by the existing soil cover that remains at the site. Additionally, asphalt pavement, concrete-covered sidewalks, and concrete building slabs prevent incidental contact or ingestion of subsurface soil at the majority of the site. The EWP that appears in Appendix D outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this SMP.

#### 2.2.1.2 Sub-slab Depressurization System

Exposure to indoor air impacted with VOCs within the site building is prevented by a SSDS, which was installed in the site building by the NYSDEC in February 2011 as an IRM. The system serves to reduce the pressure beneath the building slab by venting potentially impacted soil vapor to outside of the building.

The SSDS is located in the southwest corner of the tenant laundry facility at 609 West Clinton Street. A pre-design PFE test was completed on December 9, 2010. Based on the PFE, EA issued a memo to NYSDEC indicating that SSDS would be a suitable technique to mitigate the potential for VI at the Clinton West Laundry facility. Following NYSDEC approval, Groundwater and Environmental Services, Inc., under the supervision of EA, installed the system fan, interior and exterior piping, and exterior system discharge on February 7, 2011. The operations and maintenance of the SSDS is the responsibility of the site owner. The SSDS Operation Management Plan, which includes operation and maintenance instructions, is provided as Appendix E.

### 2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10 (NYSDEC 2010b)[3].

#### 2.2.2.1 Sub-slab Depressurization System

The active SSDS will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSDS is no longer required, a proposal to discontinue the SSDS will be submitted by the property owner to the NYSDEC and NYSDOH.

#### 2.2.2.2 Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC, until residual groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

## 2.3 INSTITUTIONAL CONTROLS

A series of ICs is required by the ROD (NYSDEC 2010a)[1] to: (1) implement, maintain and monitor EC systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to commercial and restricted residential (portions of the property zoned for each use by the City of Ithaca) uses only. Adherence to these ICs on the site is required by an Environmental Easement (Appendix A) and will be implemented under this SMP.

These ICs are:

- Compliance with an Environmental Easement and this SMP.
- All ECs must be operated and maintained as specified in this SMP.
- All ECs on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP.
- Groundwater and indoor air monitoring must be performed as defined in this SMP.
- Data and information pertinent to site management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP.

ICs identified in an Environmental Easement (Appendix A) may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The site has a series of ICs in the form of site restrictions. Adherence to these ICs will be required by an Environmental Easement (Appendix A). Site restrictions that apply to the Controlled Property are:

- The property may only be used for restricted residential or commercial use (as zoned for such use by the City of Ithaca) provided that the long-term ECs and ICs included in this SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted residential use without additional remediation and amendment of an Environmental Easement, as approved by the NYSDEC.

- All future activities on the property that will potentially disturb remaining contaminated material must be conducted in accordance with this SMP.

- The use of the groundwater for a source of potable or process water is restricted without treatment rendering it safe for intended use.

- The potential for VI must be evaluated for any buildings developed in the area noted on Figure 2, and any potential impacts that are identified must be monitored or mitigated.

- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

### 2.3.1 Excavation Work Plan

The site has been remediated for restricted residential and commercial use. Any future intrusive work that will penetrate the soil cover or cap, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with the EWP that is attached as Appendix D to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a HASP and Community Air Monitoring Plan (CAMP) prepared for the site or in accordance with the NYSDOH Generic CAMP. A HASP Addendum is attached as Appendix F to this SMP that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section D-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP, and CAMP, and will be included in the periodic inspection and certification reports submitted under the Periodic Review Report (Section 5).

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the ECs described in this SMP.

### 2.3.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located within the area identified on Figure 7, a soil VI evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, a soil VI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive SSDS that is capable of being converted to an active system. The SSDS system is only recommended as a conservative alternative to performing a soil VI evaluation and designing a mitigation system.

Prior to conducting a soil VI investigation or installing a mitigation system, a Work Plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This Work Plan will be developed in accordance with the most recent NYSDOH Guidance for Evaluating VI in the State of New York (NYSDOH 2006)[10]. Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the soil VI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) soil VI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. Validated soil VI data will be transmitted to the property owner within 30 days of validation. If any indoor air test results exceed NYSDOH guidelines, relevant NYSDOH fact sheets will be provided to all tenants and occupants of the property within 15 days of receipt of validated data.

Soil VI sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

## 2.4 INSPECTIONS AND NOTIFICATIONS

### 2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

[10] NYSDOH. 2006. Guidance for Evaluating Vapor Intrusion.

- Whether ECs continue to perform as designed
- If these controls continue to be protective of human health and the environment
- Compliance with requirements of this SMP and the Environmental Easement
- Achievement of remedial performance criteria
- Sampling and analysis of appropriate media during monitoring events
- If site records are complete and up to date
- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

### 2.4.2 Notifications

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

- 60-day advance notice of any proposed changes in site use in accordance with the ROD (NYSDEC 2010a)[1].

- 15-day advance notice of any proposed ground-intrusive activities pursuant to the EWP (Appendix D).

- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other ECs and likewise any action to be taken to mitigate the damage or defect.

- Notice within 48-hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of all approved work plans and reports, including this SMP.

- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

## 2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

### 2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to the NYSDEC Project Manager. These emergency contact lists must be maintained in an easily accessible location at the site.

**Emergency Contact Numbers**

| | |
|---|---|
| Medical, Fire, and Police: | 911 |
| One Call Center: | (800) 272-4480<br>(3 day notice required for utility markout) |
| Poison Control Center: | (800) 222-1222 |
| Pollution Toxic Chemical Oil Spills: | (800) 424-8802 |
| NYSDEC Spills Hotline | (800) 457-7362 |

**Contact Numbers**

| | |
|---|---|
| NYSDEC Division of Environmental Remediation | 518-402-9814 |
| Note: Contact numbers subject to change and should be updated as necessary | |

### 2.5.2 Map and Directions to Nearest Health Facility

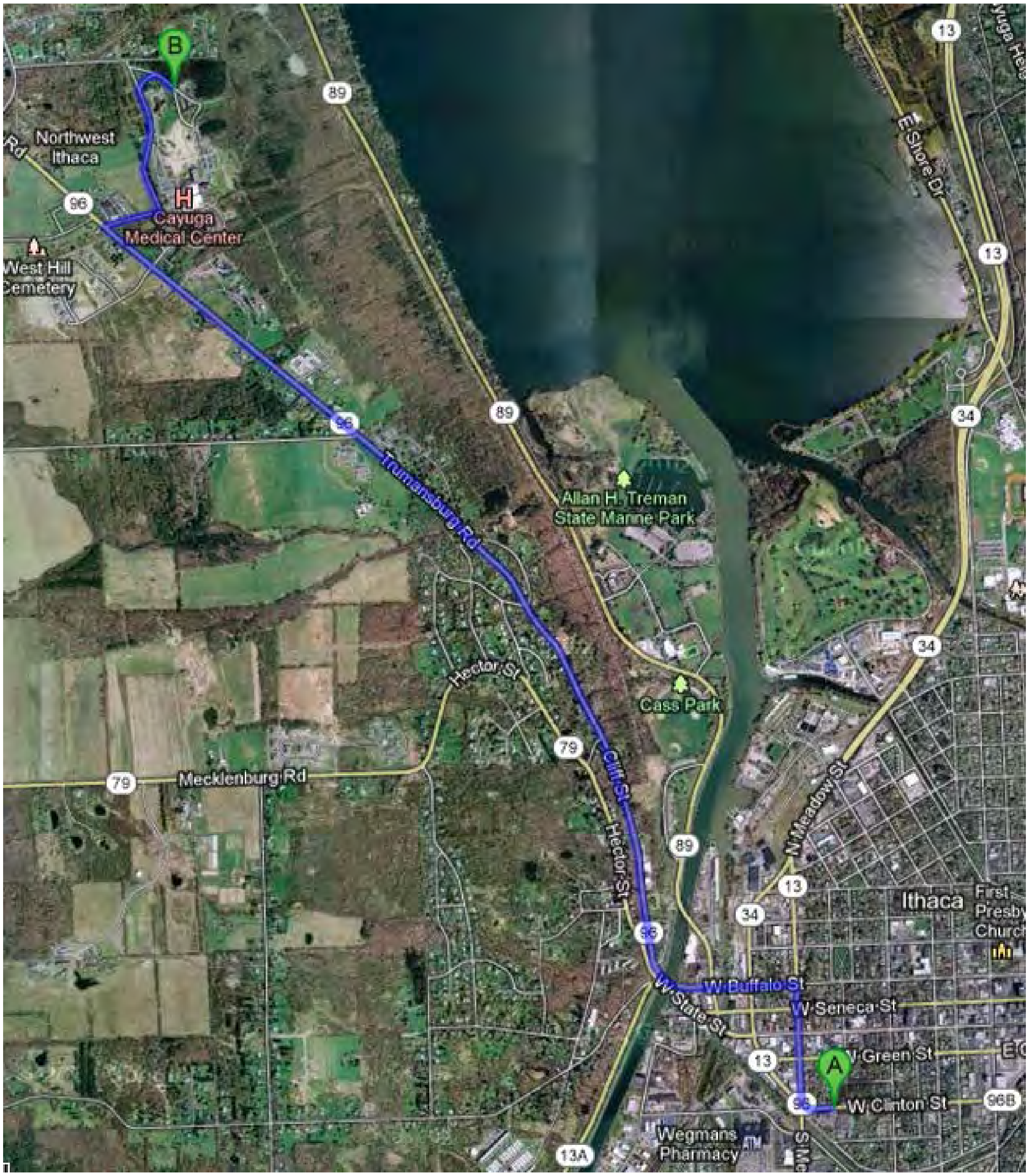
Site Location: Clinton West Plaza
Nearest Hospital Name: Cayuga Medical Center
Hospital Location: 101 Dates Drive, Ithaca, NY
Hospital Telephone: 607-274-4011

Directions to the Hospital:
1. Head west on W Clinton St toward S Meadow St.
2. Take the 1st right onto S Meadow St.
3. Turn left onto W Buffalo St.
4. Continue onto NY-96 N/Cliff St.
5. Continue to follow NY-96 N.
6. Turn right toward Harris B Dates Dr.
7. Turn left onto Harris B Dates Dr.
8. Turn right toward Dates Dr.
9. Turn right onto Dates Dr.

Destination will be on the right

Total Distance: 3.7 miles
Total Estimated Time: 12 minutes

**Map* Showing Route from the site to the Hospital:**




***Map and image is from maps.google.com**

### 2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Section 2.5.1). The list will also be posted prominently at the site and made readily available to all personnel at all times.

#### 2.5.3.1 Spill Procedures

In the event that a hazardous substance is released on the site, all site personnel shall be notified immediately. If the substance poses an immediate threat to human health and the environment, evacuation and notification of the appropriate authorities including the NYSDEC Spill Response team (listed in previous table) may be necessary. If the release is minimal and does not pose a health risk, the leak shall be contained and the spilled material shall be cleaned up with appropriately sized absorbent pads. Materials used to contain the substance shall be disposed of properly.

#### 2.5.3.2 Evacuation Plan

If site evacuation is necessary, site personnel shall exit the site on Center Street. All site personnel shall be notified of the evacuation.

# 3.0 SITE MONITORING PLAN

## 3.1 INTRODUCTION

### 3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, the soil cover system, and all affected site media identified below. Monitoring of other ECs is described in Section 4, Operation and Maintenance Plan. This Monitoring Plan may only be revised with the approval of NYSDEC.

### 3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils).

- Assessing compliance with applicable NYSDEC SCGs, particularly ambient groundwater standards and Part 375 SCOs for soil.

- Assessing achievement of the remedial performance criteria.

- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency
- Information on all designed monitoring systems (e.g., well logs)
- Analytical sampling program requirements
- Reporting requirements
- QA/QC requirements
- Inspection and maintenance requirements for monitoring wells
- Monitoring well decommissioning procedures
- Annual inspection and periodic certification.

Semiannual monitoring of the performance of the remedy and overall reduction in contamination on-site and off-site will be conducted for the first 2 years. The frequency thereafter will be determined by NYSDEC. Trends in contaminant levels in air, soil, and/or groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in the table below and outlined in detail in Sections 3.2 and 3.3 below.

**Monitoring/Inspection Schedule**

| Monitoring Program | Frequency* | Matrix | Analysis |
|---|---|---|---|
| Groundwater | Semiannual (for the first 2 years) | Water | VOCs |
| SSDS/Indoor Air | As recommended by State agencies (during the heating season) | Air | VOCs |
| The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH | | | |

## 3.2 SOIL COVER SYSTEM MONITORING

The soil cover and asphalt parking areas will be inspected on annual basis to identify any disturbances or otherwise impaired.

## 3.3 MEDIA MONITORING PROGRAM

Groundwater and indoor air will be monitored as part of the management of this site.

### 3.3.1 Groundwater Monitoring

The network of monitoring wells has been installed to monitor both up-gradient and down-gradient groundwater conditions at the site. The network of on-site and off-site wells was designed and installed during the RI (Fagan Engineers 2009)[6] and pre-design investigation (EA 2010a)[8]. A total of 21 monitoring wells and 3 temporary monitoring points are located at the site. Of these, 11 were selected for groundwater monitoring during the remedial action based upon the spatial relationship to the targeted treatment zone. Additionally, the monitoring wells were selected based on previous CVOC detections, location to the estimated contaminant plume and the targeted treatment zone, and location upgradient or downgradient of the contaminant plume based on groundwater gradients and flow direction. The groundwater monitoring wells on site are installed to a maximum of 25 ft bgs and constructed with 10 ft of screen. The layout of the groundwater monitoring well network is illustrated in Figure 10.

These 11 monitoring wells were sampled in October 2011 to establish baseline groundwater quality conditions and six times during the-post-injection monitoring phase of the remedial action. The last sampling event was completed by EA in October/November 2012. Samples were analyzed form VOCs (Method SW8260B). Results of the baseline sampling and six post-injection monitoring events are shown on Figure 9. Additionally, six existing groundwater monitoring wells provide no additional data and are not required to monitor the effectiveness of the remedy and should be decommissioned per CP-43 with the approval of the NYSDEC (see Section 3.3.1.2 and Figure 10).

Groundwater monitoring is to be performed semiannually for the first 2 years and as directed by NYSDEC thereafter. Groundwater is to be analyzed VOCs (Method SW8260B). The following monitoring wells are to be sampled as part of the groundwater monitoring program for the site:

| **Monitoring Wells at the Clinton West Plaza** | | |
|---|---|---|
| **Upgradient On-site Monitoring Wells** | **Stick-up or Flush-mount** | **Well Depth (ft bgs)** |
| MMW-03 | Flush-mount | 19.39 |
| TPMW-6 | Flush-mount | 15.61 |
| **Downgradient On-site Monitoring Wells** | **Stick-up or Flush-mount** | **Well Depth (ft bgs)** |
| TPMW-3 | Flush-mount | 12.95 |
| TPMW-4 | Flush-mount | 14.52 |
| MMW-01 | Flush-mount | 19.35 |
| MMW-02 | Flush-mount | 19.56 |
| MMW-04 | Flush-mount | 29.45 |
| MW-14 | Flush-mount | 14.46 |
| TPM-01 | Flush-mount | 24.39 |
| TPM-02 | Stick-up | 28.41 |
| TPM-03 | Flush-mount | 21.85 |

Monitoring well construction logs are included in Appendix G. Caps and plugs for monitoring wells are labeled with well IDs in indelible ink and should be relabeled during each sampling event. Flush-mount wells are secured by a bolts and steel covers. Due to the lack of space inside the flush-mount curb boxes, monitoring wells are not currently locked. TPM-02 is a temporary monitoring point and is not secured.

The sampling frequency may be modified with the approval of the NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by the NYSDEC.

The groundwater monitoring well network is shown in Figure 10. Figure 9 and Table 2 provide a summary of the post-remedial action groundwater quality for VOCs.

Deliverables for the groundwater monitoring program are specified below.

### 3.3.1.1 Sampling Protocol

All monitoring well sampling activities will be recorded in a field book and a groundwater sampling log presented in Appendix H. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

Prior to sampling, all monitoring wells shall be inspected and gauged to obtain the static water levels for the site. Monitoring well purging will be performed and groundwater samples will be collected from the monitoring wells using a submersible pump and dedicated section of polyethylene tubing. A water quality meter (Horiba U-52 or similar) with flow-through cell (flushed with distilled water before use at each well) will be used during well purging for field measurement of pH, specific conductance, temperature, oxidation-reduction potential, turbidity, and dissolved oxygen. Each well shall be purged three well volumes or until field parameters stabilize, whichever occurs first. Purge water is to be discharged to the ground surface near the well. In the event that a strong odor or sheen is evident, water is to be drummed, characterized, handled, and disposed of at a licensed treatment, storage, and disposal facility.

The following procedures will be used for monitoring well groundwater sampling:

- Wear appropriate personal protective equipment as specified in the site-specific HASP Addendum (Appendix F). In addition, samplers will use new nitrile sampling gloves for the collection of each sample.

- Unlock and remove the well cap where necessary.

- Measure the static water level in the well with an electronic water level indicator.

- The water level indicator will be washed with Alconox detergent and water, then rinsed with deionized water between individual monitoring wells to prevent cross-contamination.

- Calculate the volume of water in the well.

- Place polyethylene sheeting around the well casing to prevent contamination of sampling equipment in the event sampling equipment is dropped.

- Purge water from the well until water quality parameters are stabilized or 3-5 well volumes of water (unless otherwise approved), using U.S. Environmental Protection Agency (EPA) low-flow methodology as described below.

- Pump with a peristaltic pump equipped with new polyethylene tubing dedicated to each well. Set pump/tubing intake at the approximate mid-point of the monitoring wells screened interval and start pump.

- Allow field parameters of pH, reduction-oxidation potential (Eh), dissolved oxygen, specific conductivity, turbidity, and temperature to stabilize before sampling. Purging will be considered complete if the following conditions are met:
    - Consecutive pH readings are ±0.1 pH units of each other

- Consecutive dissolved oxygen readings are ±10 percent of each other
- Consecutive Redox readings are ±0.10 units of each other
- Consecutive measured specific conductance is ±3 percent of each other
- Turbidity < 50 nephelometric turbidity units

If these parameters are not met after purging a volume equal to 3-5 times the volume of standing water in the well, the Remedial Project Manager will be contacted to determine the appropriate action(s).

- If the well is purged dry before the required volumes are removed, the well may be sampled when it recovers (recovery period up to 24 hours).

- Place analytical samples in cooler and chill to 4°C. Samples will be shipped to the analytical laboratories within 24 hours.

- Pump will be decontaminated and the polyethylene suction/discharge line will be properly discarded.

- Re-lock well cap.

- Fill out field sampling form, labels, custody seals, and chain-of-custody forms.

Groundwater samples will be placed in appropriate sample containers, sealed, and submitted to the laboratory for analysis.

#### 3.3.1.2 Monitoring Well Repairs, Replacement, and Decommissioning

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells rendered unserviceable (e.g., damaged screen or excessive silting) or approved for removal will be properly decommissioned and replaced if necessary (as per the Monitoring Plan).

Well decommissioning procedures are as follows:

- Measure total depth of the well to ensure the well depth is consistent with the recorded construction depth.

- Remove the steel manhole or steel stickup protective casing with an effort being made to ensure that the riser does not splinter and/or become structurally unstable for pulling.

- The bottom of the casing shall be punctured and the casing freed from the hole using suitable equipment (i.e., drill rig cable system). Well materials shall be disposed of at a licensed disposal facility.

- The well shall be tremie-grouted with a cement bentonite grout while removing the casing. The grout shall be completed to a depth of approximately 5 ft below grade.

- A bentonite seal shall be placed on top of the grout.

- The remaining riser shall be sealed with a Portland cement plug to the ground surface.

The following table identifies the six monitoring wells no longer needed to assess remedial action performance or monitoring under the SMP. These monitoring wells will be scheduled for decommissioning upon finalization of the SMP and approval by NYSDEC.

| **Monitoring Wells Proposed to be Decommissioned at Clinton West Plaza** | | |
|---|---|---|
| **Upgradient On-site Monitoring Wells** | **Stick-up or Flush-mount** | **Well Depth (ft bgs)** |
| MW-07 | Flush-mount | 15 |
| MW-08 | Flush-mount | 15 |
| MW-09 | Flush-mount | 15 |
| MW-10 | Flush-mount | 15 |
| MW-11 | Flush-mount | 15 |
| MW-12 | Flush-mount | 15 |

In the event the casing or well screen is severed during casing pulling, or if a borehole collapse occurs, the remaining materials will be removed by over-drilling using the conventional augering method described below:

- Overdrilling shall be conducted by either using a hollow-stem auger with outward facing carbide cutting teeth with a diameter 2 in. larger than the casing and/or using a hollow-stem auger fitting with a plug used to grind the well materials which will be brought to the surface by the auger. Spoils shall be drummed and disposed of at a licensed disposal facility.

- Overdrilling shall be advanced 0.5 ft beyond the original bore depth.

- Once the desired drilling depth has been completed (using open ended hollow-stem auger method) the casing and screen shall be retrieved from the center of the augers.

- As the augers are being retracted, cement-bentonite grout shall be pumped down the center of the augers.

- Bore hole shall be grouted and sealed with bentonite and Portland cement as described above.

Replacement wells shall be constructed using methods consistent with those used during the RI (Fagan Engineers 2009)[6] and pre-design investigation. Existing monitoring well construction logs are provided in Appendix G.

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

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's Commissioner Policy – 43 Groundwater Monitoring Well Decommissioning Policy (NYSDEC 2009)[11]. Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

### 3.3.2 Indoor Air Monitoring

Indoor air sampling is to take place annually as required by the NYSDEC and NYSDOH, as discussed in Section 1.3 of this plan, on-site on an annual basis to monitor effectiveness of SSDSs and potential soil VI. Samples are to be analyzed by an Environmental Laboratory Analytical Program-certified laboratory for VOCs using EPA Method TO-15. In accordance with the NYSDOH guidance for evaluating soil VI (2006a)[9], the analysis for the indoor air samples is to achieve detection limits of 0.25 $\mu g/m^3$ for each compound. Indoor air monitoring for the on-site building is the responsibility of the site owner.

Prior to collection of indoor air, an inspection of general site conditions is to be performed. The inspection is to include the following activities:

- Completion of the NYSDOH Indoor Air Quality Questionnaire and Building Inventory included in Indoor Air Sampling and Analysis Guidance (NYSDOH 2006b)[12]. A sample of the questionnaire is provided in Appendix H. As directed by NYSDEC, a limited product inventory will be prepared. Sections 1 through 12 of the questionnaire will be completed with the exception of Section 4. In addition, a floor plan sketch of the first floor will not be required.

[11] NYSDEC. 2009. Commissioner Policy–43 Groundwater Monitoring Well Decommissioning Policy. 3 November.
[12] NYSDOH. 2006b. Indoor Air Sampling and Analysis Guidance.

- Documentation of weather conditions outside and temperature inside.

- Ambient air (indoor and outdoor) screening using field equipment (i.e., parts per billion photoionization detector).

- Selection of air sampling locations.

An active approach, utilizing laboratory batch-certified Summa canisters, regulated for a 24-hour sample collection, will be used to monitor the indoor air conditions. The following procedures will be used for all indoor air sampling:

- Visually assess the building to be sampled. Select an area for sampling that is approximately 3–4 ft above the floor surface, out of the line of traffic, and away from any vents or windows.

- Place a canister in the selected sample location. The canister must be certified clean in accordance with EPA Method TO-15 and under a vacuum pressure of no more than -30 in. of mercury in Hg. Flow controllers must be set for a 24-hour collection period.

- Record the serial number of the canister and associated regulator on the chain-of-custody form and field notebook/sample form. Assign a sample identification on the canister identification tag and record this on chain-of-custody and field notebook/sample form. For the property owner’s privacy, do not use a sample identifier containing the name of the property owner or the address of the property.

- Record the gauge pressure; the vacuum gauge pressure must read -25 in Hg or less, or the canister cannot be used.

- Record the start time on the chain-of-custody form and on the air sampling form (Appendix H), and take a digital photograph of canister setup and the surrounding area.

To terminate the sample collection:

- Close the canister valve; record the stop time on the chain-of-custody form and in the field notebook/sample form.

- Record the final gauge pressure and disconnect the pressure gauge/flow controller from the canister.

- Install the plug on the canister inlet fitting and place the sample container in the original box.

Complete the sample collection log with the appropriate information, and log each sample on the chain-of-custody form.

## 3.4 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed (Appendix H). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage.
- An evaluation of the condition and continued effectiveness of ECs.
- General site conditions at the time of the inspection.
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection.
- Compliance with permits and schedules included in the Operation and Maintenance Plan.
- Confirm that site records are up to date.

SSDS inspections will take place as part of the annual site-wide inspection and are discussed in Section 4.0 of this plan.

## 3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) Addendum prepared for the site (Appendix I). Main components of the QAPP Addendum include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
    - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
    - Sample holding times will be in accordance with the NYSDEC Analytical Services Protocol requirements.

  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.

- Sample Tracking and Custody

- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow all calibration procedures and schedules as specified in EPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.

- Analytical Procedures

- Preparation of a Data Usability Summary Report, which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.

- Internal QC and Checks

- QA Performance and System Audits

- Preventative Maintenance Procedures and Schedules

- Corrective Action Measures.

## 3.6 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. A letter report will also be prepared subsequent to each sampling event. The report will include, at a minimum:

- Date of event

- Personnel conducting sampling

- Description of the activities performed
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.)
- Sampling results in comparison to appropriate standards/criteria
- A figure illustrating sample type and sampling locations
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (o be submitted electronically in the NYSDEC-identified format)
- Any observations, conclusions, or recommendations
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC.

A summary of the monitoring program deliverables are summarized below.

**Schedule of Monitoring/Inspection Reports**

| Task | Reporting Frequency[1] |
|---|---|
| Letter inspection and Monitoring Report | Semiannually for the first 2 years |
| Indoor Air Monitoring Report | Annually |
| Periodic Review Report | December 2014 (First), annually thereafter |
| 1. The frequency of events will be conducted as specified until otherwise approved by NYSDEC | |

# 4.0 OPERATION AND MAINTENANCE PLAN

## 4.1 INTRODUCTION

This Operation and Maintenance Plan describes the measures necessary to operate, monitor, and maintain the mechanical components of the remedy selected for the site. This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the site to operate and maintain the SSDSs
- Includes an operation and maintenance contingency plan
- Will be updated periodically to reflect changes in site conditions or the manner in which the SSDSs are operated and maintained.

Information on non-mechanical ECs (i.e., soil cover system) is provided in Section 2 – EC/IC Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

## 4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

There is one SSDS on-site and it is located in the southwest corner of the tenant laundry facility in the building at 609 West Clinton Avenue. The system serves to reduce sub-slab pressure and vent built-up soil gas outside of the building. The system consists of slotted screen installed beneath the slabs, connected to polyvinyl chloride pipe, an in-line ventilation fan, and an exterior exhaust point. The exhaust pipe is located within the building and vents above the roof of the building. The vent fan is outside of the building. The exhaust point is covered with rain caps. The system location is shown on Figure 11. The system has run continuously since February 2011. Additional, details on the system are included in the SSDS Operation Management Plan in Appendix E.

### 4.2.1 Indoor Air Monitoring

Indoor air monitoring is to take place on an annual basis, during the heating season, as required by the NYSDEC and NYSDOH. This is discussed in Section 3.3.2 of this plan. In the event that indoor air monitoring indicates VOC contamination in the air, or per NYSDEC's request, a full sub-slab soil VI evaluation is to be completed. This would include the collection of an indoor air sample, a sub-slab air sample, and an outdoor air sample. The indoor sample is to be collected as discussed in Section 3.3.2. The following procedures will be used for collection of sub-slab soil vapor samples:

- Visually assess the condition of the floor. Select an area for sampling that is out of the line of traffic and away from major cracks and other floor penetrations (sumps, pipes, etc.). Refer to historical sample forms (Appendix J) for ideal sample locations.

- Drill a ⅜-in. diameter hole completely through the concrete floor slab using an electric hammer drill.

- Sweep concrete dust away from the drill hole and wipe the floor with a dampened towel. Concrete dust can be cleaned up with a vacuum equipped with a high efficiency particulate air filter only after the sample tubing is properly sealed and sample collection has begun.

- Insert the Teflon-lined polyethylene tubing (¼-in. inside diameter × ⅜-in. outside diameter, approximately 3-ft long) into the hole drilled in the floor, extending no further than 2 in. below the bottom of the floor slab.

- Pour the melted beeswax around the tubing at the floor penetration, packing it in tightly around the tubing.

- Attach a syringe to the sample tube and purge approximately 100 mL of air/vapor. The syringe will be capped and the air released outside the building as to not interfere with the indoor air sample collection.

- Place a canister on the floor adjacent to the sample tube. The canister will be a 6-L canister (provided by an independent laboratory) with a vacuum gauge and flow controller. The canister must be certified clean in accordance with EPA Method TO-15 and under a vacuum pressure of no more than -30 in. of mercury in HG. Flow controllers must be set for a 24-hour collection period.

- Record the serial number of the canister and associated regulator on the chain-of-custody form and field notebook/sample form. Assign sample identification on the canister identification tag and record this on the chain-of-custody form and field notebook/sample form. For the property owner’s privacy, do not use a sample identifier containing the name of the property owner or the address of the property.

- Record the gauge pressure; the vacuum gauge pressure must read -25 in Hg or less, or the canister cannot be used.

- Record the start time on the chain-of-custody form and on the field record of air sampling (Appendix H), and take a digital photograph of canister setup and the surrounding area.

To complete the sample collection:

- Close the canister valve and record the stop time on the chain-of-custody form and in the field notebook/sample form.
- Record the final gauge pressure and disconnect the sample tubing and the pressure gauge/flow controller from the canister, if applicable.
- Install the plug on the canister inlet fitting and place the sample container in the original box.
- Complete the sample collection log with the appropriate information, and log each sample on the chain-of-custody form.
- Remove the temporary subsurface probe and properly seal the hole in the slab with hydraulic cement.

Field QC samples will include duplicates and trip blanks. Field duplicates will be collected at the rate of 1 duplicate per 20 original samples (20 percent). Field duplicates will be collected by installing an in-line stainless steel "tee," which will essentially split the flow coming from the sample tubing penetrating the floor to two canisters set up adjacent to each other and each collecting vapors at identical flow rates.

Concurrently with the indoor air and sub-slab soil vapor monitoring program, one outdoor ambient air sample will be collected each day that indoor air monitoring occurs. The ambient air samples will be collected during the same 24-hour period as the indoor air samples, which represent outdoor air conditions for the sampling area. The ambient air samples will be collected in a laboratory batch-certified Summa canister regulated for a 24-hour sample collection. A section of Teflon or polyethylene tubing that is identified as laboratory- or food-grade will be extended from the Summa canister to collect the ambient air sample from the breathing zone at approximately 3–5 ft above ground surface. Consistent with the indoor and sub-slab vapor sampling, the collecting rate of the outdoor air sample will be less than 0.2 L per minute.

Air samples will be analyzed by an Environmental Laboratory Analytical Program-certified laboratory for VOCs using EPA Method TO-15. In accordance with the NYSDOH Indoor Air Sampling and Analysis Guidance, the analysis for indoor and outdoor air samples will achieve a minimum reporting limit of 0.25 $\mu g/m^3$. The analysis for sub-slab soil vapor samples will achieve minimum reporting limit of 5 $\mu g/m^3$ for structures with full-slab foundations and a minimum 1 $\mu g/m^3$ for structures with less than a full-slab foundation. For specific parameters identified by NYSDOH, where the selected parameters may have a higher detection limit (e.g., acetone), the higher detection limits will be designated by NYSDOH. The analytical turnaround time will be 14 days from receipt of sample containers. Analytical results will be provided as an electronic data deliverable.

## 4.3 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be kept on file on-site. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Periodic Review Report, as specified in the Section 5 of this SMP.

### 4.3.1 Routine Maintenance Reports

During each maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities
- Presence of leaks
- Date of leak repair
- Other repairs or adjustments made to the system
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet)
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

# 5. INSPECTIONS, REPORTING, AND CERTIFICATIONS

## 5.1 SITE INSPECTIONS

### 5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedule provided in Section 3 Monitoring Plan of this SMP. At a minimum, a site-wide inspection will be conducted twice a year. Inspections of remedial components (SSDS in this case) will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition exists.

### 5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

A general site-wide inspection form will be completed during the site-wide inspection (Appendix H). This form is subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

### 5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective
- The Monitoring Plan is being implemented
- Operation and maintenance activities are being conducted properly
- The site remedy continues to be protective of public health and the environment and is performing as designed in the Remedial Action Work Plan (Conceptual Pilot Study Design Report) and Final Engineering Report.

## 5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a qualified environmental professional will prepare the following certification or similar as provided by the NYSDEC:

For each IC/EC identified for the site, I certify that all of the following statements are true:

- The inspection of the site to confirm the effectiveness of the ICs/ECs required by the remedial program was performed under my direction.

- The IC/EC employed at this site is unchanged from the date the control was put in place, or last approved by the Department.

- Nothing has occurred that would impair the ability of the control to protect the public health and environment.

- Nothing has occurred that would constitute a violation or failure to comply with any SMP for this control.

- Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control.

- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document.

- Use of the site is compliant with the Environmental Easement (Appendix A).

- The EC systems are performing as designed and are effective.

- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program.

- The information presented in this report is accurate and complete.

- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner’s Designated Site Representative].

The signed certification will be included in the Periodic Review Report described below.

For each IC identified for the site, I certify that all of the following statements are true:

- The IC employed at this site is unchanged from the date the control was put in place, or last approved by the Department.

- Nothing has occurred that would impair the ability of the control to protect the public health and environment.

- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control.

- Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control.

- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document.

- Use of the site is compliant with the Environmental Easement (Appendix A).

- The information presented in this report is accurate and complete.

- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative].

## 5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the NYSDEC every calendar year, beginning after approval of the Final Engineering Report. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in the metes and bounds. The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each annual certification period. Media sampling results will also incorporated into the Periodic Review Report. The report will include:

- Identification, assessment, and certification of all ECs/ICs required by the remedy for the site.

- Results of the required annual site inspections and severe condition inspections, if applicable.

- All applicable inspection forms and other records generated for the site during the reporting period in electronic format.

- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions.

- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.

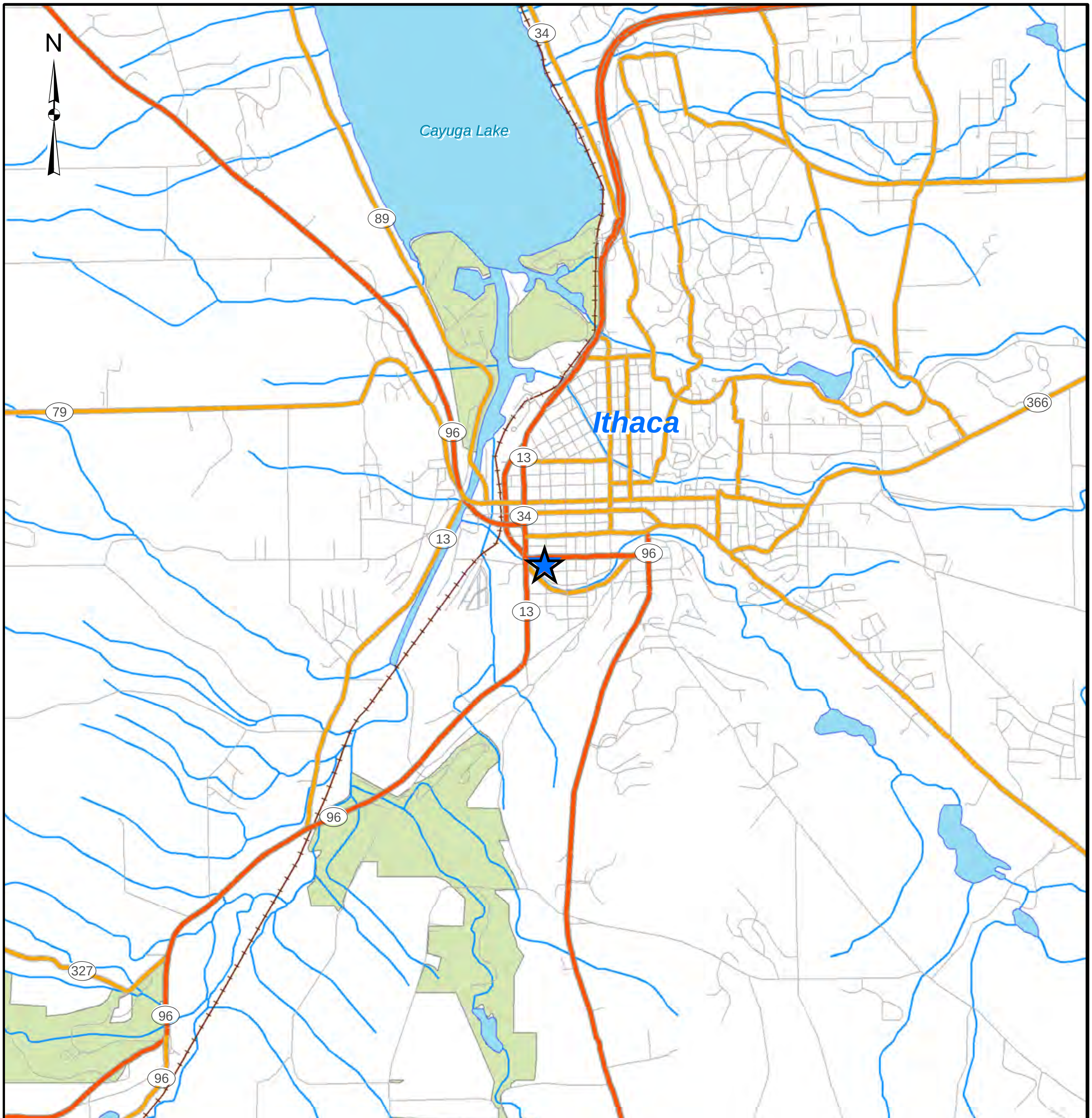
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format.

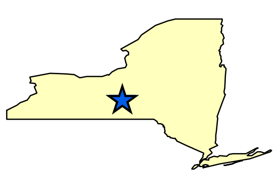
- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific ROD (NYSDEC 2010a)[1]
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan
  - The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Central Office and Regional Office in which the site is located, and in electronic format to NYSDEC Central and Regional Offices, and the NYSDOH Bureau of Environmental Exposure Investigation.

## 5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an IC/EC, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.



**Legend**

- Highway
- Major Road
- Local Road
- Park
- Rivers & Streams
- Surface Water Body

0 1 2 Miles

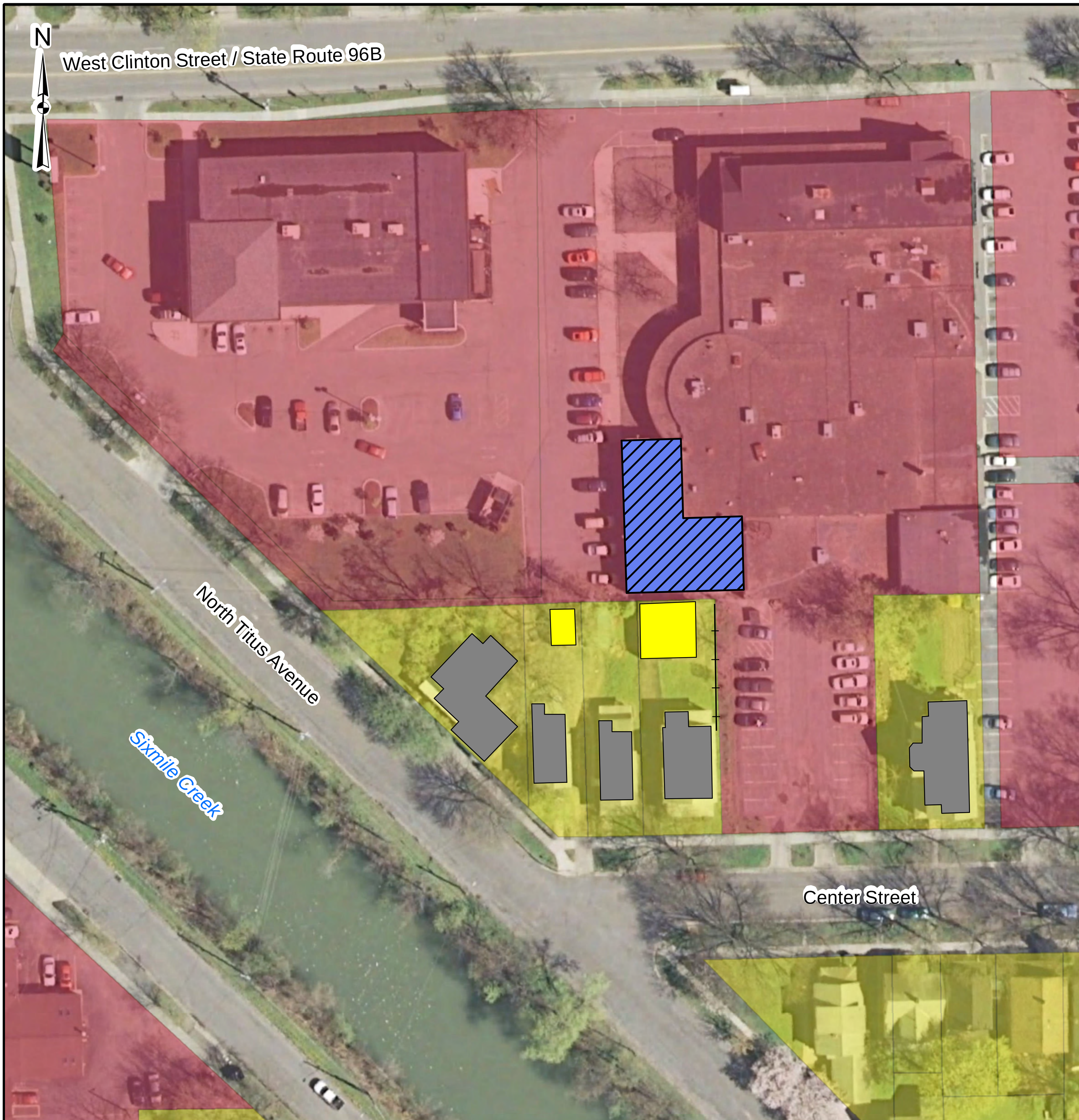
1 in = 1 miles

Source: ESRI Street Maps USA

CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
ITHACA, NEW YORK

FIGURE 1
Site Location Map

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | SEPTEMBER 2013 | 14907.04 | GIS/PROJECTS/ 14907.02_FIG1.MXD |




**Legend**

**Select Structures** — Dry Cleaners; Residence; Utility Building

**Zoning** — Commercial; Residential

Feet: 0, 70, 140

1 inch = 70 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007; Property Parcels: Tompkins County 2010

CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
ITHACA, NEW YORK

FIGURE 2
Site and Surrounding Area

| PROJECT MGR: RSC | DESIGNED BY: CJS | CREATED BY: CJS | CHECKED BY: RSC | SCALE: AS SHOWN | DATE: AUGUST 2013 | PROJECT NO: 14907.04 | FILE NO: GIS/PROJECTS/ 1490704_FIG2.MXD |
|---|---|---|---|---|---|---|---|


CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
ITHACA, NEW YORK

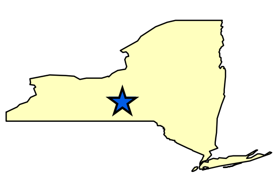
FIGURE 3
Geologic Cross Sections
April 2011

Feet
0 12.5 25 50
1 inch = 25 feet

**Legend**
- Subsurface Soil Boring
- Groundwater Monitoring Well
- Cross Section Point

**Zoning**
- Commercial
- Residential

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | PROJECT NO: | DATE: | SCALE: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | DCC | CJS | RSC | 1490704 | SEPTEMBER 2013 | AS SHOWN | GIS/PROJECTS/1490704_FIG3.MXD |

**Legend**

- Groundwater Monitoring Well
- Interpreted Groundwater Flow Direction
- Interpreted Groundwater Elevation Contour
- Inferred Groundwater Elevation Contour

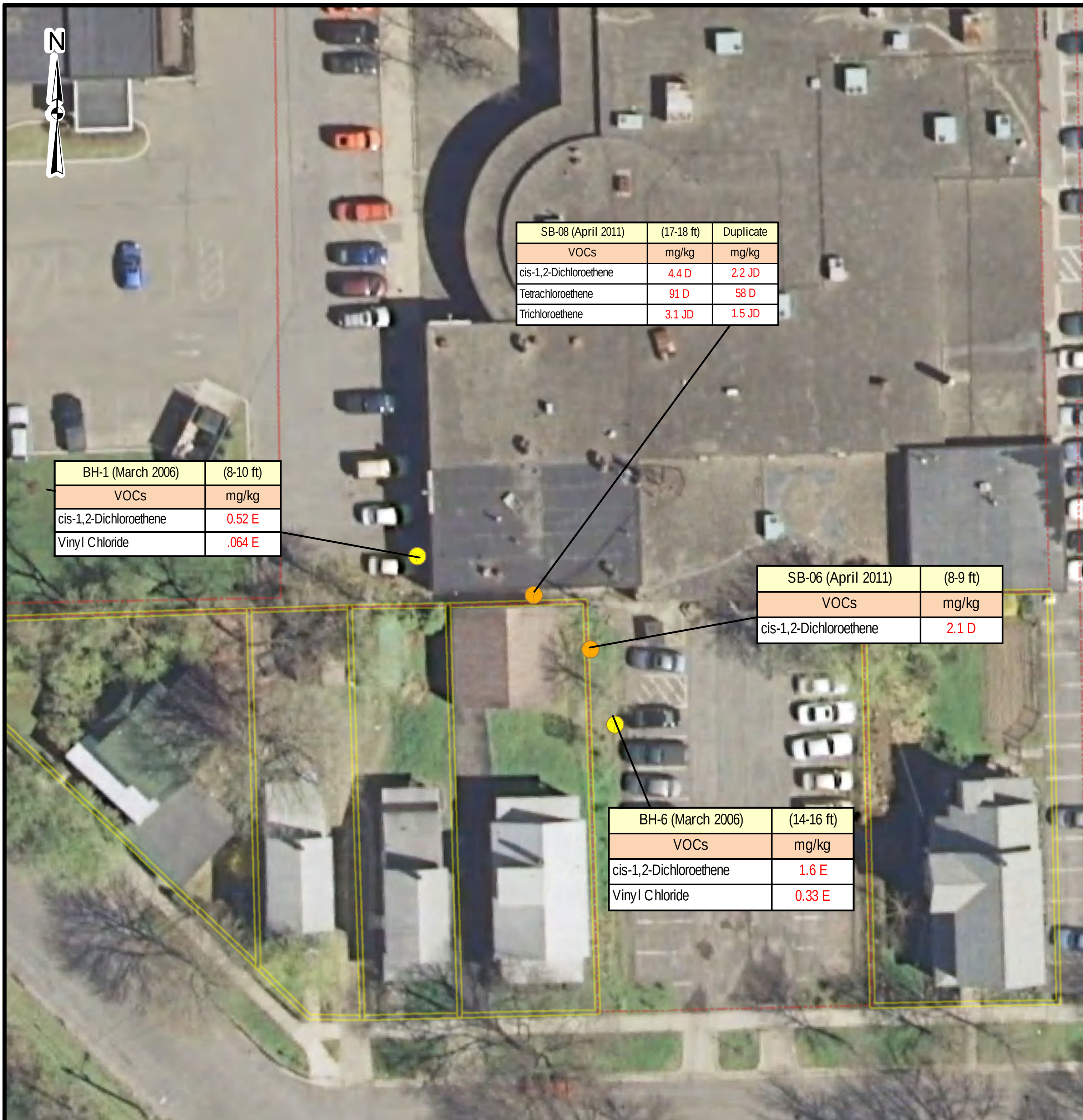
Feet
0 20 40 80

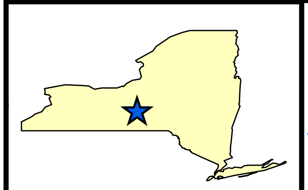
1 inch = 40 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007

| CLINTON WEST PLAZA (755015)<br>SITE MANAGEMENT PLAN<br>ITHACA, NEW YORK | FIGURE 4<br>Interpreted Groundwater<br>Contours 31 October 2012 |
|---|---|

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | ALK | CJS | RSC | AS SHOWN | SEPTEMBER 2013 | 14907.04 | GIS/PROJECTS/ 1490704_FIG4.MXD |



**Legend**

Subsurface Soil Boring (2011)

Subsurface Soil Boring (2006)

Groundwater Monitoring Well

**Zoning**

Commercial    Residential

J    Value is an estimate.
D    Value is the result of a dilution.
E    Analyte concentration exceeded calibration range.
mg/kg    Milligrams per kilogram (ppm)

Values in RED indicate concentration in exceedence of NYCRR Part 375 Soil Cleanup Objective for Unrestricted Use.

Feet
0    20    40
1 in = 40 feet

Source: ESRI Street Maps USA

CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
ITHACA, NEW YORK

FIGURE 5
Chlorinated Volatile Organic Compounds Exceeedences in Subsurface Soil Samples - March 2006 and April 2011

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | SEPTEMBER 2013 | 14907.04 | GIS/PROJECTS/ 14907.02_FIG5.MXD |


| TPMW-3 | |
|---|---|
| VOCs | µg/L |
| cis-1,2 Dichloroethene | 1,000 D |
| trans-1,2 Dichloroethene | 13 |
| Tetrachloroethene | 520 D |
| Trichloroethene | 420 D |
| Vinyl chloride | 63 |

| MW-16 | |
|---|---|
| VOCs | µg/L |
| Tetrachloroethene | 18 |

| TPMW-4 | | Duplicate |
|---|---|---|
| VOCs | µg/L | µg/L |
| cis-1,2 Dichloroethene | 540 D | 510 D |
| Tetrachloroethene | 31 | 31 |
| Trichloroethene | 59 | 60 |
| Vinyl chloride | 94 | 95 |

| MMW-01 | |
|---|---|
| VOCs | µg/L |
| cis-1,2 Dichloroethene | 49 |
| Tetrachloroethene | 14 |
| Trichloroethene | 9.1 |
| Vinyl chloride | 120 |

| MW-14 | |
|---|---|
| VOCs | µg/L |
| cis-1,2 Dichloroethene | 7.8 |

| MMW-03 | |
|---|---|
| VOCs | µg/L |
| Benzene | 1.8 |

CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
ITHACA, NEW YORK

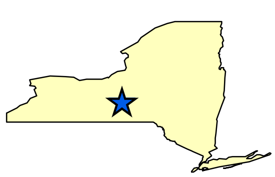
FIGURE 6
Chlorinated Volatile Organic Compounds Detected in Groundwater Samples
May 2011

Feet
0 30 60 120
1 inch = 60 feet

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | PROJECT NO: | DATE: | SCALE: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | DCC | CJS | RSC | 1490704 | AUGUST 2013 | AS SHOWN | GIS/PROJECTS/ 149070 4_FIG6.MXD |

VOCs Volatile Organic Compounds.
µg/L Micrograms per Liter (parts per billion)
NE No Exceedences.
NS Not Sampled.
D Concentration is the result of a dilution analysis.

Values in RED indicate concentration in exceedence of NYSDEC Ambient Water Quality Standards.

**Legend**

- Dry Cleaners
- Residence
- Utility Building
- Indoor Air Sample Location
- Tax Parcel Boundary

0 50 100 Feet

1 inch = 60 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007; Property Parcels: Tompkins County 2010

CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
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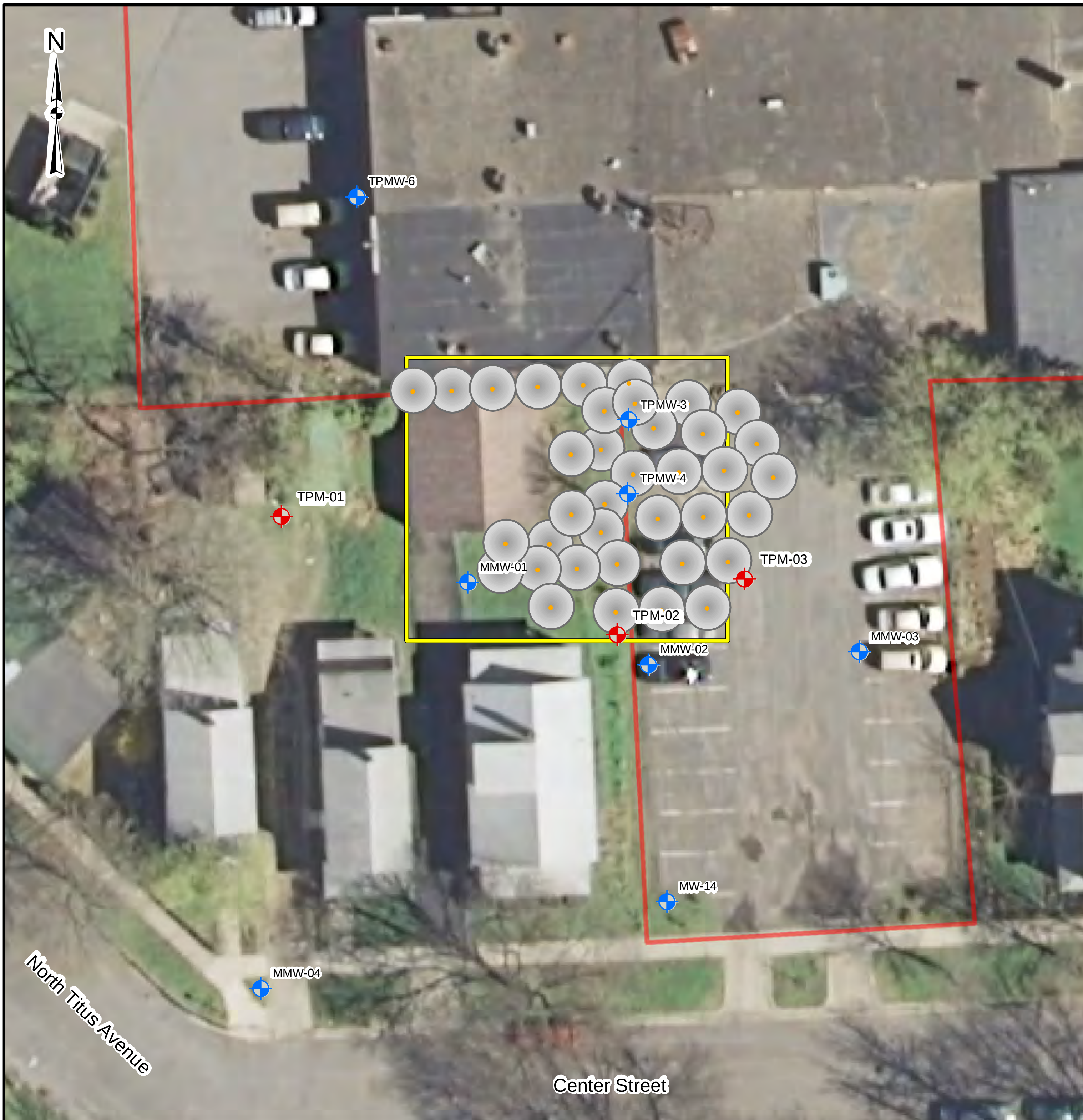
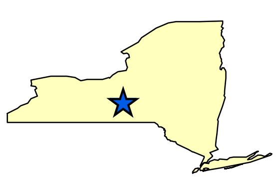
FIGURE 7
Soil Vapor Intrusion
Evaluation Locations (2011)

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | SEPTEMBER 2013 | 14907.04 | GIS/PROJECTS/ 1490704_FIG7.MXD |



**Legend**

- Property Boundary
- Remedial Treatment Area
- Groundwater Monitoring Well
- Temporary Monitoring Well
- Injection Point
- Radius of Influence

Feet
0 15 30

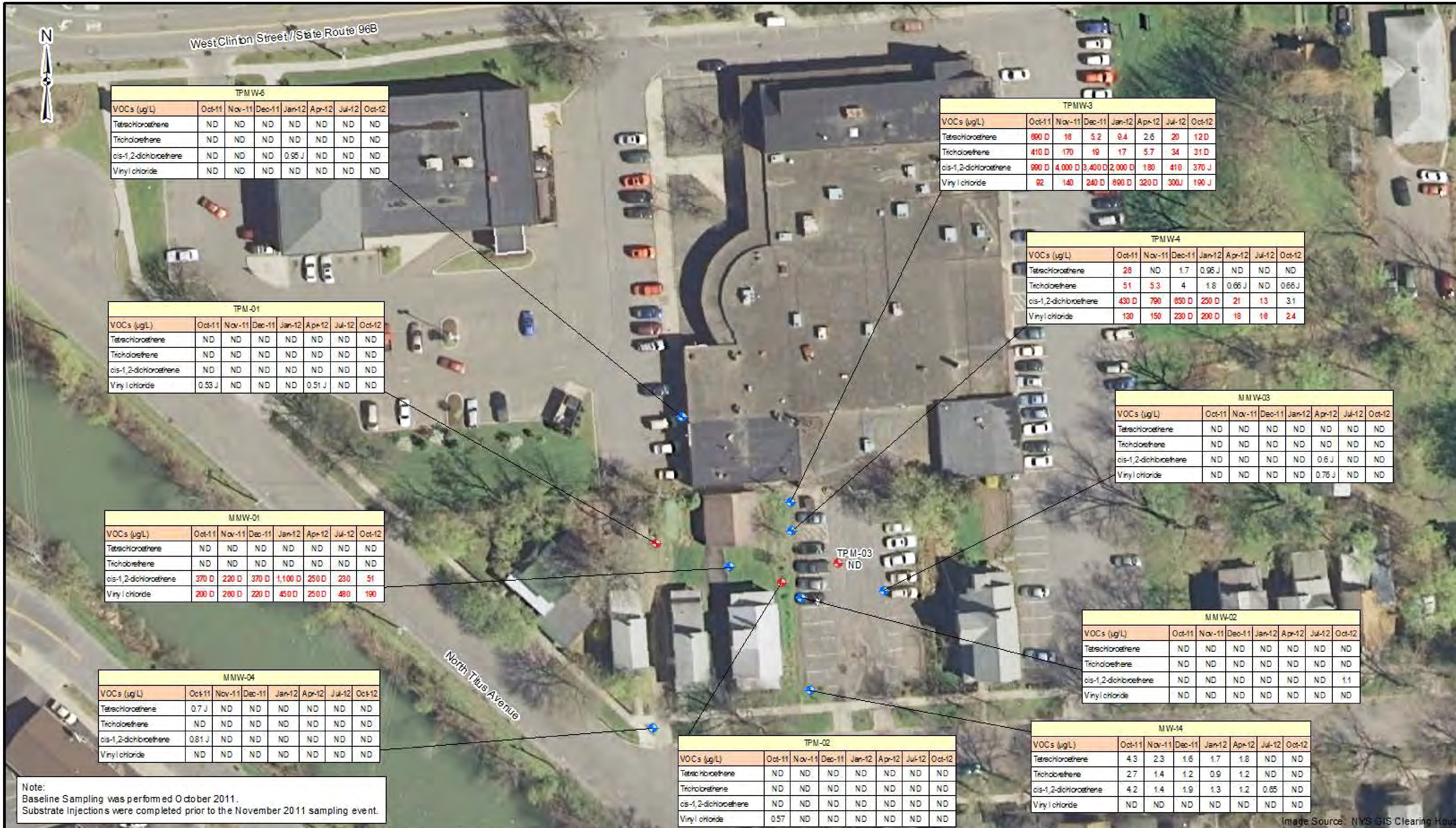
1 inch = 30 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007

CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
ITHACA, NEW YORK

FIGURE 8
Remedial Treatment Area
and Substrate Injection Points

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | SEPTEMBER 2013 | 14907.04 | GIS/PROJECTS/ 1490704_FIG8.MXD |




| TPMW-5 | | | | | | | |
|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | 0.95 J | ND | ND | ND |
| Vinyl chloride | ND | ND | ND | ND | ND | ND | ND |

| TPMW-3 | | | | | | | |
|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 |
| Tetrachloroethene | 690 D | 16 | 5.2 | 9.4 | 2.6 | 20 | 12 D |
| Trichloroethene | 410 D | 170 | 19 | 17 | 5.7 | 34 | 31 D |
| cis-1,2-dichloroethene | 990 D | 4,000 D | 3,400 D | 2,000 D | 180 | 410 | 370 J |
| Vinyl chloride | 92 | 140 | 240 D | 690 D | 320 D | 300J | 190 J |

| TPMW-4 | | | | | | | |
|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 |
| Tetrachloroethene | 28 | ND | 1.7 | 0.96 J | ND | ND | ND |
| Trichloroethene | 51 | 5.3 | 4 | 1.8 | 0.66 J | ND | 0.66 J |
| cis-1,2-dichloroethene | 430 D | 790 | 650 D | 250 D | 21 | 13 | 3.1 |
| Vinyl chloride | 130 | 150 | 230 D | 200 D | 18 | 16 | 2.4 |

| TPM-01 | | | | | | | |
|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | ND | ND | ND | ND |
| Vinyl chloride | 0.53 J | ND | ND | ND | 0.51 J | ND | ND |

| MMW-03 | | | | | | | |
|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | ND | 0.6 J | ND | ND |
| Vinyl chloride | ND | ND | ND | ND | 0.76 J | ND | ND |

| MMW-01 | | | | | | | |
|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | 370 D | 220 D | 370 D | 1,100 D | 250 D | 230 | 51 |
| Vinyl chloride | 200 D | 260 D | 220 D | 450 D | 250 D | 480 | 190 |

| MMW-02 | | | | | | | |
|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | ND | ND | ND | 1.1 |
| Vinyl chloride | ND | ND | ND | ND | ND | ND | ND |

| MMW-04 | | | | | | | |
|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 |
| Tetrachloroethene | 0.7 J | ND | ND | ND | ND | ND | ND |
| Trichloroethene | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | 0.81 J | ND | ND | ND | ND | ND | ND |
| Vinyl chloride | ND | ND | ND | ND | ND | ND | ND |

| TPM-02 | | | | | | | |
|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 |
| Tetrachloroethene | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-dichloroethene | ND | ND | ND | ND | ND | ND | ND |
| Vinyl chloride | 0.57 | ND | ND | ND | ND | ND | ND |

| MW-14 | | | | | | | |
|---|---|---|---|---|---|---|---|
| VOCs (µg/L) | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Apr-12 | Jul-12 | Oct-12 |
| Tetrachloroethene | 4.3 | 2.3 | 1.6 | 1.7 | 1.8 | ND | ND |
| Trichloroethene | 2.7 | 1.4 | 1.2 | 0.9 | 1.2 | ND | ND |
| cis-1,2-dichloroethene | 4.2 | 1.4 | 1.9 | 1.3 | 1.2 | 0.65 | ND |
| Vinyl chloride | ND | ND | ND | ND | ND | ND | ND |

Note:
Baseline Sampling was performed October 2011.
Substrate Injections were completed prior to the November 2011 sampling event.

CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
ITHACA, NEW YORK

FIGURE 9
Chlorinated Volatile Organic Compounds Detected in Groundwater Samples
October 2011 - October 2012

Feet
0 25 50 100
1 inch = 50 feet

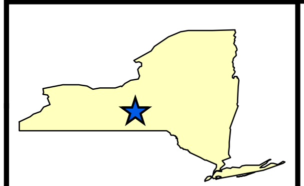
| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | PROJECT NO: | DATE: | SCALE: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | DCC | CJS | RSC | 14907.04 | SEPTEMBER 2013 | AS SHOWN | GIS/PROJECTS/ 149704_FIG9.MXD |

**Legend**

Groundwater Monitoring Well
Temporary Monitoring Well

| | |
|---|---|
| VOCs | Volatile Organic Compounds. |
| µg/L | Micrograms per Liter (parts per billion) |
| ND | Not Detected. |
| NS | Not Sampled. |
| J | Value is an estimate. |
| D | Value is the result of a dilution. |

Values in RED indicate concentration in exceedance of NYSDEC Ambient Water Quality Standards.

**Legend**

- Groundwater Monitoring Well
- Temporary Monitoring Point
- Property Boundary

Feet: 0, 60, 120

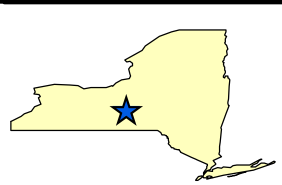
1 inch = 60 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007

CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
ITHACA, NEW YORK

FIGURE 10
Groundwater Monitoring
Well Network

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | SEPTEMBER 2013 | 14907.04 | GIS/PROJECTS/ 1490704_FIG10.MXD |

**Legend**

- Dry Cleaners
- Residence
- Utility Building
- Indoor Air Sample Location
- Areas of Soil Vapor Concern
- Tax Parcel Boundary

0 50 100 Feet

1 inch = 60 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color -2007; Property Parcels: Tompkins County 2010

CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
ITHACA, NEW YORK

FIGURE 11
Areas of Soil Vapor Intrusion Concern

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | SEPTEMBER 2013 | 14907.04 | GIS/PROJECTS/ 1490704_FIG11.MXD |

TABLE 1 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES - OCTOBER 2011 (BASELINE)

| Parameters List EPA Method 8260B | MW ID | TPMW-3 | | TPMW-4 | | TPMW-6 | | TPM-01 | | TPM-02 | | TPM-03 | | MMW-01 | | NYSDEC AWQS (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lab ID | K2097-07/DL | | K2097-06/DL | | K2097-11 | | K2097-13 | | K2097-04 | | K2097-05 | | K2097-12/DL | | |
| | Screened Interval | 6 - 16 ft bgs | | 6 - 16 ft bgs | | 6 - 16 ft bgs | | 18 - 28 ft bgs | | 18 - 28 ft bgs | | 14.5 - 24.5 ft bgs | | 10 - 20 ft bgs | | |
| | Sample Type | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | |
| | Sample Date | 10/20/2011 | | 10/20/2011 | | 10/21/2011 | | 10/21/2011 | | 10/20/2011 | | 10/20/2011 | | 10/21/2011 | | |
| Acetone | (µg/L) | (<2.2) | R | (<2.2) | R | 7.8 | R | 7.0 | R | (<2.2) | R | 6.1 | R | 5.8 | R | 50 (g) |
| 2- Butanone | (µg/L) | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | U | (<2.1) | R | (<2.1) | R | 50 (g) |
| Carbon disulfide | (µg/L) | (<0.34) | U | (<0.34) | U | (<0.34) | U | (<0.34) | U | 1.7 | | (<0.34) | U | (<0.34) | U | --- |
| 1,1- Dichloroethene | (µg/L) | 3.2 | | 2.1 | | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | 0.8 | J | 5 (s) |
| *cis* -1,2- Dichloroethene | (µg/L) | **990** | **D** | **430** | **D** | (<0.48) | U | (<0.48) | U | (<0.48) | U | (<0.48) | U | **370** | **D** | 5 (s) |
| *trans* -1,2- Dichloroethene | (µg/L) | **12** | | 4.7 | | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | 1.6 | | 5 (s) |
| Tetrachloroethene | (µg/L) | **690** | **D** | **26** | | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | 5 (s) |
| Trichloroethene | (µg/L) | **410** | **D** | **51** | | (<0.36) | U | (<0.36) | U | (<0.36) | U | (<0.36) | U | 0.81 | J | 5 (s) |
| Vinyl chloride | (µg/L) | **92** | | **130** | | (<0.50) | U | 0.53 | J | 0.57 | J | (<0.50) | U | **200** | **D** | 2 (s) |

| Parameters List EPA Method 8260B | MW ID | MMW-02 | | MMW-03 | | MMW-04 | | MW-14 | | DUP-01[(a)] | | TRIP BLANK | | TRIP BLANK | | NYSDEC AWQS (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lab ID | K2097-02 | | K2097-03 | | K2097-10 | | K2097-01 | | K2097-08 | | K2097-09 | | K2097-14 | | |
| | Screened Interval | 10 - 20 ft bgs | | 10 - 20 ft bgs | | 20 - 30 ft bgs | | 5 - 15 ft bgs | | 6 - 16 ft bgs | | NA | | NA | | |
| | Sample Type | Groundwater | | Groundwater | | Groundwater | | Groundwater | | QA/QC | | QA/QC | | QA/QC | | |
| | Sample Date | 10/20/2011 | | 10/20/2011 | | 10/20/2011 | | 10/20/2011 | | 10/20/2011 | | 10/20/2011 | | 10/21/2011 | | |
| Acetone | (µg/L) | (<2.2) | R | (<2.2) | R | 11 | R | 7.2 | R | (<2.2) | R | 6.5 | J | 5.9 | J | 50 (g) |
| 2- Butanone | (µg/L) | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | R | --- |
| Carbon disulfide | (µg/L) | 0.69 | J | (<0.34) | U | (<0.34) | U | (<0.34) | U | (<0.34) | U | (<0.34) | U | (<0.34) | U | --- |
| 1,1- Dichloroethene | (µg/L) | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | 5 (s) |
| *cis* -1,2- Dichloroethene | (µg/L) | 0.71 | J | (<0.48) | U | 0.81 | J | 4.2 | | 0.7 | J | (<0.48) | U | (<0.48) | U | 5 (s) |
| *trans* -1,2- Dichloroethene | (µg/L) | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | 5 (s) |
| Tetrachloroethene | (µg/L) | (<0.65) | U | (<0.65) | U | 0.71 | J | 4.3 | | (<0.65) | U | (<0.65) | U | (<0.65) | U | 5 (s) |
| Trichloroethene | (µg/L) | (<0.36) | U | (<0.36) | U | (<0.36) | U | 2.7 | | (<0.36) | U | (<0.36) | U | (<0.36) | U | 5 (s) |
| Vinyl chloride | (µg/L) | (<0.50) | UJ | (<0.50) | U | (<0.50) | U | (<0.50) | U | (<0.50) | U | (<0.50) | U | (<0.50) | U | 2 (s) |

(a) DUP-01 sample was collected at TPMW-4

NOTE:

| | |
|---|---|
| EPA | = U.S. Environmental Protection Agency |
| ID | = Identification |
| bgs | = Below ground surface |
| NYSDEC | = New York State Department of Environmental Conservation |
| AWQS | = Ambient Water Quality Standard |
| µg/L | = Micrograms per liter |
| R | = Sample result is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified |
| (g) | = NYSDEC Ambient Water Quality Standards guidance value |
| U | = Analyte was analyzed for, but not detected above the laboratory reporting limit |
| --- | = No guidance value or standard. |
| J | = Analyte detected below the practical quantification limit (PQL) |
| (s) | = NYSDEC Ambient Water Quality Standards standard value |
| D | = Indicates the compound concentration is the result of a dilution |
| NA | = Not Applicable |
| QA/QC | = Quality assurance/quality control |
| UJ | = Analyte was not detected above the sample reporting limit; and the reporting limit is approximate |

Analytical data results provided by Spectrum Analytical, Inc. Data validation performed by Environmental Data Services, Inc.

**Bold and shaded values indicate that the analyte was detected greater than the NYSDEC Ambient Water Quality Standards**

TABLE 2 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES - OCTOBER/NOVEMEBER 2012

| Parameters List EPA Method 8260B | MW ID | TPMW-3 | | TPMW-4 | | TPMW-6 | | TPM-01 | | TPM-02 | | TPM-03 | | MMW-01 | | NYSDEC AWQS (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lab ID | L2322-08/DL | | L2322-06 | | L2322-09 | | L2322-10 | | L2322-11 | | L2322-12 | | L2322-05 | | |
| | Screened Interval | 6 - 16 ft bgs | | 6 - 16 ft bgs | | 6 - 16 ft bgs | | 18 - 28 ft bgs | | 18 - 28 ft bgs | | 14.5 - 24.5 ft bgs | | 10 - 20 ft bgs | | |
| | Sample Type | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | Groundwater | | |
| | Sample Date | 11/1/2012 | | 11/1/2012 | | 11/1/2012 | | 11/1/2012 | | 11/1/2012 | | 11/1/2012 | | 11/1/2012 | | |
| Acetone | (µg/L) | 27 | J | 21 | | (<2.2) | R | (<2.2) | R | (<2.2) | R | (<2.2) | R | (<2.2) | R | 50 (g) |
| 2- Butanone | (µg/L) | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | R | 88 | J | (<2.1) | R | (<2.1) | R | --- |
| 1,2- Dichloroethane | (µg/L) | (<0.41) | U | (<0.41) | U | (<0.41) | U | (<0.41) | U | (<0.41) | U | (<0.41) | U | (<0.41) | U | 0.6 (s) |
| 1,1- Dichloroethene | (µg/L) | 3.3 | DJ | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | 5 (s) |
| *cis* -1,2- Dichloroethene | (µg/L) | **370** | **J** | 3.1 | | (<0.48) | U | (<0.48) | U | (<0.48) | U | (<0.48) | U | **51** | | 5 (s) |
| *trans* -1,2- Dichloroethene | (µg/L) | **7.9** | **D** | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | 5 (s) |
| Methylene Chloride | (µg/L) | (<0.41) | UJ | (<0.41) | U | (<0.41) | UJ | (<0.41) | UJ | (<0.41) | UJ | (<0.41) | UJ | (<0.41) | UJ | 5 (s) |
| Tetrachloroethene | (µg/L) | **12** | **D** | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | 5 (s) |
| Trichloroethene | (µg/L) | **31** | **D** | (<0.36) | U | (<0.36) | U | (<0.36) | U | (<0.36) | U | (<0.36) | U | (<0.36) | U | 5 (s) |
| 1,2,3- Trichloropropane | (µg/L) | (<0.82) | U | (<0.82) | U | (<0.82) | U | (<0.82) | U | (<0.82) | U | (<0.82) | U | (<0.82) | U | 0.04 (s) |
| Vinyl chloride | (µg/L) | **190** | **J** | **2.4** | | (<0.50) | U | (<0.50) | U | (<0.50) | U | (<0.50) | U | **190** | | 2 (s) |

| Parameters List EPA Method 8260B | MW ID | MMW-02 | | MMW-03 | | MMW-04 | | MW-14 | | DUPLICATE[(a)] | | TRIP BLANK | | TRIP BLANK 2 | | NYSDEC AWQS (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lab ID | L2322-04 | | L2322-01 | | L2322-02 | | L2322-03 | | L2322-07 | | L2322-14 | | L2322-13 | | |
| | Screened Interval | 10 - 20 ft bgs | | 10 - 20 ft bgs | | 10 - 20 ft bgs | | 20 - 30 ft bgs | | 6 - 16 ft bgs | | NA | | NA | | |
| | Sample Type | Groundwater | | Groundwater | | Groundwater | | Groundwater | | QA/QC | | QA/QC | | QA/QC | | |
| | Sample Date | 11/1/2012 | | 10/31/2012 | | 10/31/2012 | | 11/1/2012 | | 11/1/2012 | | 10/31/2012 | | 11/1/2012 | | |
| Acetone | (µg/L) | (<2.2) | R | (<2.2) | R | 5.0 | J | (<2.2) | R | (<2.2) | R | (<2.2) | R | (<2.2) | R | 50 (g) |
| 2- Butanone | (µg/L) | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | R | (<2.1) | R | --- |
| 1,2- Dichloroethane | (µg/L) | (<0.41) | U | (<0.41) | U | (<0.41) | U | (<0.41) | U | (<0.41) | U | (<0.41) | U | (<0.41) | U | 0.6 (s) |
| 1,1- Dichloroethene | (µg/L) | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | (<0.39) | U | 5 (s) |
| *cis* -1,2- Dichloroethene | (µg/L) | 1.1 | | (<0.48) | U | (<0.48) | U | (<0.48) | U | 4.3 | | (<0.48) | U | (<0.48) | U | 5 (s) |
| *trans* -1,2- Dichloroethene | (µg/L) | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | 5 (s) |
| Methylene Chloride | (µg/L) | (<0.41) | UJ | (<0.41) | UJ | (<0.41) | UJ | 1.1 | UJ | (<0.41) | UJ | 1.2 | | 1.1 | J | 5 (s) |
| Tetrachloroethene | (µg/L) | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | (<0.65) | U | 5 (s) |
| Trichloroethene | (µg/L) | (<0.36) | U | (<0.36) | U | (<0.36) | U | (<0.36) | U | (<0.36) | U | (<0.36) | U | (<0.36) | U | 5 (s) |
| 1,2,3- Trichloropropane | (µg/L) | (<0.82) | U | (<0.82) | U | (<0.82) | U | (<0.82) | U | (<0.82) | U | (<0.82) | U | (<0.82) | U | 0.04 (s) |
| Vinyl chloride | (µg/L) | (<0.50) | U | (<0.50) | U | (<0.50) | U | (<0.50) | U | **3.3** | | (<0.50) | U | (<0.50) | U | 2 (s) |

(a) DUPLICATE sample was collected at TPMW-4.

NOTE:
- EPA = U.S. Environmental Protection Agency
- ID = Identification
- bgs = Below ground surface
- NYSDEC = New York State Department of Environmental Conservation
- AWQS = Ambient Water Quality Standard
- µg/L = Micrograms per liter
- J = Analyte detected below the practical quantification limit (PQL)
- R = Sample result is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified
- (g) = NYSDEC Ambient Water Quality Standards guidance value
- --- = No guidance value or standard.
- U = Analyte was analyzed for, but not detected above the laboratory reporting limit
- (s) = NYSDEC Ambient Water Quality Standards standard value
- D = Indicates the compound concentration is the result of a dilution
- UJ = Analyte was not detected above the sample reporting limit; and the reporting limit is approximate
- NA = Not Applicable
- QA/QC = Quality assurance/quality control

Analytical data results provided by Spectrum Analytical, Inc. Data validation performed by Environmental Data Services, Inc.

**Bold and shaded values indicate that the analyte was detected greater than the NYSDEC Ambient Water Quality Standards**

# Appendix A

# Environmental Easement

***NOTE: The Environmental Easement will be included once filed with Tompkins County.***

# Appendix B

# Metes and Bounds

**METES and BOUNDS Description**

ALL that certain plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the City of Ithaca, Tompkins County, and State of New York being more particularly bounded and described as follows:

# Appendix C

# Mitigation System Installation Record

# Mitigation System Installation Record

☒ Structure was sampled previously

## System Information

System ID: 

Owner Name: Clinton West Ltd. / Tenant: Glenn Porter

System Address: 609 West Clinton Street

City: Ithaca, NY  Zip: 14850

Site No: 755015

Site Name: DEC Ithaca - Clinton W. Plaza

☐ Owner Occupied

Telephone: 607-277-2210

Alt. Telephone: 

## Contractor Information

Installer Name: Kevin Leo

Company: Groundwater & Environmental...

Telephone: 1-800-220-3069 x 4056

## Building Conditions

Building Type: General Commercial

Slab Integrity: ○ Poor ○ Average ● Good ○ Excellent

Slab Penetrations: ☒ Sump ☐ Floor drain ☐ Perimeter drain ☐ Other

Describe:

A poured concrete casting lint trap located in the south-west corner of the building. It measures 4 feet by 6 feet and 44 inches deep. The seam was sealed with a concrete caulk.

Observed Water: ● Dry ○ Damp ○ Sump only ○ Standing

Describe:

## System Installation

Installation Type: Sub-Slab Depressurization (Active)

Date Installed: Feb 9, 2011

Slab Thickess (inches): 3 to 5 in.

Subslab Material: Gravel

Subslab Moisture: Damp

Number of Suction Points: 1

Number of Fans Installed: 1

| | ☒ Fan #1 Operating | ☐ Fan #2 Operating | ☐ Fan #3 Operating |
|---|---|---|---|
| Fan Model No(s): | RP-265 | | |
| Fan Serial No(s): | 108398 | | |
| Final U-Tube Levels: | 1.9"WC | | |

Additional Mitigation Elements (check all that apply):

☐ Drainjer ☐ Membrane ☒ Sealed cracks ☐ New floor ☐ Rain cap ☐ Other

Comments:

**Communication Testing**

Test Method: Micromanometer Meter Type/Manufacturer: Fluke 922

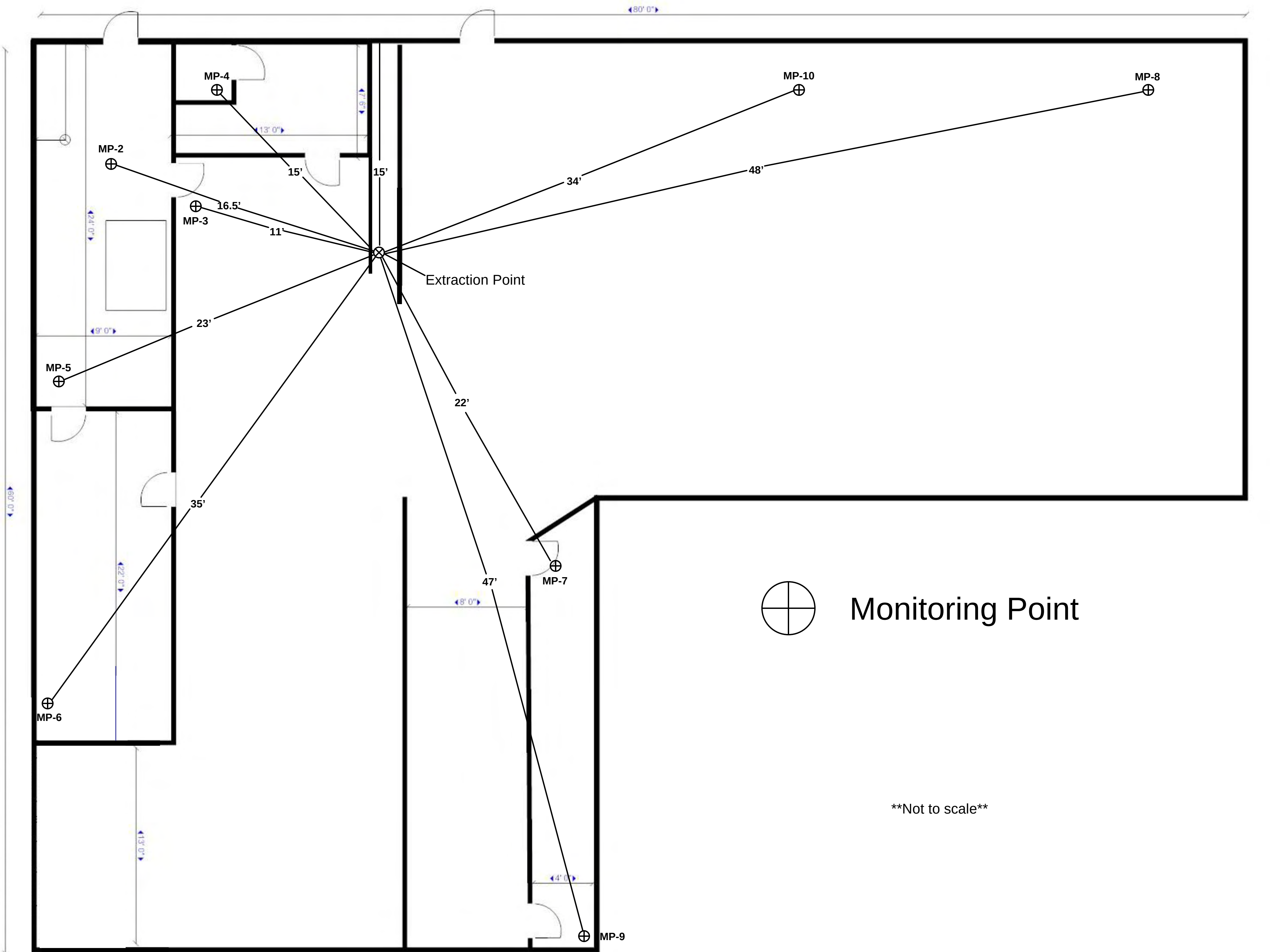
| Location | Reading/Result | Dist. From Suction Point (ft) | Passed? |
|---|---|---|---|
| | SEE ATTACHED | | ☐ |
| | | | ☐ |
| | | | ☐ |
| | | | ☐ |
| | | | ☐ |

| NORTH | **System Sketch**<br>(indicate notable features, location of extraction points, and communication test holes) |
|---|---|
| | SEE ATTACHED |

GES Groundwater & Environmental Services, Inc.

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

| Monitoring Point | Pressure ( " WC) | Distance From Extractioı |
|---|---|---|
| MP-2 | -0.076 | 16.5' |
| MP-3 | -0.133 | 11.0' |
| MP-4 | -0.092 | 15.0' |
| MP-5 | -0.050 | 23.0' |
| MP-6 | -0.017 | 35.0' |
| MP-7 | -0.740 | 22.0' |
| MP-8 | 0.0002 | 48.0' |
| MP-9 | -0.510 | 47.0' |
| MP-10 | -0.003 | 34.0' |



80' 0"
60' 0"
13' 0"
7' 6"
24' 0"
9' 0"
22' 0"
13' 0"
8' 0"
4' 0"
MP-2
MP-3
MP-4
MP-5
MP-6
MP-7
MP-8
MP-9
MP-10
15'
15'
16.5'
11'
34'
48'
23'
22'
35'
47'
Extraction Point
Monitoring Point
**Not to scale**

# Appendix D

# Excavation Work Plan

# APPENDIX D – EXCAVATION WORK PLAN

## D-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the Department. Currently, this notification will be made to:

David Chiusano, Project Manager
Site Remediation Engineer
New York State Department of Conservation
625 Broadway 12th Floor
Albany, New York 12233-7017
Email: djchiusa@gw.dec.state.ny.us

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control.

- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling.

- A schedule for the work, detailing the start and completion of all intrusive work.

- A summary of the applicable components of this Excavation Work Plan (EWP).

- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120.

- A copy of the Contractor’s Health and Safety Plan (HASP), in electronic format, if it differs from the HASP Addendum provided as Appendix F of the Site Management Plan (SMP).

- Identification of disposal facilities for potential waste streams.

- Identification of sources of any anticipated backfill, along with all required chemical testing results.

## D-2 SOIL SCREENING METHODS

Prior to intrusive soil screening, on-site utilities shall be field located. Soil screening is to take place prior to any excavation or disposal of soil from within the site boundaries. Soil boring methods are recommended for soil screening at the site, due to asphalt/porous pavement cover; however, depending on the extent of the planned excavation, test pit methods may be used, following saw-cutting of asphalt. Soil samples shall be collected at a minimum of 1 per 500 $yd^3$ of planned soil excavation, and analyzed for volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260B or per the disposal facility's requirements, if applicable.

Visual, olfactory, and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the Certificate of Completion.

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

## D-3 STOCKPILE METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters, and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the New York State Department of Environmental Conservation (NYSDEC).

## D-4 MATERIALS EXCAVATION AND LOAD OUT

Asphalt, porous pavement, or concrete shall be saw-cut, removed, and stockpiled prior to excavation of underlying soil. Excavated soil shall be stockpiled separate from asphalt or concrete debris prior to load out. Excavations left open overnight or longer shall be surrounded by temporary construction fencing. A qualified environmental professional or person under their supervision will oversee all invasive work, and the excavation and load-out of all excavated material. The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this EWP.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation requirements (and all other applicable transportation requirements).

If site conditions during excavation activities require that trucks drive over bare soil, a truck wash will be operated on-site. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete. Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

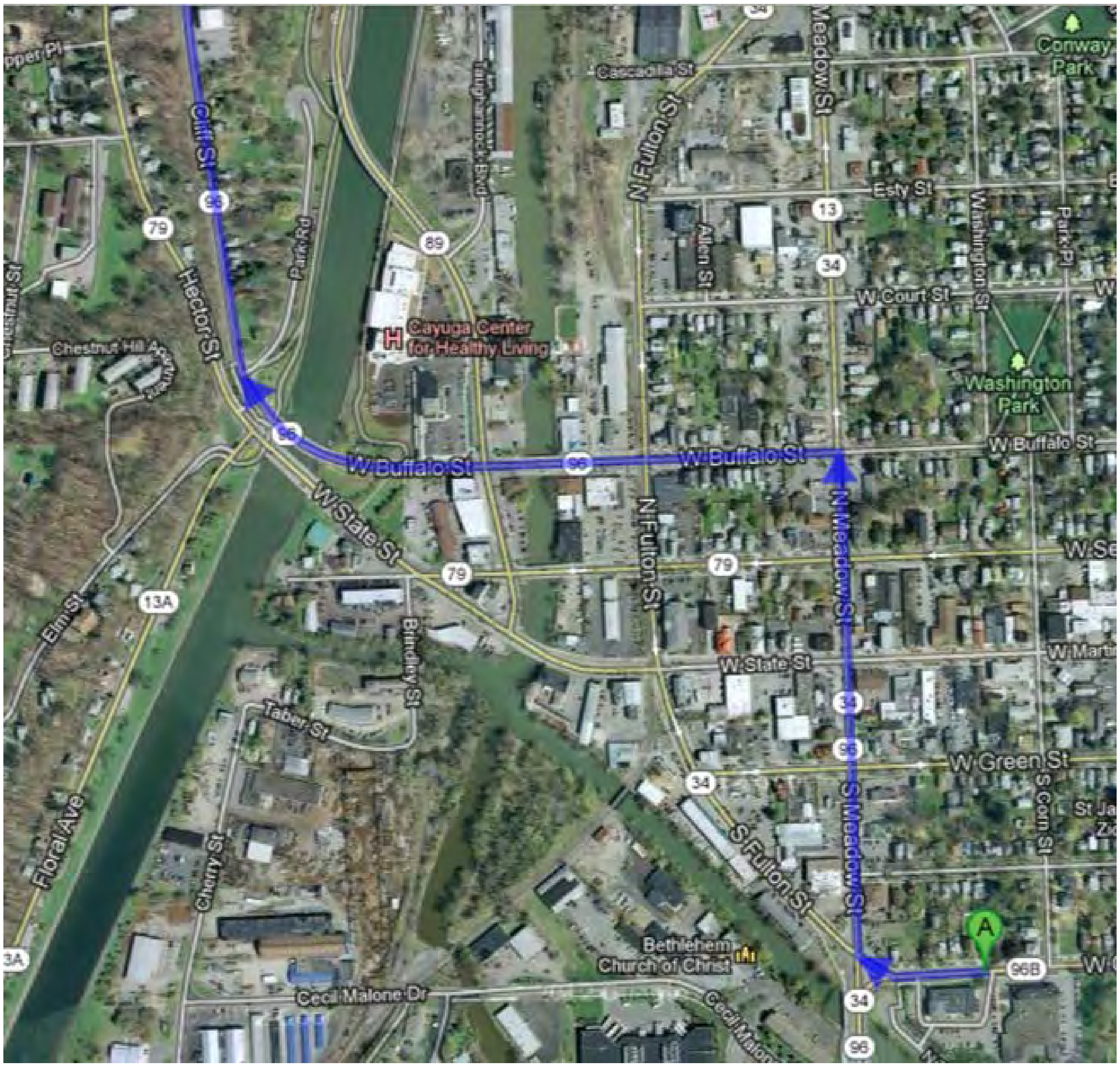
## D-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks will be washed prior to leaving the site if necessary. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Trucks leaving the site shall head west on West Clinton Ave toward South Meadow Street and turn right onto South Meadow Street, then turn left onto West Buffalo Avenue and continue onto NY State Route 96 before continuing to their final destination.




Map courtesy of maps.google.com

All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development. Trucks will be prohibited from stopping and idling in the neighborhood outside the project site. Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

## D-6 MATERIALS DISPOSAL OFF-SITE

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

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

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted Soil Cleanup Objectives is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

## D-7 MATERIALS REUSE ON-SITE

Analytical results from soil screening activities which are completed in accordance with Section D-2 of this EWP will be used to determine if reuse is appropriate. Chemical criteria for on-site reuse of material have been approved by NYSDEC and are listed in Table D-1. The qualified environmental professional will ensure that procedures defined for materials reuse in the SMP are followed and that unacceptable material does not remain on-site. Soil slated for reuse is to be stockpiled distinctly separate from soil to be disposed off-site.

On-site material, including historic fill and contaminated soil, that is acceptable for re-use on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

## D-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported, and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge, and development fluids will not be recharged back to the land surface or subsurface of the site, but will be managed off-site.

Discharge of water generated during large-scale construction activities to surface waters (i.e., a local pond, stream or river) will be performed under a State Pollutant Discharge Elimination System permit.

## D-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the Contract Documents. The demarcation layer, consisting of non-woven geotextile or equivalent material will be replaced to provide a visual reference to the top of the 'Remaining Contamination Zone', the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the 'Remaining Contamination Zone'. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the SMP.

## D-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site. The source of backfill supply shall be approved by the NYSDEC. The facility shall be operating under a valid NYSDEC Mining Permit or other applicable regulatory authority for the duration of the site work.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site. Material shall not contain man-made fills, trash, refuse, backfills from previous construction, root or other organic matter, frozen material, or any other deleterious materials. Material shall not contain free liquids when delivered, or placed and compacted.

All materials shall be sampled for target compound list (TCL) VOCs by EPA Method 8260, TCL semivolatile organic compounds by EPA Method 8270, polychlorinated biphenyls by EPA Method 8082, and target analyte list Metals by EPA Method 6010/7000 series. All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.8(d) included as Table D-1. Soils that meet 'exempt' fill requirements under 6NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight-fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

## D-11 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

## D-12 CONTINGENCY PLAN

If underground storage tanks (USTs) or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

All UST removal work shall be performed in accordance with Section 5.5 of the NYSDEC DER-10: Technical Guidance for Site Investigation and Remediation (May 2010). All UST removal work shall also comply with applicable local, county, state, and federal regulations. Ten days’ notice must be provided to the NYSDEC DER prior to the closure of a regulated UST.

The contractor shall monitor the site with an explosimeter and an organic vapor detector to indicate the presence and concentration of flammable vapors and gas. The atmosphere in the bottom, middle, and top of the excavation shall be monitored with the explosimeter regularly until the tank is removed from the site. If unsafe working conditions exist at any point during removal, work shall be suspended immediately until it is determined that conditions are acceptable for resuming work.

During excavation, extreme caution shall be exercised in order to maintain the integrity of the UST. The contractor shall provide shoring and bracing where necessary to support existing structures. Excavated material shall be placed in a separate stockpile, sampled, and submitted for acceptance by an approved disposal facility.

Removal of each tank shall consist of opening the tank, cleaning the interior, removal of the tank from the site, and disposal. This includes removal and disposal of all service lines associated with each UST back to their source. Disposal shall be in strict accordance with NYSDEC and applicable local, county, state, and federal regulations. The contractor shall remove all liquid and sludge from the tank using explosion proof pumps. All equipment must be bonded to the tank and the tank must be grounded to a separate ground when purging the tank with compressed air or inert gas under pressure. The contractor shall avoid leakage from the tanks onto the surrounding soil by properly pumping the contents of the tanks into permitted transport vehicles. Transport vehicles for tank contents shall not remain on-site for more than 24 hours. The removed contents shall be disposed of according to appropriate federal, state, and local laws. If leakage or spillage occurs, the contractor shall immediately notify the NYSDEC Spill Case Hotline, and the Tompkins County health department within 15 minutes.

Sampling will be performed on product, sediment, surrounding soils, etc., as necessary, to determine the nature of the material and proper disposal method. Chemical analysis will be performed for full a full list of analytes (target analyte list metals, TCL volatiles and semivolatiles, and TCL pesticides and polychlorinated biphenyls), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

## D-13 COMMUNITY AIR MONITORING PLAN

Community air monitoring will be implemented to monitor for VOC and particulate levels at the perimeter of the work area in accordance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP). Total VOCs will be monitored continuously at the downwind perimeter of the work area daily using approved instrumentation. If total VOC levels exceed 5 parts per million above background at the work area perimeter, work activities will be halted and monitoring continued. All readings will be recorded and available to the NYSDEC and NYSDOH personnel to review.

Because the site is in a moderately populated area, with active commercial buildings adjacent to the site, a fixed monitoring station shall be located at the site perimeter adjacent to the building entrance, regardless of wind direction.

Exceedances of action levels listed in the Community Air Monitoring Plan will be reported to NYSDEC and NYSDOH Project Managers.

## D-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used as necessary will include odor masking agents. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

## D-15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.

- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.

- Gravel will be used on roadways to provide a clean and dust-free road surface.

- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

## D-16 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work. A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

# TABLE D-1 CRITERIA FOR IMPORTED SOILS

| Constituent | | NYCRR Part 375-6.8 (d) Unrestricted Use | Units |
|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS - SOIL** | | | |
| 1,1,1-Trichlorethane | | 680 | µg/kg |
| 1,1-Dichloroethane | | 270 | µg/kg |
| 1,1-Dichloroethene | | 330 | µg/kg |
| 1,2,4-Trimethylbenzene | | 3,600 | µg/kg |
| 1,2-Dichlorobenzene | | 1,100 | µg/kg |
| 1,2-Dichloroethane | | 20 | µg/kg |
| 1,3,5-Trimethylbenzene | | 8,400 | µg/kg |
| 1,3-Dichlorobenzene | | 2,400 | µg/kg |
| 1,4-Dichlorobenzene | | 1,800 | µg/kg |
| Acetone | | 50 | µg/kg |
| Benzene | | 60 | µg/kg |
| Carbon tetrachloride | | 760 | µg/kg |
| Chlorobenzene | | 1,100 | µg/kg |
| Chloroform | | 370 | µg/kg |
| cis-1,2-Dichloroethylene | | 250 | µg/kg |
| Ethylbenzene | | 1,000 | µg/kg |
| m,p-Xylene | | 260(a) | µg/kg |
| Methyl ethyl ketone | | 120 | µg/kg |
| Methylene chloride | | 50 | µg/kg |
| n-Butylbenzene | | 12,000 | µg/kg |
| n-Propylbenzene | | 3,900 | µg/kg |
| o-Xylene | | 260(a) | µg/kg |
| sec-Butylbenzene | | 11,000 | µg/kg |
| trans-Butylbenzene | | 5,900 | µg/kg |
| Tert-Butyl Methyl Ether | | 930 | µg/kg |
| Tetrachloroethylene | | 1,300 | µg/kg |
| Toluene | | 700 | µg/kg |
| trans-1,2-Dichloroethene | | 190 | µg/kg |
| Trichloroethylene | | 470 | µg/kg |
| Vinyl chloride | | 20 | µg/kg |

| INORGANICS (METALS) - SOIL | | |
|---|---|---|
| Arsenic | 13 | mg/Kg |
| Barium | 350 | mg/Kg |
| Beryllium | 7.2 | mg/Kg |
| Cadmium | 2.5 | mg/Kg |
| Chromium (Total) | 1[(a)], 30[(b)] | mg/Kg |
| Copper | 50 | mg/Kg |
| Lead | 63 | mg/Kg |
| Manganese | 1,600 | mg/Kg |
| Mercury | 0.18 | mg/Kg |
| Nickel | 30 | mg/Kg |
| Selenium | 3.9 | mg/Kg |
| Silver | 2 | mg/Kg |
| Zinc | 109 | mg/Kg |
| (a) Value is for hexavalent Chromium but is considered to be met if the analysis for total Chromium is below the specific SCO.<br>(b) Value is for trivalent Chromium but is considered to be met if the analysis for total Chromium is below the specific SCO. | | |
| **POLYCHLORINATED BIPHENYLS/PESTICIDES** | | |
| 2,4,5-tp Acid (Silvex) | 3.80 | mg/Kg |
| 4,4'-DDE | 0.0033 | mg/Kg |
| 4,4'-DDT | 0.0033 | mg/Kg |
| 4,4'-DDD | 0.0033 | mg/Kg |
| Aldrin | 0.005 | mg/Kg |
| alpha-BHC | 0.02 | mg/Kg |
| beta-BHC | 0.036 | mg/Kg |
| Chlordane (alpha) | 0.094 | mg/Kg |
| delta-BHC | 0.04 | mg/Kg |
| Dibenzofuran | 7 | mg/Kg |
| Dieldrin | 0.005 | mg/Kg |
| Endosulfan I | 2.4 | mg/Kg |
| Endosulfan II | 2.4 | mg/Kg |
| Endosulfan sulfate | 2.4 | mg/Kg |
| Endrin | 0.014 | mg/Kg |
| Heptachlor | 0.042 | mg/Kg |
| Lindane | 0.1 | mg/Kg |
| Polychlorinated biphenyls | 0.1 | mg/Kg |

| SEMIVOLATILE ORGANIC COMPOUNDS - SOIL | | |
|---|---|---|
| Acenaphthene | 20 | mg/Kg |
| Acenaphthylene | 100 | mg/Kg |
| Anthracene | 100 | mg/Kg |
| Benz(a)anthracene | 1 | mg/Kg |
| Benzo(a)pyrene | 1 | mg/Kg |
| Benzo(b)fluoranthene | 1 | mg/Kg |
| Benzo(g,h,i)perylene | 100 | mg/Kg |
| Benzo(k)fluoranthene | 0.8 | mg/Kg |
| Chrysene | 1 | mg/Kg |
| Dibenz(a,h)anthracene | 0.33 | mg/Kg |
| Fluoranthene | 100 | mg/Kg |
| Fluorene | 30 | mg/Kg |
| Indeno(1,2,3-cd)pyrene | 0.5 | mg/Kg |
| m-Cresol | 0.33 | mg/Kg |
| Naphthalene | 12 | mg/Kg |
| o-Cresol | 0.33 | mg/Kg |
| p-Cresol | 0.33 | mg/Kg |
| Pentachlorophenol | 0.8 | mg/Kg |
| Phenanthrene | 100 | mg/Kg |
| Phenol | 0.33 | mg/Kg |
| Pyrene | 100 | mg/Kg |

# Appendix E

# SSDS Operation Management Plan

# CLINTON WEST PLAZA
## TOMPKINS COUNTY, NEW YORK

**On-Site Subslab Depressurization System Supplemental Site Management Plan**

## NYSDEC Site Number: 755015

**Prepared for:**
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A
625 Broadway
Albany, New York 12233-7017

**Prepared by:**
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**Revisions to Final Approved On-Site Subslab Depressurization System Supplemental Site Management Plan:**

| Revision # | Submitted Date | Summary of Revision | DEC Approval Date |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

**APRIL 2014**

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## LIST OF FIGURES

# LIST OF ACRONYMS

| | |
|---|---|
| bgs | Below ground surface |
| | |
| CVOC | Chlorinated volatile organic compound |
| | |
| DER | Division of Environmental Remediation |
| | |
| EA | EA Engineering, P.C. and its affiliate EA Science and Technology |
| EC | Engineering control |
| EPA | U.S. Environmental Protection Agency |
| | |
| HRC | Hydrogen release compound |
| | |
| GES | Groundwater Environmental Services, Inc. |
| | |
| IC | Institutional control |
| IRM | Interim remedial measure |
| | |
| LCS | LCS, Inc. |
| | |
| NYS | New York State |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOH | New York State Department of Health |
| | |
| PCE | Tetrachloroethene |
| PFE | Pressure field extension |
| | |
| QC | Quality control |
| | |
| RI | Remedial investigation |
| ROD | Record of Decision |
| | |
| SCG | Standards, criteria, and guidance |
| SMP | Site Management Plan |
| SSDS | Subslab depressurization system |
| | |
| TCE | Trichloroethene |
| | |
| $\mu g/m^3$ | Micrograms per cubic meter |
| | |
| VI | Vapor intrusion |
| VOC | Volatile organic compound |

# 1.0 INTRODUCTION AND DESCRIPTION OF ON-SITE SUBSLAB DEPRESSURIZATION SYSTEM SITE MANAGEMENT

## 1.1 INTRODUCTION

This document is for the operation and maintenance of the subslab depressurization system (SSDS) and is intended to be a standalone document that is subordinate to the Clinton West Plaza Site Management Plan (SMP) (EA 2013)[1]. The SMP is required as an element of the remedial program at Clinton West Plaza (hereinafter referred to as the "site") under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with the Record of Decision (ROD) (NYSDEC 2010a)[2]. The SSDS was installed in February 2011 as an interim remedial action.

### 1.1.1 General

EA Engineering, P.C., and its affiliate EA Science and Technology (EA) were tasked by the NYSDEC to manage and perform the remediation of a 2.49 acre property located at 609–625 West Clinton Street in the City of Ithaca, Tompkins County, New York (Figure 1). EA was required to investigate and remediate contaminated media at the site. A figure showing the site location and boundaries of this 2.49-acre site is provided as Figure 2. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement that is included in the site SMP as Appendixes A and B (EA 2013)[1].

After completion of the remedial work described in the Pilot Study Conceptual Design Report (EA 2011)[3], residual volatile organic compound (VOC) contamination was left in the subsurface at this site, which is hereafter referred to as 'remaining contamination." The SMP (EA 2013)[1] was prepared to manage remaining contamination at the site until the institutional control (IC) is extinguished in accordance with Environmental Conservation Law Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in NYS. The SMP was prepared by EA in accordance with the requirements in NYSDEC Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation (NYSDEC 2010b)[4], and the guidelines provided by NYSDEC. This Supplemental On-Site SSDS SMP provides background information, installation details, and operating instructions to maintain the SSDS as required under the ROD (NYSDEC 2010a)[2]; or until NYSDEC provides approval to terminate the SSDS.

---

[1] EA. 2013. Final SMP. Clinton West Plaza, Tompkins County, New York. September.
[2] NYSDEC. 2010a. ROD. Clinton West Plaza, Site Number 755015, City of Ithaca, New York. May.
[3] EA. 2011. Pilot Study Conceptual Design Report. Clinton West Plaza (755015) Ithaca, Tompkins County, New York. September.
[4] NYSDEC. 2010b. DER-10 Technical Guidance for Site Investigation and Remediation. May.

### 1.1.2 Purpose

The site contains contamination left after completion of the remedial action. Engineering controls (ECs) (i.e., the SSDS) have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. This Supplemental On-Site SSDS SMP specifies the methods necessary to ensure compliance with all ECs required by the Environmental Easement (EA 2013)[1] for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the Environmental Easement. This Supplemental On-Site SSDS SMP may only be revised with the approval of the NYSDEC.

This Supplemental On-Site SSDS SMP provides a detailed description of all procedures required to manage the On-Site SSDS to mitigate remaining contamination at the site, including: (1) operation and management of the SSDS; (2) performance of periodic inspections; and (3) defining criteria for termination of the SSDS.

It is important to note that:

- This Supplemental On-Site SSDS SMP is subordinate to the site SMP (EA 2013)[1] and failure to properly implement the SMP is a violation of the Environmental Easement.

- Failure to comply with this Supplemental On-Site SSDS SMP is also a violation of Environmental Conservation Law, 6 New York Code of Rules and Regulations Part 375 and, thereby, subject to applicable penalties.

### 1.1.3 Revisions

Revisions will be proposed in writing to the NYSDEC project manager. In accordance with the Environmental Easement (EA 2013)[1] for the site, the NYSDEC will provide notice of any approved changes to the SMP, append these notices to the site SMP that is retained in its files, and append this Supplemental On-Site SSDS SMP as required.

## 1.2 SITE BACKGROUND

### 1.2.1 Site Location and Description

The 2.49 acre site is currently commercially developed with an active 36,254 $ft^2$ shopping plaza that was constructed in 1970, which was recently sold and is owned by Ithaca West, LLC (Tax Map ID Number: 79-6-8.2). The site is surrounded by residential neighborhoods and a retail property (Figure 2). A laundromat, Clinton West Laundry, was located at 609 West Clinton Street within the Clinton West Plaza, Ithaca, New York, but is no longer operational and the space is currently vacant. A SSDS was installed in the former laundromat within the site building by the NYSDEC in February 2011; however, the current status of the SSDS is unknown as there is no access. Residential structures are located immediately southwest and east of the property. The site includes large parking areas paved with asphalt.

### 1.2.2 Site History

The Clinton West Plaza site was initially reported as a potential site with contamination after First Niagara Bank of Rochester, New York retained LCS, Inc. (LCS) of Buffalo, New York to conduct an Environmental Transaction Screening, Environmental Site Assessment Report in December 2005 (LCS 2006)[5]. The Environmental Site Assessment report concluded that a Phase II investigation was warranted to assess the environmental conditions on-site due to the former operational history of a dry cleaner at the site. LCS completed the Phase II subsurface investigation and supplemental subsurface investigations, and determined that soil and groundwater contamination associated with dry cleaning chemicals, notably tetrachloroethene (PCE), existed at the site. PCE is a solvent commonly used in the dry cleaning process. Based on the findings of the Phase II investigation, the site was listed on the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State as a Class 2 site (Site No. 755015).

### 1.2.3 Geologic Conditions

The site is located in the Appalachian Uplands Physiographic Province where local topographic features result from glacial and fluvial processes. The site is located 1.5 mi south of Cayuga Lake and is approximately 300 ft northeast of Six Mile Creek which flows northward to Cayuga Inlet and Lake. The site topography and surrounding area is relatively flat.

The overburden soil to approximate 20 ft below ground surface (bgs) consists of several distinct layers of alluvial deposits that consist of (in order from most shallow to deepest): topsoil, sand, and gravel; brown clay with fine sands; brown sand with trace silts; and a distinct gray clay unit. Additionally, a brown fine to medium sand was observed below the gray clay in the western area of the site and a peat layer was encountered at approximately 19 ft bgs in the southernmost portion of the site. Groundwater has been encountered on-site at depths ranging from approximately 2 to 5 ft bgs and has been estimated to generally flow south-southwest towards Six Mile Creek. Localized groundwater flows radially from the Clinton West Plaza.

A more detailed summary of the site geology and hydrogeology is included in Section 1.2.3 of the site SMP (EA 2013)[1].

[5] LCS. 2006. *Subsurface Soil and Groundwater Investigation and Supplemental Subsurface Soil and Groundwater Investigation.* West Clinton Plaza, 609-625 West Clinton Street, Ithaca, New York. April. May.

## 1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

The nature and extent of contamination at the site was documented in a Remedial Investigation (RI)/Feasibility Study Report prepared by Fagan Engineers (2009)[6]. A brief review of the results is included below and a more detailed summary is included in the site SMP (EA 2013)[1]:

- No on-site soil source for chlorinated volatile organic compounds (CVOCs) was identified or delineated during the RI.
- Groundwater concentrations of CVOCs have been reported exceeding site standards, criteria, and guidance (SCGs) dating back to 2006 (LCS)[6].
- Soil vapor intrusion (VI) sampling identified an exceedance of the New York State Department of Health (NYSDOH) Air Guideline for PCE within the current laundry facility.
- The Feasibility Study recommended the selection of Alternative 5, which included installation of a SSDS, a pre-design investigation, source area chemical-oxidation, injection of a hydrogen release compound (HRC)®, implementation of ICs, and long-term monitoring.

EA completed a supplemental pre-design investigation in April 2011. Samples were collected from media that included subsurface soil, groundwater, and microbial populations and community structures. Further details on the historical and pre-design investigation results are provided in the Pilot Study Conceptual Design Report (EA, 2011)[2].

## 1.4 SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved Pilot Study Conceptual Design Report (EA 2011)[3] and the Pre-Design Investigation and Pilot Study Program Letter Work Plan (EA 2010a)[7].

The following is a summary of the remedial actions performed at the site:

1. Installation of a SSDS as an interim remedial measure (IRM), as outlined in the ROD (NYSDEC 2010a)[1], in the Clinton West Laundry tenant space located at 609 West Clinton Street.

[6] Fagan Engineers. 2009. RI/Feasibility Study Report, Clinton West Plaza, 609-625 West Clinton Street, Ithaca, New York. July.
[7] EA. 2010a. Pre-Design Investigation and Pilot Study Program Letter Work Plan. December.

2. Injection of 3,600 lbs of HRC® substrate at 36 injection points at a loading rate of 5 lbs/ft using direct-push technology to a depth of 25 ft bgs.

3. Preparation for execution and recording of an Environmental Easement/Notice (EA 2013)[1] to restrict land use and prevent future exposure to any contamination remaining at the site.

4. Other major remedial elements including all ICs listed in the Site SMP.

5. Development and implementation of a SMP for long-term management of remaining contamination as required by the Environmental Easement/Notice, which includes plans for: (1) ICs and ECs, (2) monitoring, (3) operation and maintenance, and (4) reporting;

Remedial activities were completed at the site in February and November 2011. Baseline and post-injection groundwater monitoring was performed from October 2011 through November 2012. No contaminated materials were removed from the site.

### 1.4.1 Interim Remedial Measure and Site-Related Treatment System

Results of the RI indicated that due to the presence of CVOCs in groundwater and soil vapor, potential existed for human health exposure via the VI pathway. Site contaminants addressed through the remedy selection process were PCE, trichloroethene (TCE), *cis*-1,2-dichloroethene, and vinyl chloride. As outlined in the ROD (NYSDEC 2010a)[2], the selected remedial alternative required the installation of a SSDS to mitigate the potential for VI at the Clinton West Laundry facility. The design and installation of this element of the ROD were conducted as an IRM to mitigate the potential for human health exposure to site related contaminants.

NYSDEC initiated the IRM using an existing standby Remedial Contractor, Groundwater & Environmental Services, Inc. (GES), to perform the SSDS installation activities. A pre-design pressure field extension (PFE) test was completed on December 9, 2010. Based on the PFE test, EA issued a memo to NYSDEC indicating that SSDS would be a suitable technique to mitigate the potential for VI at the Clinton West Laundry facility. Following NYSDEC approval, GES, under the supervision of EA, installed the system fan, interior and exterior piping, and exterior system discharge on February 7, 2011.

During design and installation activities, EA provided technical assistance on design requirements and system sizing, as well as on-site oversight support and system installation documentation. The Mitigation System Installation Record is included as Appendix A. No additional long-term treatment systems were installed as part of the site remedy.

### 1.4.2 Remaining Contamination

Results from post-injection groundwater sampling indicate that concentrations of PCE and TCE have been significantly reduced within the targeted treatment zone. Concentrations of PCE and TCE at TPMW-3 were reduced by 98 and 92 percent, respectively. Concentrations of PCE and TCE were both reduced by 100 percent (non-detect) at TPMW-4. PCE and TCE were not detected at other monitoring locations within the treatment zone, which suggests that the substrate injection process did not displace impacted groundwater to areas inside or outside of the target treatment zone. However, groundwater analytical results from the October/November 2012 sampling event indicate that site contaminants of concern remain at concentrations greater than their relevant standards, criteria, and guidance at TPMW-3, TPMW-4, and MMW-01.

# 2.0 ON-SITE SUBSLAB DEPRESSURIZATION SYSTEM PLAN

## 2.1 INTRODUCTION

### 2.1.1 General

Since remaining contaminated groundwater/soil vapor exists beneath the site, ECs and ICs are required to protect human health and the environment. In addition to the SSDS, ECs/ICs are more thoroughly discussed in the site SMP (EA 2013)[1]. This subsection of the EC/IC Plan describes the procedures for the implementation and management of the SSDS at the site. This is one component of the SMP and is subject to revision by NYSDEC.

## 2.2 SUBSLAB DEPRESSURIZATION SYSTEM

Exposure to indoor air impacted with VOCs within the site building is prevented by a SSDS, which was installed in the former laundromat within the site building by the NYSDEC in February 2011. The system serves to reduce the pressure beneath the building slab by venting potentially impacted soil vapor to outside of the building.

The SSDS is located in the southwest corner of the tenant laundry facility at 609 West Clinton Street. A pre-design PFE test was completed on December 9, 2010. Based on the PFE, EA issued a memo to NYSDEC indicating that SSDS would be a suitable technique to mitigate the potential for VI at the Clinton West Laundry facility (EA 2010a)[9]. Following NYSDEC approval, GES, under the supervision of EA, installed the system fan, interior and exterior piping, and exterior system discharge on February 7, 2011. The SSDS Information Package, which includes operation and maintenance instructions, is provided as Appendix B.

### 2.2.1 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered complete when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10 (NYSDEC 2010b)[3].

### 2.2.2 Subslab Depressurization System

The active SSDS will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicate that the SSDS is no longer required, a proposal to discontinue the SSDS will be submitted by the property owner to the NYSDEC and NYSDOH for review and consideration.

### 2.2.3 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located within the area identified on Figure 4, a soil VI evaluation shall be performed by the property owner to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, a soil VI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive SSDS that is capable of being converted to an active system. The SSDS system is only recommended as a conservative alternative to performing a soil VI evaluation and designing a mitigation system.

Prior to conducting a soil VI investigation or installing a mitigation system, a Work Plan will be developed by the property owner and submitted to the NYSDEC and NYSDOH for review and approval. This Work Plan will be developed in accordance with the most recent NYSDOH Guidance for Evaluating VI in the State of New York (NYSDOH 2006)[8]. Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the soil VI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) soil VI sampling data collected by the property owner will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation by the property owner, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. Validated soil VI data will be transmitted NYSDEC and NYSDOH within 30 days of validation. If any indoor air test results exceed NYSDOH guidelines, relevant NYSDOH fact sheets will be provided to all tenants and occupants of the property by the NYSDEC and/or NYSDOH within 15 days of receipt of validated data.

Soil VI sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

## 2.3 INSPECTIONS AND NOTIFICATIONS

### 2.3.1 Inspections

Inspections of all remedial components installed at the site will be conducted by the property owner at the frequency specified in the SMP Monitoring Plan schedule (EA 2013)[1] and indicated below. A comprehensive site-wide inspection will be conducted annually by the property owner, regardless of the frequency of SSDS inspections. The annual inspections will determine and document the following:

- Whether ECs continue to perform as designed

[8] NYSDOH. 2006. Guidance for Evaluating Vapor Intrusion.

- If these controls continue to be protective of human health and the environment

- Compliance with requirements of the site SMP, this Supplemental On-Site SSDS SMP, and the Environmental Easement

- Achievement of remedial performance criteria

- Sampling and analysis of appropriate media during monitoring events

- If site records are complete and up to date

- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of the site SMP (EA 2013)[1] and in Section 3.3.1 of this Supplemental On-Site SSDS SMP. The reporting requirements are outlined in the Periodic Review Reporting section of the site SMP.

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

### 2.3.2 Notifications

The following notifications are specific to the SSDS and additional notifications must be submitted by the property owner to the NYSDEC as required in the site SMP.

- 60-day advance notice of any proposed changes in site use in accordance with the ROD (NYSDEC 2010a)[2].

- Notice within 48-hours of any damage or defect to the foundation structures that reduces or has the potential to reduce the effectiveness of other ECs and likewise any action to be taken to mitigate the damage or defect.

- Notice within 48 hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days, and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this Supplemental On-Site SSDS SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of all approved work plans and reports, including this SSDS SMP.

- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

# 3.0 OPERATION AND MAINTENANCE PLAN

## 3.1 INTRODUCTION

This Operation and Maintenance Plan describes the measures necessary to operate, monitor, and maintain the mechanical components of the remedy selected for the site. This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the site to operate and maintain the SSDS
- Includes an operation and maintenance contingency plan
- Will be updated periodically by the property owner to reflect changes in site conditions or the manner in which the SSDSs are operated and maintained.

Information on non-mechanical ECs (i.e., soil cover system) is provided in the EC/IC Plan of the site SMP (EA 2013)[1]. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP and Supplemental On-Site SSDS SMP.

## 3.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

There is one SSDS on-site and it is located in the southwest corner of the tenant laundry facility in the building at 609 West Clinton Avenue. The system serves to reduce subslab pressure and vent built-up soil gas outside of the building. The system consists of slotted screen installed beneath the slabs, connected to polyvinyl chloride pipe, an in-line ventilation fan, and an exterior exhaust point. The exhaust pipe is located within the building and vents above the roof of the building. The exhaust point is covered with rain caps. The system location is shown on Figure 3. The system has been operable since February 2011.

### 3.2.1 Scope

The SSDS is continuously operational, and requires minimal maintenance and oversight; however, an annual inspection is required to verify continuous and effective operation. The following sections detail system startup, inspections, and maintenance.

#### 3.2.2.1 System Startup and Testing

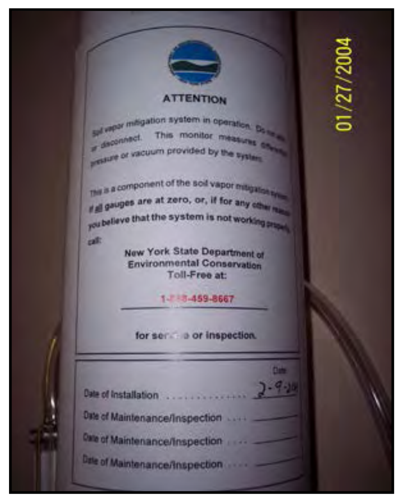
Prior to system startup, the building slab, including the system slab and wall penetration and any gaps between the slab and the walls, is to be sealed with a polyurethane sealant.

After the fan is turned on, the operating pressure is to be marked on the pressure gauge located on the vertical pipe. The pressure is to be checked weekly during continuous operation by the property owner, until the pressure is observed to be the same during two consecutive weeks.

Following system startup, a field test is to be conducted by the property owner to check negative pressure beneath the slab. Starting approximately 5 ft from the system, a ¼-in. diameter hole is to be drilled completely through the concrete slab. The vacuum is to be measured using a handheld electric manometer at the test location. This is to be repeated an additional 5 ft from each previous test hole, until the furthest possible point on the slab has been tested. Each previously tested hole is to be filled with fast-setting concrete prior to the succeeding test. The system is working properly if all points tested show a pressure drop of 0.5 Pa or higher.

The system testing described above will be conducted if, in the course of the SSDS lifetime, significant changes are made to the system, and the system must be restarted.

#### 3.2.2.2 System Operation: Equipment Maintenance




In the event that the annual inspection discussed in Section 4.3 reveals system failure or potential for system failure, the building owner and NYSDEC SSDS contact should be notified immediately. Faulty parts of the system should be replaced if possible, or cracks should be sealed using a polyurethane sealant. Depending on the complexity of the problem, an experienced professional should be consulted to return the system to service.

## 3.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

A SSDS has been installed to mitigate possible soil VI into the occupied tenant laundry facility at the on-site building. While the system involves very little in the way of operation and maintenance, monitoring is necessary to verify system functionality and effectiveness. An annual inspection described in Section 4.3.1 of the site SMP (EA 2013)[1] will serve to verify that the system components are in working condition and are not compromised in any way. Annual air sampling as discussed in Section 4.3.2 of the site SMP will serve to verify that the system is effectively mitigating vapor intrusion.

### 3.3.1 General Equipment Monitoring

An annual inspection will be performed on both systems by the property owner in conjunction with the annual site-wide inspection discussed in Section 3.4 of this plan. The inspection is to include the following at a minimum:

- Inspect all visible system components, including the system piping, fans, manometer, etc. Note any cracks in piping or other operational issues

- Inspect slab for cracks, noting location and size of gaps, or where seals have begun to fail

- Make sure that contact information on the SSDS is up to date

- Note changes in building use and changes in heating, ventilation, and air conditioning.

Inspection frequency is subject to change with the approval of the NYSDEC and NYSDOH. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSDS has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the SSDS are specified later in this plan.

A complete list of components to be checked is provided in the Inspection Checklist, which is part of the site-wide inspection form presented in Appendix H of the site SMP (EA 2013)[1] and Appendix C of this On-Site Supplemental SSDS SMP. Additionally, an example system checklist for the SSDS is also provided. This form or one similar should be used to record system performance during an inspection. If any equipment readings are not within their typical range, if any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair by the property owner as per the Operation and Maintenance Plan are required immediately, and the SSDS is to be restarted.

### 3.3.2 Evaluation for SSDS Termination Protocol

In order to determine if operation of the SSDS may be terminated, a full subslab soil VI evaluation is to be completed by the property owner. This would include the collection of an indoor air sample, a subslab air sample, and an outdoor air sample. The indoor sample is to be collected as discussed in Section 3.3.2 of the site SMP (EA 2013)[1]. The following procedures will be used for collection of sub-slab soil vapor samples:

- Visually assess the condition of the floor. Select an area for sampling that is out of the line of traffic and away from major cracks and other floor penetrations (sumps, pipes, etc.). Refer to historical sample forms (Appendix C) for ideal sample locations.

- Drill a ⅜-in. diameter hole completely through the concrete floor slab using an electric hammer drill.

- Sweep concrete dust away from the drill hole and wipe the floor with a dampened towel. Concrete dust can be cleaned up with a vacuum equipped with a high efficiency particulate air filter only after the sample tubing is properly sealed and sample collection has begun.

- Insert the Teflon-lined polyethylene tubing (¼-in. inside diameter × ⅜-in. outside diameter, approximately 3-ft long) into the hole drilled in the floor, extending no further than 2 in. below the bottom of the floor slab.

- Pour the melted beeswax around the tubing at the floor penetration, packing it in tightly around the tubing.

- Attach a syringe to the sample tube and purge approximately 100 mL of air/vapor. The syringe will be capped and the air released outside the building as to not interfere with the indoor air sample collection.

- Place a canister on the floor adjacent to the sample tube. The canister will be a 6-L canister (provided by an independent laboratory) with a vacuum gauge and flow controller. The canister must be certified clean in accordance with U.S. Environmental Protection Agency (EPA) Method TO-15 and under a vacuum pressure of no more than -30 in. of mercury in Hg. Flow controllers must be set for a 24-hour collection period.

- Record the serial number of the canister and associated regulator on the chain-of-custody form and field notebook/sample form. Assign sample identification on the canister identification tag and record this on the chain-of-custody form and field notebook/sample form. For the property owner's privacy, do not use a sample identifier containing the name of the property owner or the address of the property.

- Record the gauge pressure; the vacuum gauge pressure must read -25 in Hg or less, or the canister cannot be used.

- Record the start time on the chain-of-custody form and on the field record of air sampling presented in Appendix H of the site SMP (EA 2013)[1], and take a digital photograph of canister setup and the surrounding area.

To complete the sample collection:

- Close the canister valve and record the stop time on the chain-of-custody form and in the field notebook/sample form.

- Record the final gauge pressure and disconnect the sample tubing and the pressure gauge/flow controller from the canister, if applicable.

- Install the plug on the canister inlet fitting and place the sample container in the original box.

- Complete the sample collection log with the appropriate information, and log each sample on the chain-of-custody form.

- Remove the temporary subsurface probe and properly seal the hole in the slab with hydraulic cement.

Field quality control samples will include duplicates and trip blanks. Field duplicates will be collected at the rate of 1 duplicate per 20 original samples (20 percent). Field duplicates will be collected by installing an in-line stainless steel “tee,” which will essentially split the flow coming from the sample tubing penetrating the floor to two canisters set up adjacent to each other and each collecting vapors at identical flow rates.

Concurrently with the indoor air and subslab soil vapor monitoring program, one outdoor ambient air sample will be collected each day that indoor air monitoring occurs. The ambient air samples will be collected during the same 24-hour period as the indoor air samples, which represent outdoor air conditions for the sampling area. The ambient air samples will be collected in a laboratory batch-certified Summa canister regulated for a 24-hour sample collection. A section of Teflon or polyethylene tubing that is identified as laboratory- or food-grade will be extended from the Summa canister to collect the ambient air sample from the breathing zone at approximately 3–5 ft above ground surface. Consistent with the indoor and subslab vapor sampling, the collecting rate of the outdoor air sample will be less than 0.2 L per minute.

Air samples will be analyzed by an Environmental Laboratory Analytical Program-certified laboratory contracted by the property owner for VOCs using EPA Method TO-15. In accordance with the NYSDOH Indoor Air Sampling and Analysis Guidance, the analysis for indoor and outdoor air samples will achieve a minimum reporting limit of 0.25 $\mu g/m^3$. The analysis for subslab soil vapor samples will achieve minimum reporting limit of 5 $\mu g/m^3$ for structures with full-slab foundations and a minimum 1 $\mu g/m^3$ for structures with less than a full-slab foundation. For specific parameters identified by NYSDOH, where the selected parameters may have a higher detection limit (e.g., acetone), the higher detection limits will be designated by NYSDOH. The analytical turnaround time will be 14 days from receipt of sample containers. Analytical results will be provided as an electronic data deliverable. Requirements for electronic data deliverables can be found at http://www.dec.ny.gov/chemical/6240.html.

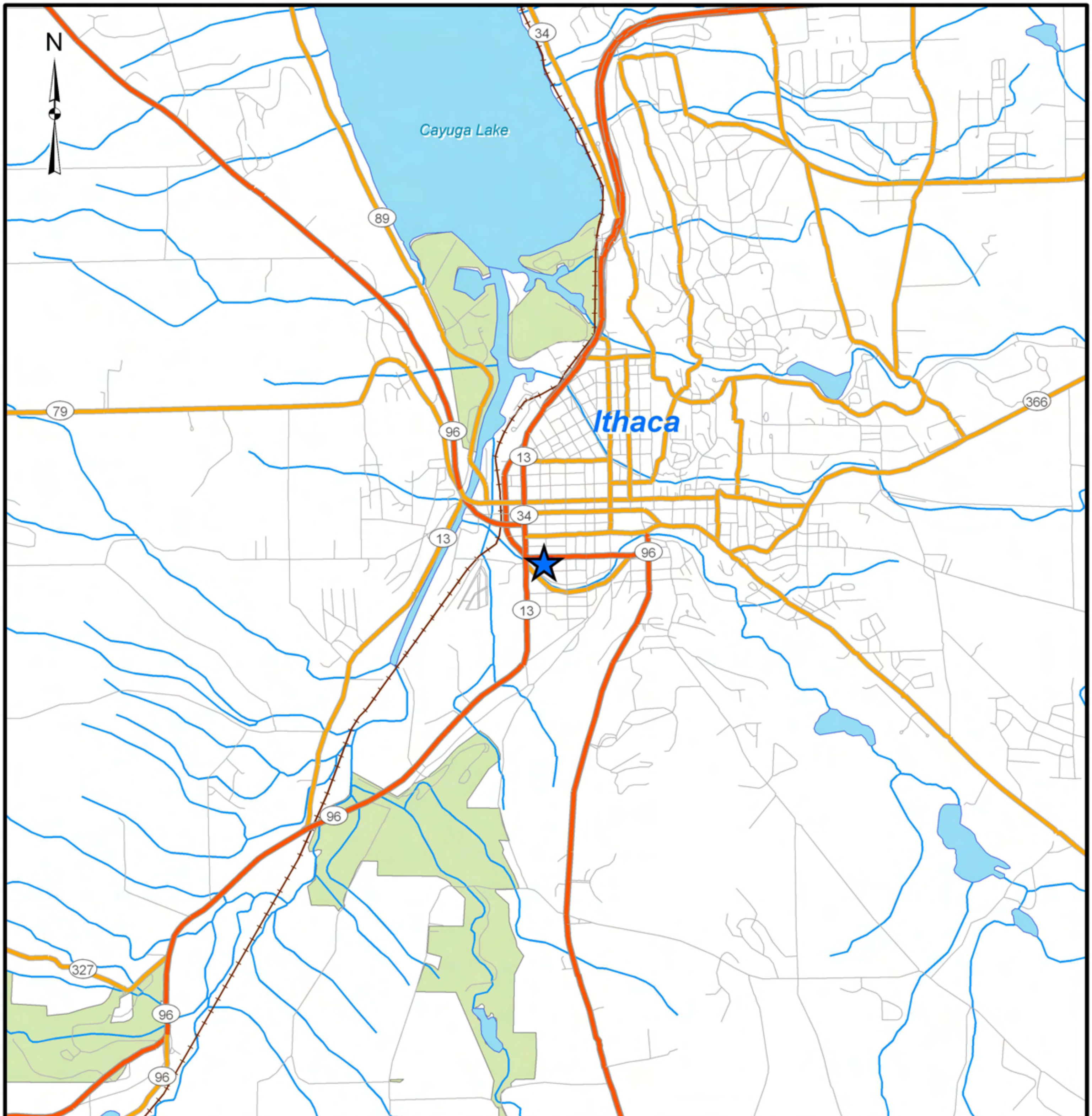
## 3.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be kept on file on-site by the property owner. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and provided to the property owner to be made part of the Periodic Review Report (prepared by the NYSDEC), as specified in the Section 5 of the site SMP (EA 2013)[1].

### 3.4.1 Routine Maintenance Reports

During each maintenance event, a form will be completed by the property owner which will include, but not be limited to, the following information:

- Date
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities
- Presence of leaks
- Date of leak repair
- Other repairs or adjustments made to the system
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet)
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).




**Legend**

- Highway
- Major Road
- Local Road
- Park
- Rivers & Streams
- Surface Water Body

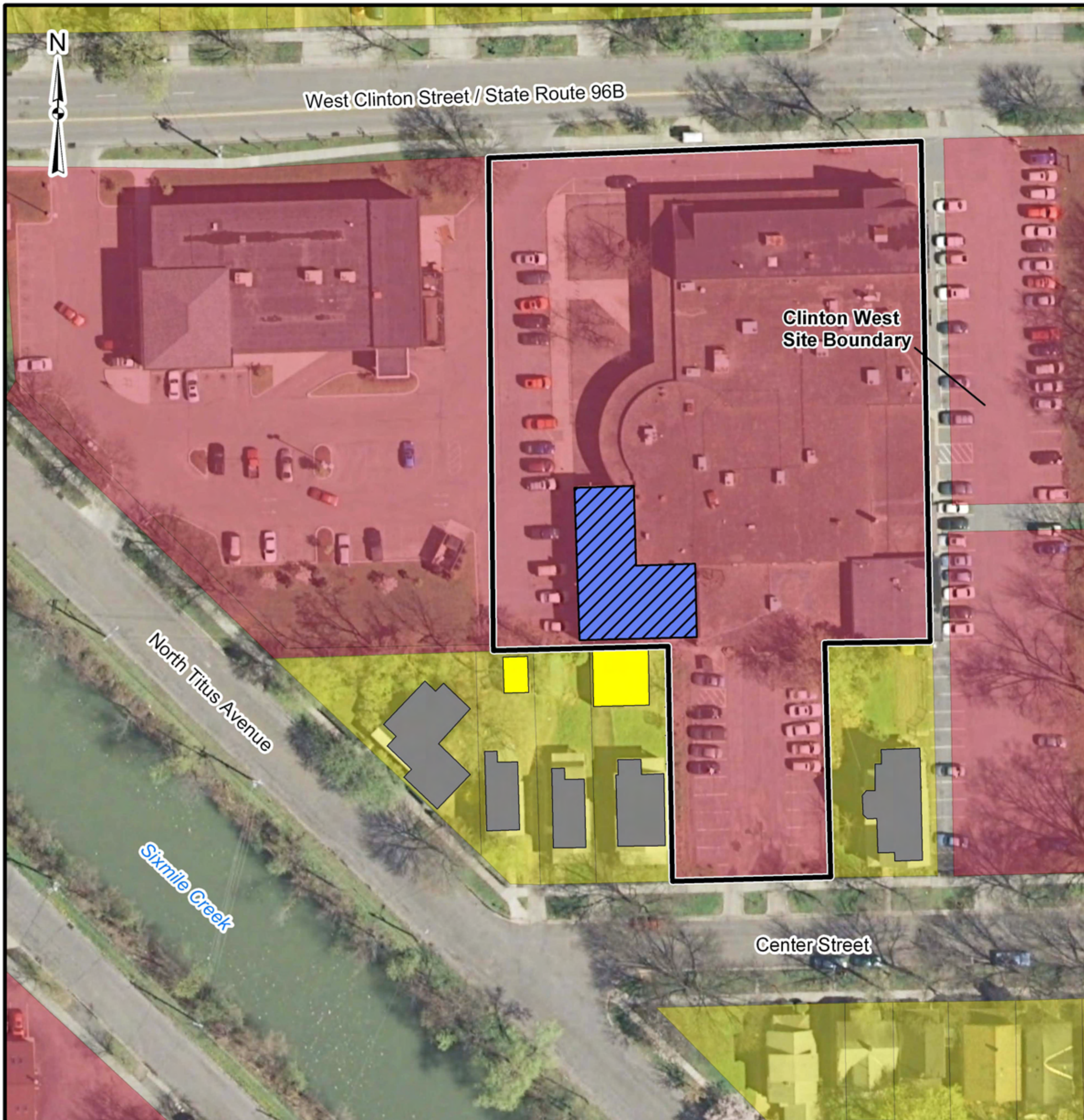
0 1 2 Miles

1 in = 1 miles

Source: ESRI Street Maps USA

| | | |
|---|---|---|
| | CLINTON WEST PLAZA (755015)<br>SSDS SUPPLEMENTAL SITE MANAGEMENT PLAN<br>ITHACA, NEW YORK | FIGURE 1<br>Site Location Map |

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | APRIL 2014 | 14907.25 | GIS/PROJECTS/<br>1490725_FIG1.MXD |




**Legend**

**Select Structures** **Zoning**

Dry Cleaners — Commercial

Residence — Residential

Utility Building

0 70 140 Feet

1 inch = 70 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007; Property Parcels: Tompkins County 2010

CLINTON WEST PLAZA (755015)
SSDS SUPPLEMENTAL SITE MANAGEMENT PLAN
ITHACA, NEW YORK

FIGURE 2
Site and Surrounding Area

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | APRIL 2014 | 14907.25 | GIS/PROJECTS/ 1490725_FIG2.MXD |


**Legend**

- Former Dry Cleaners
- Approximate Site Boundary
- Tax Parcel Boundary

Feet
0 60 120

1 inch = 60 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color -2007; Property Parcels: Tompkins County 2010

CLINTON WEST PLAZA (755015)
SSDS SUPPLEMENTAL SITE MANAGEMENT PLAN
ITHACA, NEW YORK

FIGURE 3
SSDS Location

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | APRIL 2014 | 14907.25 | GIS/PROJECTS/ 1490725_FIG3.MXD |

# Appendix A

# Mitigation System Installation Record

# Mitigation System Installation Record

☒ Structure was sampled previously

## System Information

System ID:

Site No: 755015

Site Name: DEC Ithaca - Clinton W. Plaza

Owner Name: Clinton West Ltd. / Tenant: Glenn Porter

☐ Owner Occupied

System Address: 609 West Clinton Street

Telephone: 607-277-2210

City: Ithaca, NY Zip: 14850

Alt. Telephone:

## Contractor Information

Installer Name: Kevin Leo

Company: Groundwater & Environmental...

Telephone: 1-800-220-3069 x 4056

## Building Conditions

Building Type: General Commercial

Slab Integrity: ○ Poor ○ Average ◉ Good ○ Excellent

Slab Penetrations: ☒ Sump ☐ Floor drain ☐ Perimeter drain ☐ Other

Describe:

A poured concrete casting lint trap located in the south-west corner of the building. It measures 4 feet by 6 feet and 44 inches deep. The seam was sealed with a concrete caulk.

Observed Water: ◉ Dry ○ Damp ○ Sump only ○ Standing

Describe:

## System Installation

Installation Type: Sub-Slab Depressurization (Active)

Date Installed: Feb 9, 2011

Slab Thickess (inches): 3 to 5 in.

Subslab Material: Gravel

Subslab Moisture: Damp

Number of Suction Points: 1

Number of Fans Installed: 1

| | ☒ Fan #1 Operating | ☐ Fan #2 Operating | ☐ Fan #3 Operating |
|---|---|---|---|
| Fan Model No(s): | RP-265 | | |
| Fan Serial No(s): | 108398 | | |
| Final U-Tube Levels: | 1.9"WC | | |

Additional Mitigation Elements (check all that apply):

☐ Drainjer ☐ Membrane ☒ Sealed cracks ☐ New floor ☐ Rain cap ☐ Other

Comments:

**Communication Testing**

Test Method: Micromanometer Meter Type/Manufacturer: Fluke 922

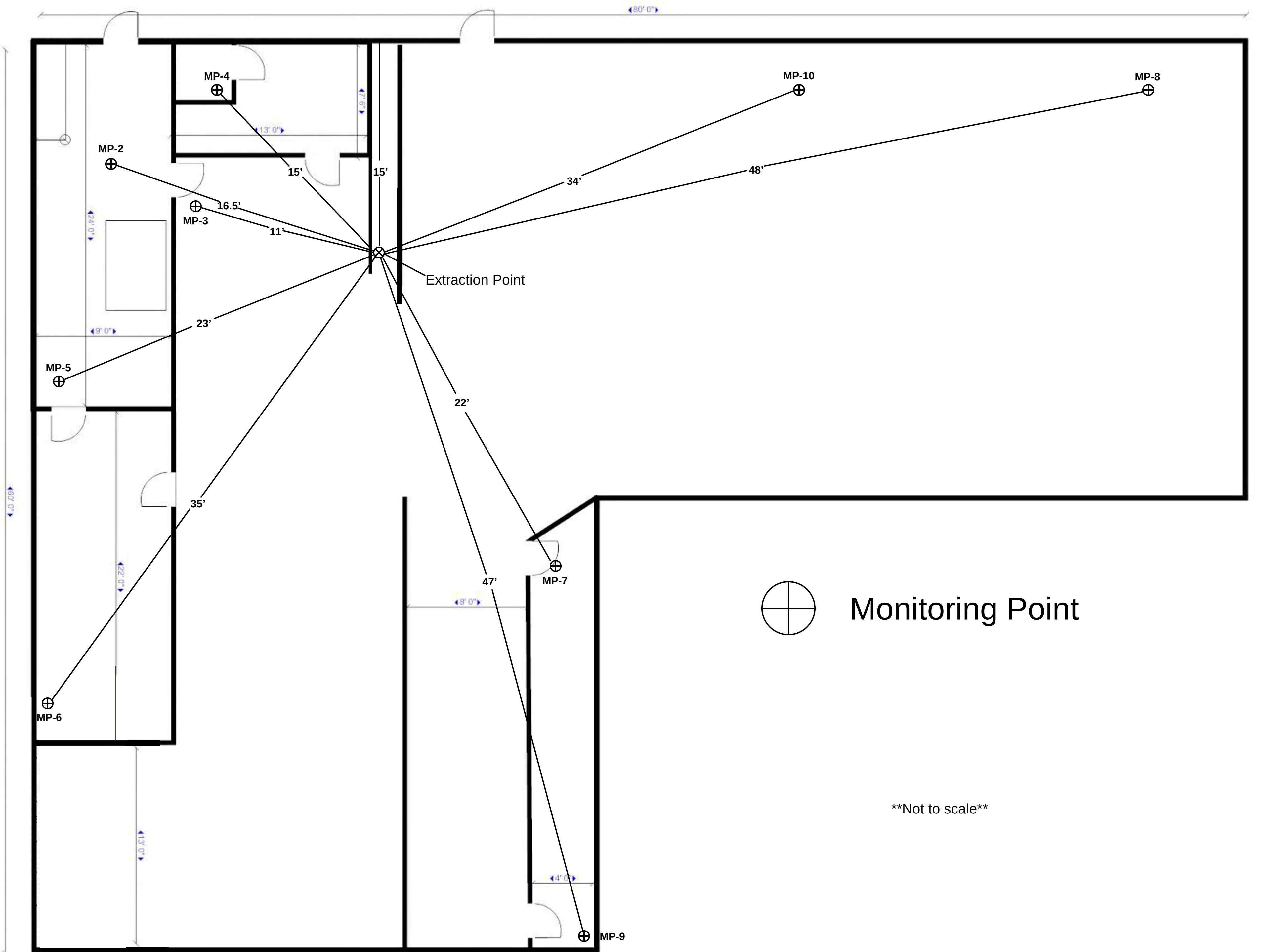
| Location | Reading/Result | Dist. From Suction Point (ft) | Passed? |
|---|---|---|---|
| | SEE ATTACHED | | ☐ |
| | | | ☐ |
| | | | ☐ |
| | | | ☐ |
| | | | ☐ |

| NORTH | **System Sketch**<br>(indicate notable features, location of extraction points, and communication test holes) |
|---|---|
| | SEE ATTACHED |

Groundwater
& Environmental Services, Inc.

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

| Monitoring Point | Pressure ( " WC) | Distance From Extractioı |
|---|---|---|
| MP-2 | -0.076 | 16.5' |
| MP-3 | -0.133 | 11.0' |
| MP-4 | -0.092 | 15.0' |
| MP-5 | -0.050 | 23.0' |
| MP-6 | -0.017 | 35.0' |
| MP-7 | -0.740 | 22.0' |
| MP-8 | 0.0002 | 48.0' |
| MP-9 | -0.510 | 47.0' |
| MP-10 | -0.003 | 34.0' |


80' 0"
MP-4
MP-10
MP-8
13' 0"
7' 6"
MP-2
15'
15'
34'
48'
16.5'
MP-3
11'
24' 0"
Extraction Point
23'
9' 0"
MP-5
22'
60' 0"
35'
22' 0"
47'
MP-7
8' 0"
Monitoring Point
MP-6
**Not to scale**
13' 0"
4' 0"
MP-9

# Appendix B

# SSDS Information Package

# SUB-SLAB DEPRESSURIZATION SYSTEM

**INFORMATION PACKAGE**
**CLINTON WEST PLAZA**
**NYSDEC SITE NUMBER 755015**

609 W. Clinton Street, Ithaca, Tompkins County, New York
System Installed: 2/9/2011
System Tested: 2/11/2011

Work Assignment Number
D004438-47

*Prepared for*

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

*Prepared by*


EA Engineering, P.C., and Its Affiliate
EA Science and Technology
6712 Brooklawn Parkway, Suite 104
Syracuse, New York 13211-2158
(315) 431-4610


February 2011
EA Project No. 14368.47

# CONTENTS

# LIST OF FIGURES

## 1.0 INTRODUCTION

An active Sub-Slab Depressurization (SSD) System was installed by the New York State Department of Environmental Conservation (NYSDEC) to prevent the intrusion of soil vapors [specifically Trichloroethene (TCE)] into the building through cracks and openings in the concrete slab. This was accomplished by sealing the identified cracks and openings and installing a SSD system, which uses a fan and piping to create a preferential pathway for soil vapors to move from beneath the building to the outside. For further information on soil vapor intrusion and TCE, please refer to the New York State Department of Health (NYSDOH) fact sheets provided in Attachments 1 and 2. The design for the system was based on the results of a communication test performed in the structure on December 9, 2010. The results of the communication test are shown in Attachment 3.

## 2.0 DESCRIPTION OF THE SUB-SLAB DEPRESSURIZATION SYSTEM

The SSD system installed in the building consists of one extraction point, fitted with a u-tube manometer, a fan, and a vent, and necessary piping to connect the extraction point to the fan and vent area. The extraction point was installed within the concrete slab of the structure. The components of a typical SSD system are shown in Figure 1. The fan draws air from the soil beneath the building at the extraction point and discharges it above the roof line at the vent location. The fan will also draw moisture which will condense on the walls of the piping. The condensation diverter allows condensate to collect above the fan and pass back into the system piping beneath the fan, while system piping remains pitched toward the extraction point, allowing condensate to migrate back to the extraction points and not remain in the system piping. The manometer measures the pressure in the SSD system piping and is used to verify that the system is operating properly. A photo log documenting installation of the SSD system is provided in Attachment 4.

## 3.0 INSTALLATION AND WARRANTY INFORMATION

Sub-Slab Depressurization Layout and Pressure Field Extension Test readings for the system are shown in Figure 2. The system was installed by Groundwater & Environmental Services, Inc., a NYSDOH Certified Radon Mitigation Contractor and is under warranty for five years. The fan that has been installed is the RP 265 manufactured by RadonAway. Since the system was professionally designed and installed, the fan is under warranty for five years. The fan specifications and warranty information are provided in Attachment 5.

## 4.0 HOW TO CHECK THAT THE SYSTEM IS OPERATING PROPERLY

The manometer, located along the vertical piping above the extraction point, should be used to verify that the system is operating properly. A manometer showing a properly operating system is shown in Figure 3. A manometer reading of zero indicates system failure, and a manometer reading significantly less than the original reading noted on the label indicates degradation of the system.

The initial manometer reading on February 11, 2011 for the manometer installed with this system is shown below:

| Initial Manometer Reading (February 11, 2011) | |
|---|---|
| Extraction Point | Manometer Reading (inches $H_20$) |
| EP1 | 1.9 |

If either of these two situations should occur, service is required. Please contact the NYSDEC at 1-888-459-8667 to arrange for a service visit.

## 5.0 MAINTENANCE AND INSPECTION OF THE SYSTEM

The SSD system requires minimal maintenance for continued operation. The NYSDEC will respond to requests for service, during which time the system will be audited for proper operation. The primary method of evaluating the system's operation is by the property owner/occupant. Quarterly assessments are recommended to verify that the system is operating properly, based on the information provided in Section 4.0.

If a problem is identified during a routine assessment or if there are any immediate problems or concerns regarding system operation, please contact the NYSDEC at 1-888-459-8667 to arrange for a service visit.

System audits will be performed by the NYSDEC during service visits to evaluate the continued performance of the system. Audits may include the following:

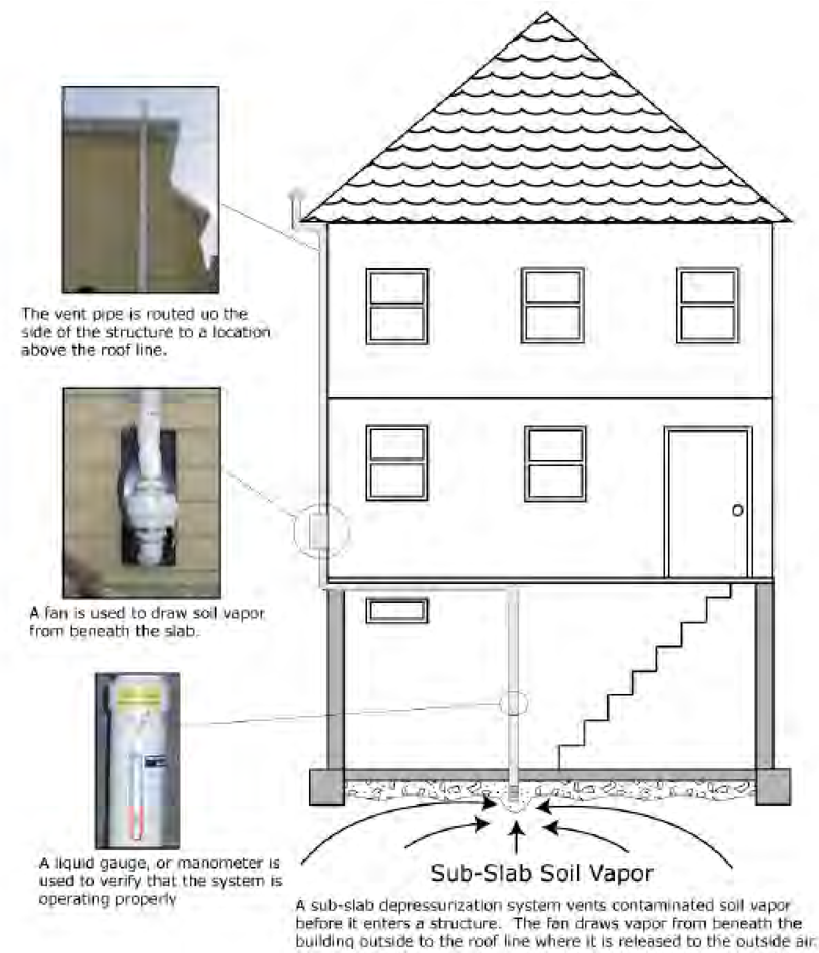
- Inspection of the manometer to determine if there is a failure or degradation of the system
- Inspection of the extraction point to determine if the seal remains intact
- Inspection of the system piping and vent network for cracks or leaks on the interior and exterior of the structure.
- Inspection of fan, rubber mounts, and condensate diverter for leaks
- Inspection of electrical connection, circuit breaker, and system power switch for adequate operation
- Collection of air samples.

## 6.0 CONTACT INFORMATION

If you have any comments or questions regarding the system, please contact the NYSDEC at 1-888-459-8667.

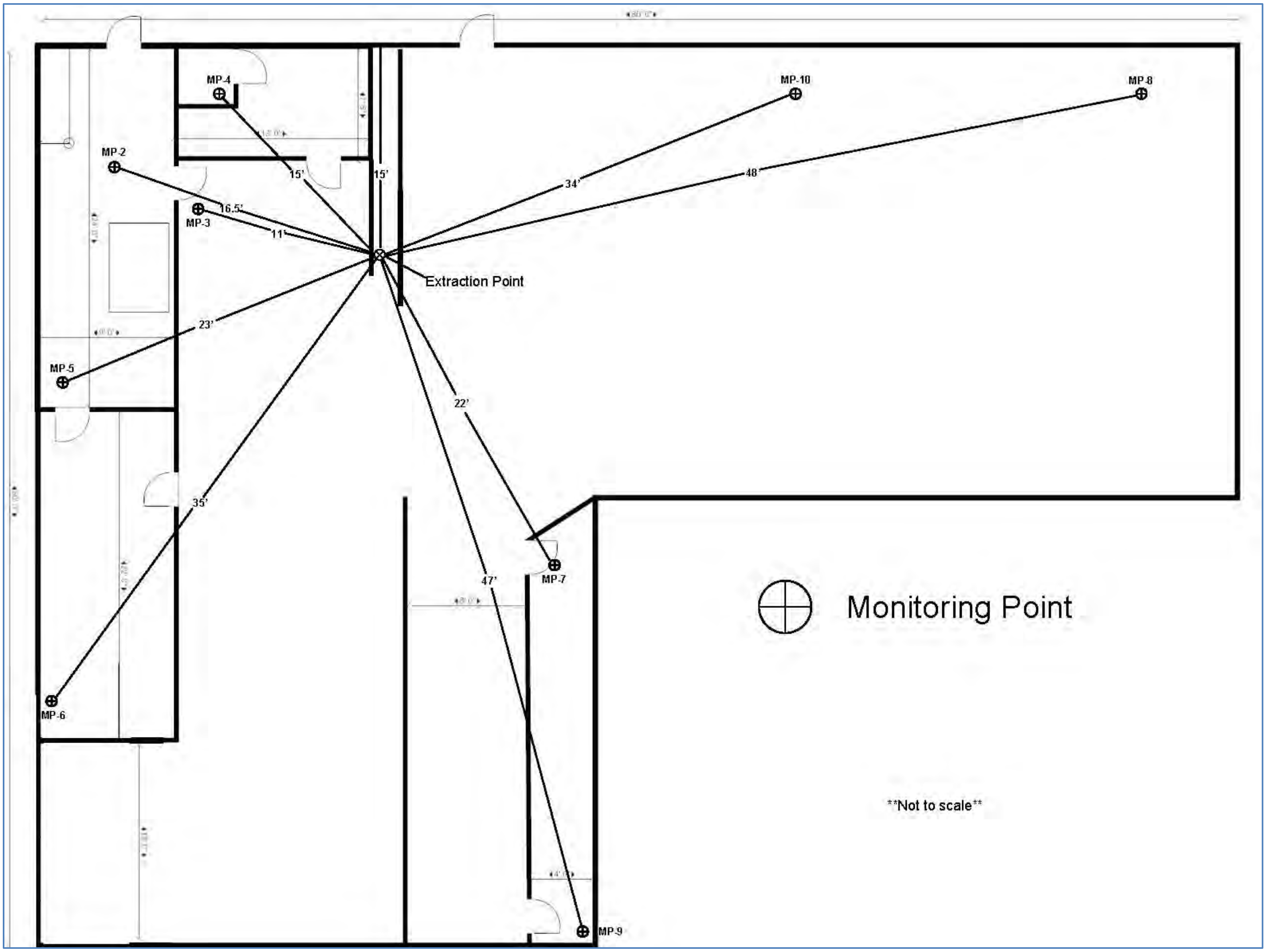
If you have any health comments or questions, please contact the NYSDOH project manager, Mr. Richard Jones at 1-315-477-8148.

## FIGURE 1: TYPICAL SUB-SLAB DEPRESSURIZATION SYSTEM CONSTRUCTION



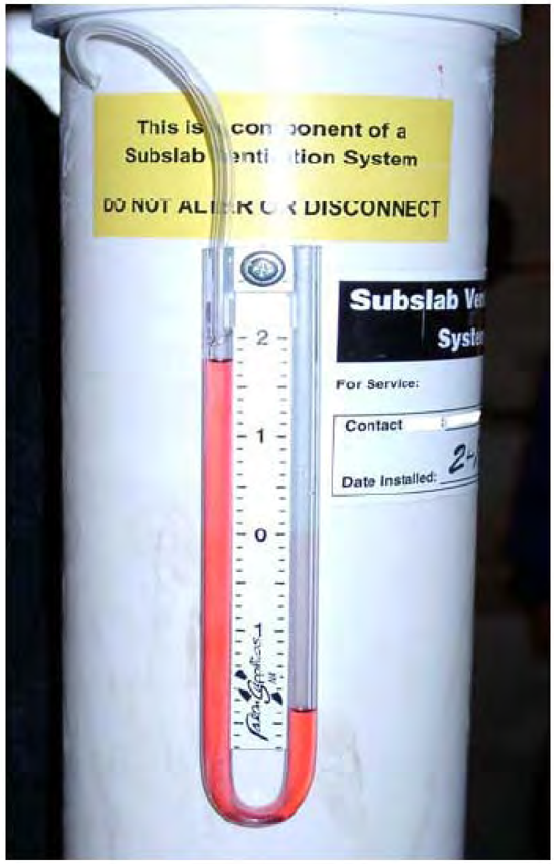

***Source: New York State Department of Health, 2009. Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October.***

**FIGURE 2: SUB-SLAB DEPRESSURIZATION SYSTEM LAYOUT AND PRESSURE FIELD EXTENSION TEST MONITORING POINT RESULTS**



| Pressure Field Extension Testing at Clinton West Plaza<br>Ithaca, New York | | |
|---|---|---|
| | | |
| Monitoring Point | Associated Extraction Point | Micromanometer Reading (- inches of $H_2O$) |
| MP-2 | EP1 | -0.076 |
| MP-3 | EP1 | -0.133 |
| MP-4 | EP1 | -0.092 |
| MP-5 | EP1 | -0.050 |
| MP-6 | EP1 | -0.017 |
| MP-7 | EP1 | -0.740 |
| MP-8 | EP1 | 0.0002 |
| MP-9 | EP1 | -0.510 |
| MP-10 | EP1 | -0.003 |
| Manometer reading at extraction point: EP1 (1.9 inches H2O) | | |

# FIGURE 3: SAMPLE MANOMETER SHOWING PROPERLY OPERATING SSD SYSTEM




***Source: New York State Department of Health, 2009. Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October.***

# Attachment 1

# NYSDOH Fact Sheet: Soil Vapor Intrusion

NEW YORK STATE
DEPARTMENT OF HEALTH

# SOIL VAPOR INTRUSION

## Frequently Asked Questions

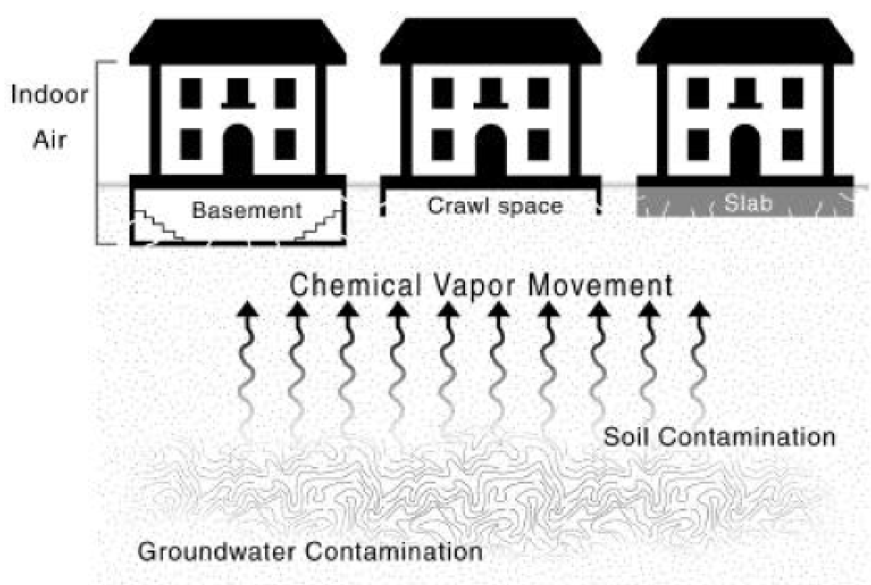
### What is soil vapor intrusion?

The phrase "soil vapor intrusion" refers to the process by which volatile chemicals move from a subsurface source into the indoor air of overlying buildings.

Soil vapor, or soil gas, is the air found in the pore spaces between soil particles. Because of a difference in pressure, soil vapor enters buildings through cracks in slabs or basement floors and walls, and through openings around sump pumps or where pipes and electrical wires go through the foundation. Heating, ventilation or air-conditioning systems may create a negative pressure that can draw soil vapor into the building. This intrusion is similar to how radon gas seeps into buildings.

Soil vapor can become contaminated when chemicals evaporate from subsurface sources and enter the soil vapor. Chemicals that readily evaporate are called "volatile chemicals." Volatile chemicals include volatile organic compounds (VOCs). Subsurface sources of volatile chemicals may include contaminated soil and groundwater, or buried wastes. If soil vapor is contaminated, and enters a building as described above, indoor air quality may be affected.

When contaminated vapors are present in the zone directly next to or under the foundation of the building, vapor intrusion is possible. Soil vapor can enter a building whether it is old or new, or whether it has a basement, a crawl space, or is on a slab (as illustrated in the figure).




[Source: United States Environmental Protection Agency, Region 3]

## How am I exposed to chemicals through soil vapor intrusion?

Humans can be exposed to soil vapor contaminated with volatile chemicals when vapors from beneath a building are drawn through cracks and openings in the foundation and mix with the indoor air. Inhalation is the route of exposure, or the manner in which the volatile chemicals actually enter the body, once in the indoor air.

*Current* exposures are when vapor intrusion is documented in an occupied building. *Potential* exposures are when volatile chemicals are present, or are accumulating, in the vapor phase beneath a building, but have not affected indoor air quality. Potential exposures also exist when there is a chance that contaminated soil vapors may move to existing buildings not currently affected or when there is a chance that new buildings can be built over existing subsurface vapor contamination. Both current and potential exposures are considered when evaluating soil vapor intrusion at a site that has documented subsurface sources of volatile chemicals.

In general, exposure to a volatile chemical does not necessarily mean that health effects will occur. Whether or not a person experiences health effects depends on several factors, including inhalation exposure, the length of exposure (short-term or acute versus long-term or chronic), the frequency of exposure, the toxicity of the volatile chemical, and the individual's sensitivity to the chemical.

## What types of chemicals associated with environmental contamination may be entering my home via soil vapor intrusion?

Volatile organic compounds, or VOCs, are the most likely group of chemicals found in soil vapor, and which can move through the soil and enter buildings. Solvents used for dry cleaning, degreasing and other industrial purposes (e.g., tetrachloroethene, trichloroethene, 1,1,1-trichloroethane and Freon 113) are examples of VOCs. Examples of petroleum-related VOCs from petroleum spills are benzene, toluene, ethyl benzene, xylenes, styrene, hexane and trimethylbenzenes.

## Is contaminated soil vapor the only source of volatile chemicals in my indoor air?

No. Volatile chemicals are also found in many household products. Paints, paint strippers and thinners, mineral spirits, glues, solvents, cigarette smoke, aerosol sprays, mothballs, air fresheners, new carpeting or furniture, hobby supplies, lubricants, stored fuels, refrigerants and recently dry-cleaned clothing all contain VOCs. Household products are often more of a source of VOCs in indoor air in homes than contaminated soil vapor.

Indoor air may also become affected when outdoor air containing volatile chemicals enters your home. Volatile chemicals are present in outdoor air due to their widespread use. Gasoline stations, dry cleaners, and other commercial/industrial facilities are important sources of VOCs to outdoor air.

## What should I expect if soil vapor intrusion is a concern near my home?

If you live near a site that has documented soil, groundwater and/or soil vapor contaminated with volatile chemicals, you should expect that the potential for vapor intrusion is being, or has been, investigated. You may be contacted by the site owner or others working on the cleanup with information about the project. Your cooperation and consent would be requested before any testing/sampling would be done on your property. You may ask the person contacting you any questions about the work being done. You can also contact the NYSDOH's project manager for the site at 1-800-458-1158 (extension 2-7850) for additional information.

### How is soil vapor intrusion investigated at sites contaminated with volatile chemicals?

The process of investigating soil vapor intrusion typically requires more than one set of samples to determine the extent of vapor contamination. Furthermore, four types of environmental samples are collected: soil vapor samples, sub-slab vapor samples, indoor air samples and outdoor air (sometimes referred to as "ambient air") samples.

<u>Soil vapor samples</u> are collected to characterize the nature and extent of vapor contamination in the soil in a given area. They are often collected before sub-slab vapor and/or indoor air samples to help identify buildings or groups of buildings that need to be sampled. Soil vapor samples are used to determine the *potential* for human exposures. *Soil vapor* samples are not the same as *soil* samples.

<u>Sub-slab vapor samples</u> are collected to characterize the nature and extent of vapor contamination in the soil immediately beneath a building with basement foundations or a slab. Sub-slab vapor results are used to determine the potential for *current* and *future* human exposures. For example, an exposure could occur in the future if cracks develop in the building's foundation or changes in the operation of the building's heating, ventilation or air-conditioning system are made that make the movement of contaminated soil vapor into the building possible.

<u>Indoor air samples</u> are collected to characterize the nature and extent of air contamination within a building. Indoor air sample results help to evaluate whether there are *current* human exposures. They are also compared to sub-slab vapor and outdoor air results to help determine where volatile chemicals may be coming from (indoor sources, outdoor sources, and/or beneath the building).

<u>Outdoor air samples</u> are collected to characterize site-specific background air conditions. Outdoor air results are used to evaluate the extent to which outdoor sources, such as automobiles, lawn mowers, oil storage tanks, gasoline stations, commercial/industrial facilities, and so forth, may be affecting indoor air quality.

### What should I expect if indoor air samples are collected in my home?

You should expect the following:

- Indoor air samples are generally collected from the lowest-level space in a building, typically a basement, during the heating season. Indoor air samples may also be collected from the first floor of living space. Indoor air is believed to represent the greatest exposure potential with respect to soil vapor intrusion.
- Sub-slab vapor and outdoor air samples are usually collected at the same time as indoor air samples to help determine where volatile chemicals may be coming from (indoor sources, outdoor sources, and/or beneath the building).
- More limited sampling may be performed outside of the heating season. For example, sub-slab vapor samples without indoor air or outdoor air samples may be collected to identify buildings and areas where comprehensive sampling is needed during the heating season.
- An indoor air quality questionnaire and building inventory will be completed. The questionnaire includes a summary of the building's construction characteristics; the building's heating, ventilation and air-conditioning system operations; and potential indoor and outdoor sources of volatile chemicals. The building inventory describes products present in the building that might contain volatile chemicals. In addition, we take monitoring readings from a real-time organic vapor meter (also known as a photoionization detector or PID). The PID is an instrument that detects many VOCs in the air. When indoor air samples are collected, the PID is used to help determine whether

products containing VOCs might be contributing to levels that are detected in the indoor air.

### What happens if soil vapor contamination or soil vapor intrusion is identified during investigation of a site?

Depending on the investigation results, additional sampling, monitoring or mitigation actions may be recommended. Additional sampling may be performed to determine the extent of soil vapor contamination and to verify questionable results. Monitoring (sampling on a recurring basis) is typically conducted if there is a significant potential for vapor intrusion to occur should building conditions change. Mitigation steps are taken to minimize exposures associated with soil vapor intrusion. Mitigation may include sealing cracks in the building's foundation, adjusting the building's heating, ventilation and air-conditioning system to maintain a positive pressure to prevent infiltration of subsurface vapors, or installing a sub-slab depressurization system beneath the building.

### What is a sub-slab depressurization system?

A sub-slab depressurization system, much like a radon mitigation system, essentially prevents vapors beneath a slab from entering a building. A low amount of suction is applied below the foundation of the building and the vapors are vented to the outside (see illustration). The system uses minimal electricity and should not noticeably affect heating and cooling efficiency. This mitigation system also essentially prevents radon from entering a building, an added health benefit. The party responsible for cleaning up the source of the soil vapor contamination is usually responsible for paying for the installation of this system. If no responsible party is available, New York State will install the system. Once the contamination is cleaned up, the system should no longer be needed. In areas where radon is a problem, the NYSDOH recommends that these systems remain in place permanently.

### What else can I do to improve my indoor air quality?

Household products and other factors, such as mold growth, carbon monoxide, and radon, can degrade the quality of air in your home. Consider the following tips to improve indoor air quality:

- Be aware of household products that contain VOCs. Do not buy more chemicals than you need at a time.
- Store unused chemicals in tightly-sealed containers in a well-ventilated location, preferably away from the living space in your home.
- Keep your home properly ventilated. Keeping it too air-tight may promote build up of chemicals in the air, as well as mold growth due to the build up of moisture.
- Fix all leaks promptly, as well as other moisture problems that encourage mold growth.
- Make sure your heating system, hot water, dryer and fireplaces are properly vented and in good condition. Have your furnace or boiler checked annually by a professional.
- Test your home for radon; take actions to reduce radon levels if needed.
- Install carbon monoxide detectors in your home; take immediate actions to reduce carbon monoxide levels if needed.

### Where can I get more information?

For additional information about soil vapor intrusion, contact the NYSDOH's Bureau of Environmental Exposure Investigation at 1-800-458-1158 (extension 2-7850).

# Attachment 2

# NYSDOH Fact Sheet: Trichloroethene (TCE)

**NEW YORK STATE**
**DEPARTMENT OF HEALTH**

# Trichloroethene (TCE) in Indoor and Outdoor Air

FACT SHEET

February 2005

### What is trichloroethene?

Trichloroethene is a manufactured, volatile organic chemical. It has been used as a solvent to remove grease from metal. Trichloroethene has also been used as a paint stripper, adhesive solvent, as an ingredient in paints and varnishes, and in the manufacture of other organic chemicals. Other names for trichloroethene include TCE and trichloroethylene. TCE is a common name for trichloroethene and will be used for the rest of this fact sheet.

TCE is a clear, colorless liquid, and has a somewhat sweet odor. It is non-flammable at room temperature and will evaporate into the air.

### How can I be exposed to TCE?

People can be exposed to TCE in air, water and food. Exposure can also occur when TCE, or material containing TCE, gets on the skin.

TCE gets into the air by evaporation when it is used. TCE can also enter air and groundwater if it is improperly disposed or leaks into the ground. People can be exposed to TCE if they drink groundwater contaminated with TCE, and if the TCE evaporates from the contaminated drinking water into indoor air during cooking and washing. They may also be exposed if TCE evaporates from the groundwater, enters soil vapor (air spaces between soil particles), and migrates through building foundations into the building's indoor air. This process is called "soil vapor intrusion."

### How can TCE enter and leave my body?

If people breathe air containing TCE, some of the TCE is exhaled unchanged from the lungs and back into the air. Much of the TCE gets taken into the body through the lungs and is passed into the blood, which carries it to other parts of the body. The liver changes most of the TCE taken into the blood into other compounds, called breakdown products, which are excreted in the urine in a day or so. However, some of the TCE and its breakdown products can be stored in the fat or the liver, and it may take a few weeks for them to leave the body after exposure stops.

### What kinds of health effects are caused by exposure to TCE in air?

In humans, long term exposure to workplace air containing high levels of TCE (generally greater than about 40,000 micrograms of TCE per cubic meter of air (mcg TCE/$m^3$)) is linked to effects on the central nervous system (reduced scores on tests evaluating motor coordination, nausea, headaches, dizziness) and irritation of the mucous membranes. Exposure to higher levels (generally greater than 300,000 mcg TCE/$m^3$) for short periods of time can irritate the eyes and respiratory tract, and can cause effects on the central nervous system, including dizziness, headache, sleepiness, nausea, confusion, blurred vision and fatigue. In laboratory animals, exposure to high levels of TCE has damaged the central nervous system, liver and kidneys, and adversely affected reproduction and development of offspring.  Lifetime exposure to high levels of TCE has caused cancer in laboratory animals.

Some studies of people exposed for long periods of time to high levels of TCE in workplace air, or elevated levels of TCE in drinking water, show an association between exposure to TCE and increased risks for certain types of cancer, including cancers of the kidney, liver and esophagus, and non-Hodgkin's lymphoma.  One study showed an association between elevated levels of TCE in drinking water and effects on fetal development.  Other studies suggest an association between workplace TCE exposure and reproductive effects (alterations in sperm counts) in men.  We do not know if the effects observed in these studies are due to TCE or some other possible factor (for example, exposure to other chemicals, smoking, alcohol consumption, socioeconomic status, lifestyle choices).  Because all of these studies have limitations, they only suggest, but do not prove, that exposure to TCE can cause cancer in humans and can cause developmental and reproductive effects as well.

## What are background levels of TCE for indoor and outdoor air?

The exact meaning of background depends on how a study selected sampling locations and conditions.  Generally, sampling locations are selected to be not near known sources of volatile chemicals (for example, a home not near a chemical spill, a hazardous waste site, a dry cleaner, or a factory).  In some studies, the criteria for sampling indoor air may require checking containers of volatile chemicals to make sure they are tightly closed or removing those products before samples are taken.  The New York State Department of Health (NYSDOH) has used several sources of information on background levels of TCE in indoor and outdoor air.  One NYSDOH study of residences heated by fuel oil found that background concentrations of TCE in indoor and outdoor air are less than 1 mcg/m$^3$ in most cases.  In this study, most homes did not have obvious sources of volatile organic compounds (VOCs).  In those homes with VOC sources, samples were taken and the data are included in the study.

## What are sources of TCE in air in homes?

TCE is found in some household products, such as glues, adhesives, paint removers, spot removers, rug cleaning fluids, paints, metal cleaners and typewriter correction fluid.  These and other products could be potential sources for TCE in indoor air.

Another source of TCE in indoor air is contaminated groundwater that is used for household purposes.  Common use of water, such as washing dishes or clothing, showering, or bathing, can introduce TCE into indoor air through volatilization from the water.

TCE may also enter homes through vapor intrusion as described on page 1 in the question "How can I be exposed to TCE?".

## What is the level of TCE that people can smell in the air?

The reported odor threshold (the air concentration at which a chemical can be smelled) for TCE in air is about 540,000 mcg TCE/m$^3$.  At this level, most people would likely be able to start smelling TCE in air.  However, odor thresholds vary from person to person.  Some people may be able to detect TCE at levels lower than the reported odor threshold and some people may only detect it at concentrations higher than the reported odor threshold.

**If I can't smell TCE in the air, am I being exposed?**

Just because you can't smell TCE doesn't mean there is no exposure. Sampling and testing is the best way to know if TCE is present.

**What is the NYSDOH's guideline for TCE in air?**

After a review of the toxicological literature on TCE, the NYSDOH set a guideline of 5 mcg/$m^3$ for TCE in air. This level is lower than the levels that have caused health effects in animals and humans. In setting this level, the NYSDOH also considered the possibility that certain members of the population (infants, children, the elderly, and those with pre-existing health conditions) may be especially sensitive to the effects of TCE.

The guideline is not a bright line between air levels that cause health effects and those that do not. The purpose of the guideline is to help guide decisions about the nature of the efforts to reduce TCE exposure. Reasonable and practical actions should be taken to reduce TCE exposure when indoor air levels are above background, even when they are below the guideline of 5 mcg/$m^3$. The urgency to take actions increases as indoor air levels increase, especially when air levels are above the guideline. In all cases, the specific corrective actions to be taken depend on a case-by-case evaluation of the situation. The goal of the recommended actions is to reduce TCE levels in indoor air to as close to background as practical.

**Should I be concerned about health effects if I am exposed to air levels slightly above the guideline? Below the guideline?**

The possibility of health effects occurring is low even at air levels slightly above the guideline. In addition, the guideline is based on the assumption that people are continuously exposed to TCE in air all day, every day for as long as a lifetime. This is rarely true for most people who are likely to be exposed for only part of the day and part of their lifetime.

**How can I limit my exposure to TCE?**

TCE can get into indoor air through household sources (for example, commercial products that contain TCE), from contaminated drinking water, or by vapor intrusion. As with any indoor air contaminant, removing household sources of TCE will help reduce indoor air levels of the chemical. Maintaining adequate ventilation will also help reduce the indoor air levels of TCE. If TCE is in the indoor air as a result of vapor intrusion, a sub-slab depressurization system, much like a radon mitigation system, will reduce exposures by minimizing the movement of vapors that are beneath a slab into a building. If TCE is in the water supply of a house, a carbon filter on the water supply to remove the TCE will minimize ingestion and inhalation exposures.

**Is there a medical test that can tell me whether I have been exposed to TCE?**

TCE can be measured in people's breath soon after they are exposed. TCE and some of its breakdown products can be measured in the urine and blood. These tests are not routinely available at a doctor's office. Urine and blood tests can indicate that you may have recently (within the last few days) been exposed to a large amount of the chemical. However, they cannot tell you the source of the exposure. Some of the breakdown products of TCE can also be formed from other chemicals.

### When should my children or I see a physician?

If you believe you or your children have symptoms that you think are caused by TCE exposure, you or your children should see a physician. You should tell the physician about the symptoms and about when, how and for how long you think you and/or your children were exposed to TCE.

### What is the NYSDOH doing to educate physicians about TCE?

The NYSDOH maintains an Infoline (1-800-458-1158) that physicians or the public can call when they have questions related to various types of chemical exposures. A certified occupational and environmental health nurse is available to triage physicians' questions and to direct their inquiries to the appropriate staff member.

The NYSDOH also works closely with the federal Agency for Toxic Substances and Disease Registry (ATSDR), making their educational materials available to physicians upon request. One of these items is an environmental medicine case study entitled "Trichloroethylene (TCE) Toxicity," which provides the opportunity for physicians to earn continuing medical education credits from the Centers for Disease Control and Prevention. Physicians who would like to complete this training are encouraged to contact the NYSDOH for more information. A printed copy can be mailed to the physician or it can be accessed on-line at the following web site http://www.atsdr.cdc.gov/HEC/CSEM/tce/index.html.

### Where can I get more information?

If you have any questions about the information in this fact sheet or would like to know more about TCE, please call the NYSDOH at 1-800-458-1158 or write to the following address:

New York State Department of Health
Bureau of Toxic Substance Assessment
Flanigan Square, 547 River Street
Troy, NY 12180-2216

# Attachment 3

# Communication Testing Results

EA Engineering, P.C.
EA Science and Technology

6712 Brooklawn Parkway, Suite 104
Syracuse, NY 13211-2158
Telephone: 315-431-4610
Fax: 315-431-4280
www.eaest.com

13 December 2010

**MEMORANDUM**

**TO:** David Chiusano, NYSDEC **LOCATION:** NYSDEC DER

**FROM:** Scott Fonte **LOCATION:** EA

**RE:** Pressure Field Extension Testing – 609 West Clinton Street, Ithaca, NY
NYSDEC Site: Clinton West Plaza (755015)
Contract/WA No: D004438-47

On 9 December 2010, EA Engineering, P.C. and its affiliate EA Science and Technology (EA) oversaw the pressure field extension testing (PFE testing) of the sub-slab environment at the structure located at 609 West Clinton Street, Ithaca, New York. PFE testing was completed by Groundwater & Environmental Services, Inc. (GES), a New York State Department of Environmental Conservation (NYSDEC) standby contractor that was tasked with installation of a vapor intrusion mitigation system at the commercial property. The PFE testing was completed to evaluate the effectiveness of a proposed sub-slab depressurization system (SSDS), and to measure the ability of a suction field and air flow to extend through material beneath the concrete slab. The goal and design of the sub-slab depressurization system is to minimize soil vapor intrusion effectively while minimizing excess energy usage, to avoid compromising moisture and temperature controls and other comfort features, and to minimize noise. A diagram illustrating the extraction point and monitoring points installed during the PFE testing is provided in Attachment A.

The PFE test was performed on the concrete slab from a 2 inch extraction point located within the southwestern portion of the building to determine the effectiveness of sub-slab depressurization within the environment beneath the poured concrete slab. Material beneath the slab consisted of approximately 2 to 3 inches of small diameter stone and gravel fill material underlain by a native glacial till material. Nine monitoring points (MP-1 through MP-9) were installed utilizing a 1/2-in. hammer drill bit in order to measure the suction field and air flow beneath the slab between the extraction point (EXP-1) and various distances and locations throughout the buildings slab. An existing lint trap, constructed of a poured concrete casting, located adjacent to EXP-1 was measured to be 4 feet wide by 6 feet long and 44 inches deep. The seam between the top of the lint trap and the base of the concrete slab was sealed with concrete caulk to prevent influence to the sub-slab environment. Micromanometer and magnohelic readings were recorded at various monitoring points during the diagnostic testing. These results were used to develop a radius of influence based on the blower rate recorded during the testing and are provided in Attachment B.

Micromanometer and magnohelic readings reported good communication between the extraction point (EXP- 1) and eight monitoring points (MP-1, MP-2, MP-3, MP-4, MP-5, MP-6, MP-7, and MP-9) located up to 62 ft away from the extraction point. One monitoring point (MP-8) located approximately 66 ft away from the extraction point reported communication slightly below the

American Society for Testing and Materials (ASTM) International (ASTM E-2121-03, 10 February 2003) depressurization goal (Section X3.3.1) of 0.025-0.035 inches of water. Based on the results of the PFE testing, it appears that one extraction point, centrally located to the extent feasible, within the structure will provide sufficient draw to communicate with the entire sub-slab environment.

Based on the results of the PFE testing, an appropriately sized SSDS will be a suitable mitigation technique to minimize the potential for soil vapor intrusion into the structure located at 609 West Clinton Street in Ithaca, NY. EA will remain in contact with NYSDEC and GES for review and discussions regarding the SSDS design and installation. In addition, a post PFE test will be required once the SSDS has been installed in accordance with Section 4.3, Subsection 4.3.1, of the New York State Department of Health *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, October 2006.

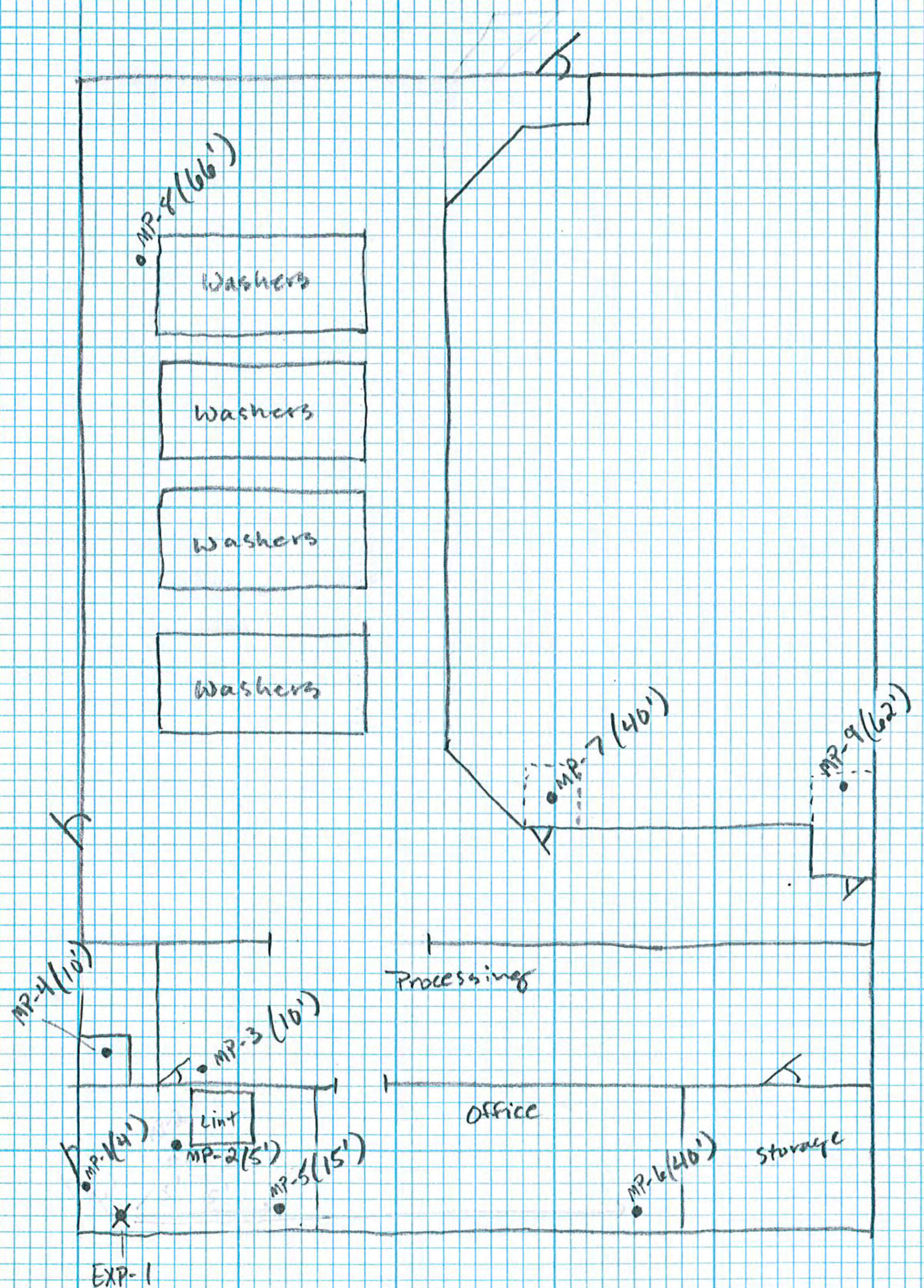
Also included as Attachment C to this memorandum are site notes and photographs recorded during the PFE testing by EA and GES.

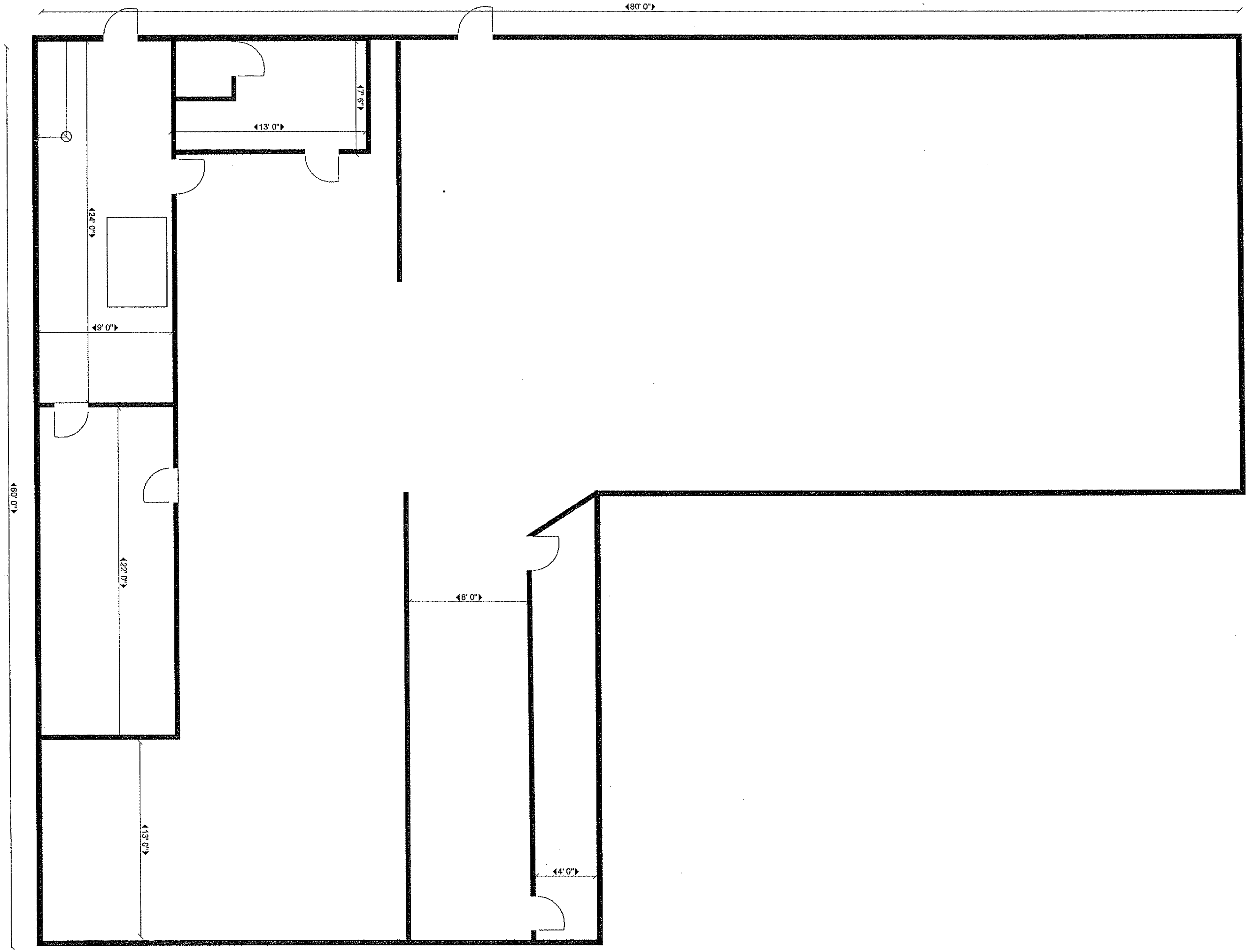
SF/drs
Attachments

# Attachment A
# Pressure Field Testing Diagram

| | |
|---|---|
| Project Clinton West Plaza | Project No. 14368.47 |
| Subject PFE Testing @ 609 W. Clinton | Sheet No. 1 of 1 |
| | Drawing No. |
| Computed by JCP Date 12/9/10 Checked by | Date |

- Approx. distance between EXP-1 and MPs indicated in paranthesis





80' 0"
60' 0"
13' 0"
7' 6"
24' 0"
9' 0"
22' 0"
13' 0"
8' 0"
4' 0"

# Attachment B
# Micromanometer/Magnohelic Results
# And Radius of Influence Results

## Pressure Field Extension Testing at 609 West Clinton Street, Ithaca, NY

| Monitoring Points | Time: | 1145 | Time: | 1150 | Time: | 1155 | Time: | 1200 | Time: | 1205 | Time: | 1210 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" |
| | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | |
| MP-1 | | -0.75 | | -0.75 | | -0.75 | | -0.75 | | -0.75 | | -0.75 |
| MP-2 | | -0.457 | | -0.412 | | -0.402 | | -0.395 | | -0.389 | | -0.378 |
| MP-3 | | | | | | | | | | | | |
| MP-4 | | | | | | | | | | | | |
| MP-5 | | | | | | | | | | | | |
| MP-6 | | | | | | | | | | | | |
| MP-7 | | | | | | | | | | | | |
| MP-8 | | | | | | | | | | | | |
| MP-9 | | | | | | | | | | | | |

Magnahelic Gauge used to collect data.

Fluke 922 Air Flow Meter used to collect data (Micromanometer).

| Monitoring Points | Time: | 1215 | Time: | 1220 | Time: | 1225 | Time: | 1230 | Time: | 1235 | Time: | 1240 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" |
| | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | |
| MP-1 | | | | | | | | | | | | |
| MP-2 | | | | | | | | | | | | |
| MP-3 | | 0.088 | | 0.086 | | 0.089 | | -0.459 | | -0.465 | | -0.466 |
| MP-4 | | -0.35 | | -0.35 | | -0.35 | | -0.35 | | -0.35 | | -0.35 |
| MP-5 | | | | | | | | -0.33 | | -0.34 | | -0.34 |
| MP-6 | | | | | | | | | | | | |
| MP-7 | | | | | | | | | | | | |
| MP-8 | | | | | | | | | | | | |
| MP-9 | | | | | | | | | | | | |

| Monitoring Points | Time: | 1245 | Time: | 1250 | Time: | 1255 | Time: | 1300 | Time: | 1305 | Time: | 1310 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" |
| | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | |
| MP-1 | | | | | | | | | | | | |
| MP-2 | | | | | | | | | | | | |
| MP-3 | | | | | | | | | | | | |
| MP-4 | | | | | | | | | | | | |
| MP-5 | | -0.34 | | -0.34 | | -0.34 | | | | | | |
| MP-6 | | | | | | -0.04 | | -0.04 | | -0.04 | | -0.04 |
| MP-7 | | | | | | -0.068 | | -0.072 | | -0.08 | | -0.08 |
| MP-8 | | | | | | | | -0.004 | | -0.017 | | -0.013 |
| MP-9 | | | | | | | | | | | | |

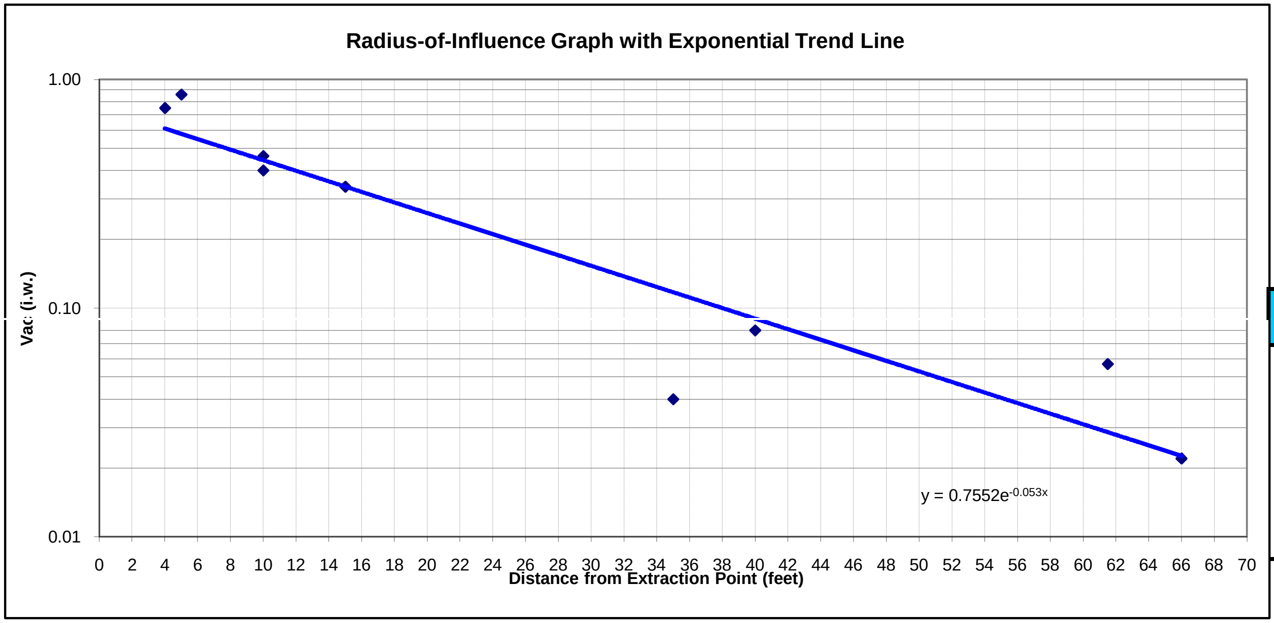
| Monitoring Points | Time: | 1315 | Time: | 1320 | Time: | 1325 | Time: | 1330 | Time: | 1335 | Time: | 1340 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" | EXP-1 (in $H_2O$): | 7-8" |
| | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | | Vacuum (In. of $H_2O$) | |
| MP-1 | | | | | | | | | | | | |
| MP-2 | | | | | | | | | | | | |
| MP-3 | | | | | | | | | | | | |
| MP-4 | | | | | | | | | | | | |
| MP-5 | | | | | | | | | | | | |
| MP-6 | | -0.04 | | | | | | | | | | |
| MP-7 | | -0.08 | | | | | | | | | | |
| MP-8 | | -0.016 | | -0.019 | | -0.022 | | -0.022 | | | | |
| MP-9 | | | | | | | | | | | | -0.057 |

| Monitoring Points | Time: | 1345 |
|---|---|---|
| | EXP-1 (in $H_2O$): | 7-8" |
| | Vacuum (In. of $H_2O$) | |
| MP-1 | | |
| MP-2 | | |
| MP-3 | | |
| MP-4 | | |
| MP-5 | | |
| MP-6 | | |
| MP-7 | | |
| MP-8 | | |
| MP-9 | | -0.056 |

| EXP-1 Effluent Total VOCs ppbRae reading (parts per billion) | | | |
|---|---|---|---|
| Time | ppb | Time | ppb |
| 1154 | 8850 | 1233 | 5576 |
| 1201 | 7220 | 1242 | 5441 |
| 1207 | 6722 | 1258 | 5053 |
| 1212 | 6420 | 1313 | 4877 |
| 1220 | 6105 | 1330 | 4638 |

# ROI Calculation Sheet

| | Extraction Well | MP-1 | MP-2 | MP-3 | MP-4 | MP-5 | MP-6 | MP-7 | MP-8 | MP-9 |
|---|---|---|---|---|---|---|---|---|---|---|
| Max Vac (inWC) | 8 | 0.75 | 0.86 | 0.46 | 0.40 | 0.34 | 0.04 | 0.08 | 0.02 | 0.06 |
| Distance from RW (ft) | 1E-15 | 4.00 | 5.00 | 10.00 | 10.00 | 15.00 | 35.00 | 40.00 | 66.00 | 61.50 |




**ROI calculated with exponential trend line**

Equation: y = c *e ^(b * x)

| | | |
|---|---|---|
| **c =** | slope | |
| **b =** | Intercept | |
| **ROI limit =** | 0.025 | |
| | c | b |
| | 0.7552 | -0.0532 |
| **ROI (ft) =** | 64.0621577 | |

# Attachment C
# Field Notes and Photolog

Location Ithaca, NY Date 12/9/10
Project / Client Clinton West PFET

0900 EA (Bob Casey / Jim Peterson) on site
0955 GES on site (Kevin / Jason)

- Horizontal 2" x 18" extraction point (slotted manually w/ sawzall)
- Approx. 16" of gravel @ install pt. w/ ~3-4" of stone beneath slab.

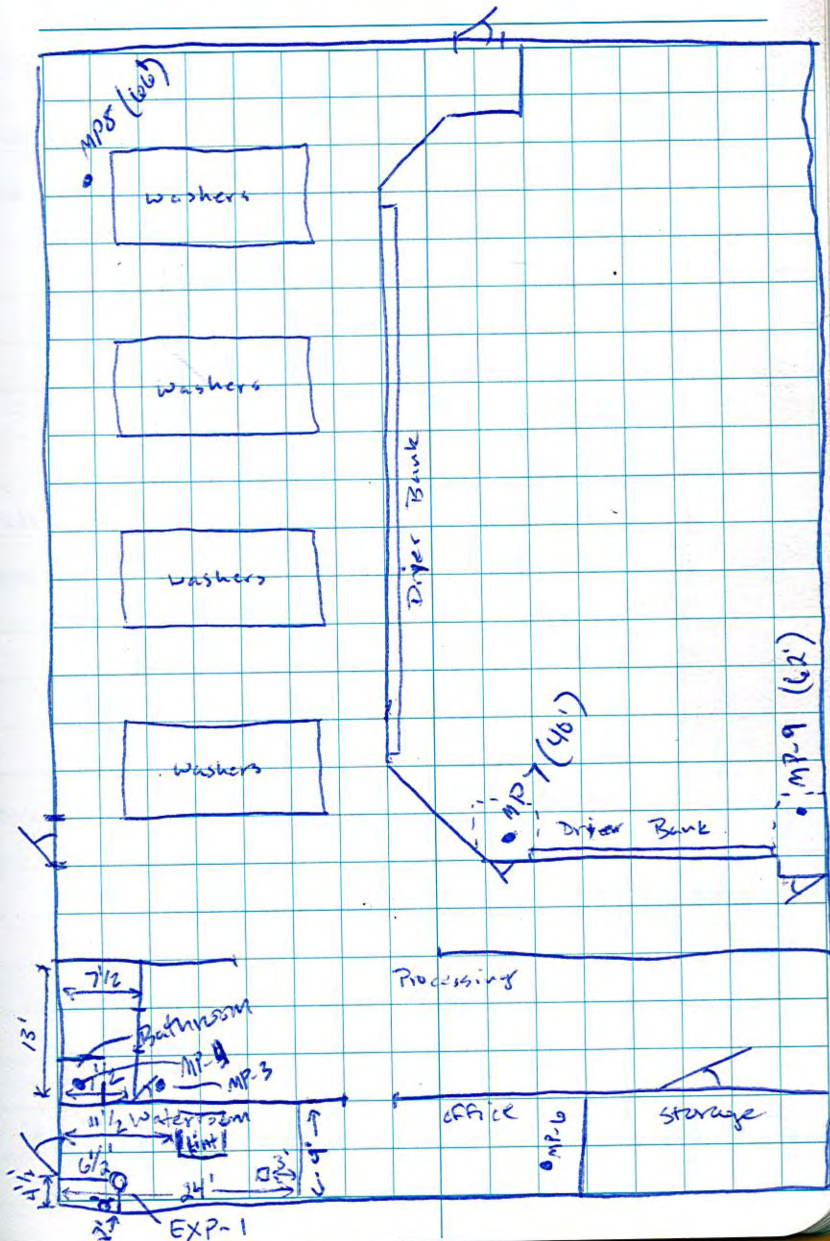
- Lint trap 4' x 6' x 44" & 4" off wall
- MP-3 : 2½' x 1'
- Bathroom : 4' x 4'

MP-1 : 4' - Mag
MP-2 : 5' - Fluke
MP-3 : 10'

| | | | |
|---|---|---|---|
| - Air discharge | 8550 ppb | @ | 1154 |
| | 7220 ppb | @ | 1201 |
| | 6722 ppb | @ | 1207 |
| | 6420 ppb | @ | 1212 |
| | 6105 ppb | @ | 1220 |

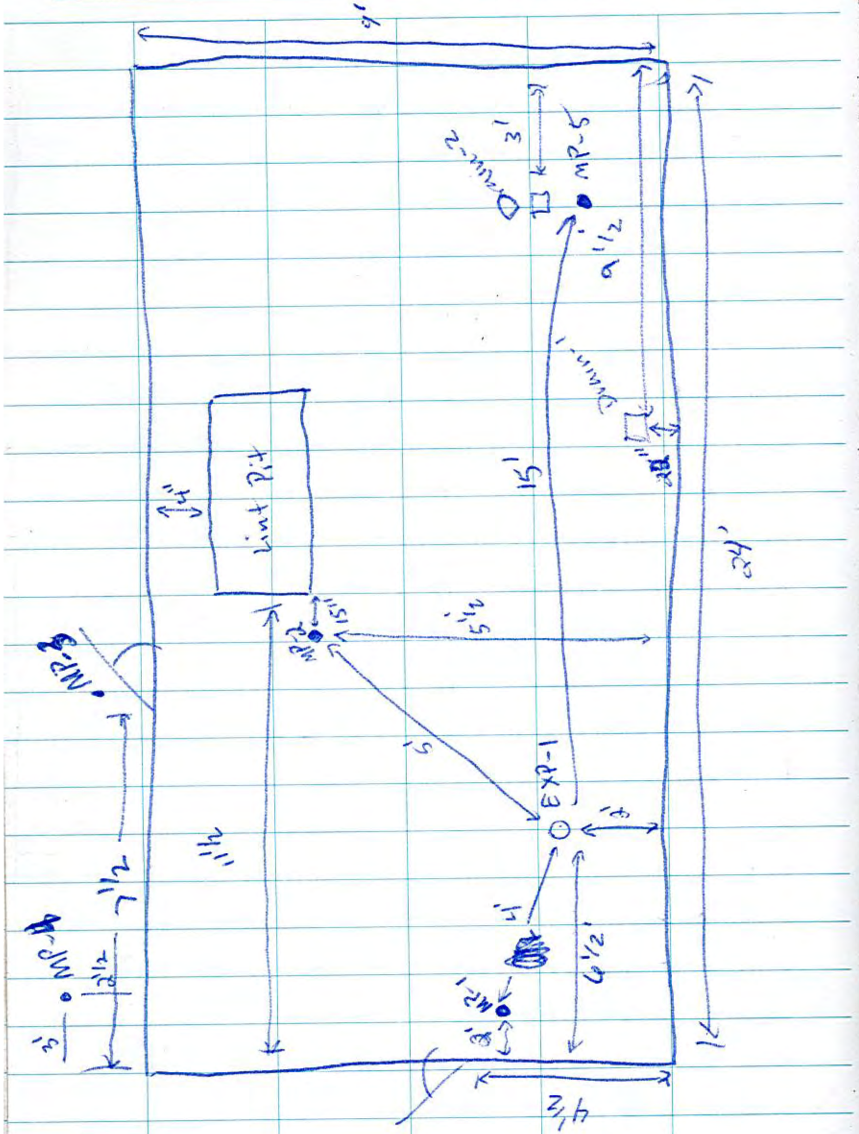


Location Ithaca, NY Date 12/9/10
Project / Client Clinton West PFET



Location Ithaca Date 12/9

Project / Client Clinton West PFET






Location Ithaca Date 12/9

Project / Client Clinton West PFET

Start: 1145 7-8" @ EXP-1

| | MPs | Int/Time | 5/Time | 10/Time | 15/Time | 20/Time |
|---|---|---|---|---|---|---|
| Fluke | MP2 | -.457/1145 | -.412/1150 | -.402/1155 | -.395/1200 | -.389/1205 |
| Mag | MP1 | -.75/1145 | -.75/1150 | -.75/1155 | -.75/1200 | -.75/1205 |

| 25/Time |
|---|
| .378/1210 |
| .75/1210 |

| | | Int/Time | 5/Time | 10/Time | 15/Time |
|---|---|---|---|---|---|
| Fluke | MP3 | *.088/1215 | *.080/1220 | *.089/1227 | -.459/1230 |
| Mag | MP4 | -.35/1215 | -.35/1220 | -.35/1227 | -.35/1230 |

| | 20/Time | 25/Time |
|---|---|---|
| MP3 | -.465/1235 | -.466/1240 |
| MP4 | -.35/1235 | -.35/1240 |

| | | Int/Time | 5/Time | 10/Time |
|---|---|---|---|---|
| Mag | MP5 | -.33/1230 | -.34/1235 | -.34/1240 |

| 15/Time | 20/Time | 25/Time |
|---|---|---|
| -.34/1245 | -.34/1250 | -.34/1255 |

* Recalibrated @ 1227

Location Ithaca Date 12/9/10

Project / Client Clinton West PFET

| | | |
|---|---|---|
| 5576 | ppb @ | 1233 |
| 5441 | ppb @ | 1242 |
| 5053 | ppb @ | 1258 |
| 4877 | ppb @ | 1313 |
| 4638 | ppb @ | 1330 |



Location Ithaca Date 12/9/10

Project / Client Clinton West PFET

| MP | Int/Time | 5/Time | 10/Time |
|---|---|---|---|
| Mag MP6 | -.04/1255 | -.04/1300 | -.04/1305 |
| Fluke* MP7 | -.068/1255 | -.072/1300 | -.08/1305 |
| | 15/Time | 20/Time | 25/Time |
| | -.04/1310 | -.04/1315 | -.04/1320 |
| | -.08/1310 | -.08/1315 | -.08/1320 |

| | Int/Time | 5/Time | 10/Time |
|---|---|---|---|
| MP8 | -.004/1300 | -.017/1305 | -.013/1310 |
| | 15/Time | 20/Time | 25/Time |
| | -.016/1315 | -.019/1320 | -.022/1325 |
| | 30/Time | | |
| | -.022/1328 | | |

| | Int/Time | 5/Time |
|---|---|---|
| MP9 | -.057/1340 | -.056/1345 |

* Fluke replaced w/ mag @ 1300 on MP7.

12/9 0700-0800 PREP NYSDEC ITHACA
0800-1000 - TRAVEL
1000 ON SITE, H&S MEETING
ROBERT & JAMES PETERSON ON SITE
TO OVERSEE WORK
PID CALIBRATED BY PINE
↳ DID NOT WORK - LAMP
1130 - BEGIN TEST ⇒ BLOWER MAXED OUT @ 8" $H_2O$
* FOR ALL DATA SEE TRACKING FORM & SITE MAPS
~~[illegible]~~ 0602302/05/270

| MP | DISTANCE FROM EP | MAX "$H_2O$ VACUUM | APPLIED VACUUM |
|---|---|---|---|
| 1 | 4 | .75 | 8" $H_2O$ |
| 2 | 5' | .86 | |
| 3 | 10' | .47 | 4" AIRFLOW |
| 4 | 10' | .40 | 115-128 |
| 5 | 15' | .34 | |
| 6 | 35' | .04 | MAX TEMP |
| 7 | 40' | .08 | 55.6 |
| 8 | 66' | .022 | |
| 9 | 61.5 | .057 | PID |

13:30 END TEST 8850 → 4638 ppb
13:30 - 14:45 ~~[illegible]~~ CLEAN UP & BREAK DOWN
14:45 - 16:30 TRAVEL & DEMO

# Vapor Mitigation Test Data Tracking Form

Extraction Well EP-1

Date: 12/9/10

| ID | Sample Description | units | Time: 1145 | Time: 1200 | Time: 1215 | Time: 1230 | Time: 1245 | Time: 1300 | Time: 1315 | Time: 1330 | Time: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Applied Vacuum | "$H_2O$ | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| | Well Airflow 4" | scfm | 123 | 112.81 | 120.02 | 128.21 | 121.04 | 123.89 | 117.94 | 115.02 | |
| | Discharge Temp | °F | 46.2 | 39.1 | 53.8 | 53.5 | 55.6 | 51.2 | 40.8 | 43.5 | |
| | PID | PPB ~~ppmv~~ | 8850 ppb | 7220 | 6237 | 5576 | 5441 | 4984 | 4783 | 4638 | |
| | ~~LEL~~ | % | | | | | | | | | |
| | ~~O2~~ | % | | | | | | | | | |
| | ~~PCE~~ | | | | | | | | | | |
| | ~~TCE~~ | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| Well ID | Distance From Extraction Well (feet) | Time: 1145 Vacuum (" H2O) | Time: 1200 Vacuum (" H2O) | Time: 1215 Vacuum (" H2O) | Time: 1230 Vacuum (" H2O) | Time: 1245 Vacuum (" H2O) | Time: 1300 Vacuum (" H2O) | Time: 1315 Vacuum (" H2O) | Time: Vacuum (" H2O) | Time: Vacuum (" H2O) |
|---|---|---|---|---|---|---|---|---|---|---|
| MP-1 | 4' | .75 | .75 | .75 | .75 | .75 | .75 | .75 | .75 | |
| MP-2 | 5' | .45 | .395 | .374 | .83 | .86 | .85 | .85 | .85 | |
| MP-3 | 10' | | | .095 | .463 | .470 | .44 | .45 | .45 | |
| MP-4 | 10' | | | .35 | .35 | .40 | .35 | .35 | .35 | |
| MP-5 | 15' | | | | .34 | .34 | .33 | .33 | .33 | |
| MP-6 | 35' | | | | | | .04 | .04 | .04 | |
| MP-7 | 40' | | | | | | .07 | .08 | .08 | |
| MP-8 | 66' | | | | | | .005 | .015 | .022 | |
| MP-9 | 61.5 | | | | | | | | .057 | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

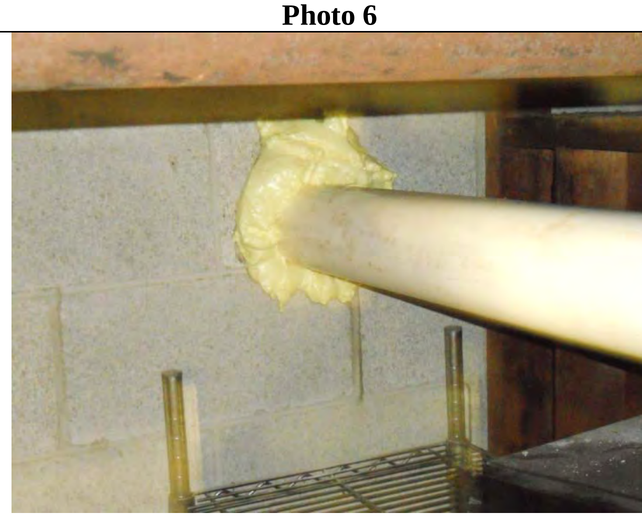
## Attachment C - Photolog

| **Photo 1** | **Photo 2** |
|---|---|
| <br>View of extraction point (EXP-1) from the northeast | <br>View of blower and effluent discharge setup from the west |
| **Photo 3** | **Photo 4** |
| <br>Seal applied to the slab and lint wall interface | <br>View of micromanometer data collection at MP-8 |

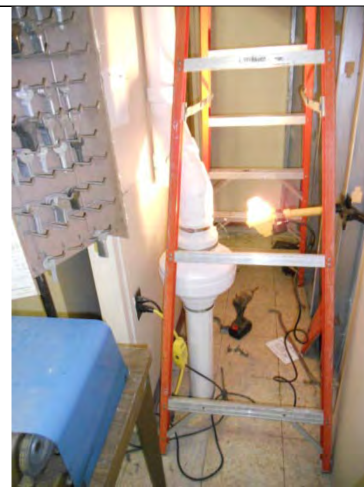
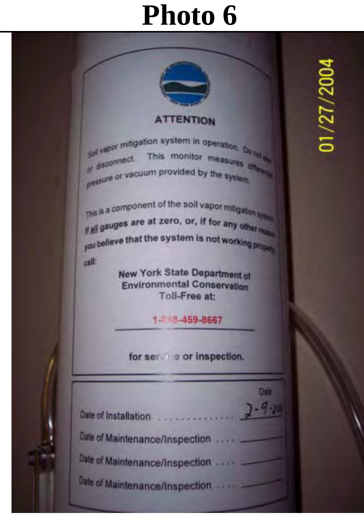
# Attachment 4

# SSD System Installation Photo Log

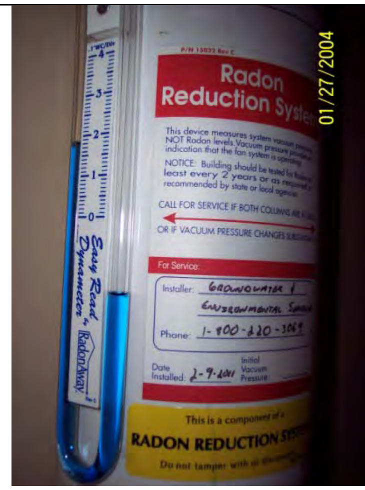
**Attachment 4 – Photo Log***

| **Photo 1** | **Photo 2** |
|---|---|
|  View of extraction point location |  View of cored extraction point |
| **Photo 3** | **Photo 4** |
|  View of piping from extraction point to ceiling line |  View of ceiling line piping to building exterior |
| **Photo 5** | **Photo 6** |
|  View of piping hole through building wall |  View of piping and seal through building wall |

**Attachment 4 – Photo Log**

| Photo 1 | Photo 2 |
|---|---|
|  View of exhaust stack above building |  View of exhaust stack above building |
| **Photo 3** | **Photo 4** |
|  View of fan unit with condensate redirect |  View of fan unit set-up |
| **Photo 5** | **Photo 6** |
|  View of sealed extraction point |  View of informational placard at extraction point |

## Attachment 4 – Photo Log

| Photo 1 | Photo 2 |
|---|---|
|   View of system manometer |   View of system manometer and radon reduction system placard |

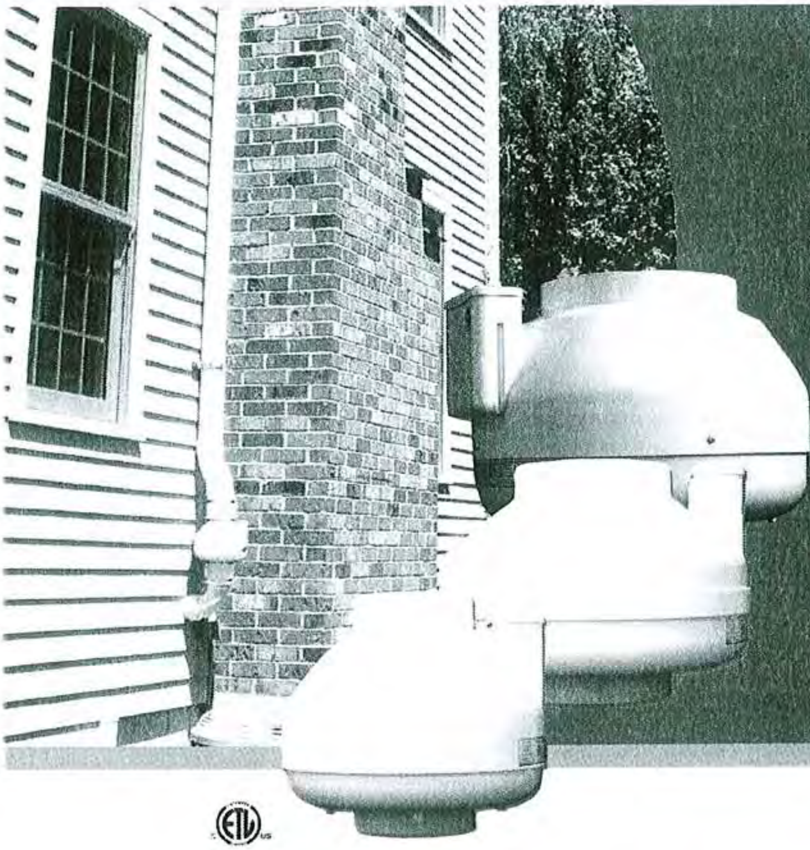
***NOTE: Date stamp on photographs are incorrect.**

# Attachment 5

# Fan Specifications and Warranty Information

RadonAway™
The World's Leading Radon Fan Manufacturer

# RP Series



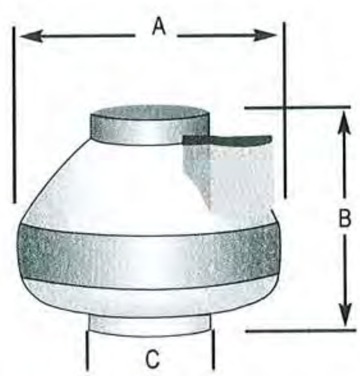
## Radon Mitigation Fans

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

## Features:

- Five-year hassle-free warranty
- Quiet and attractive
- Thermally protected
- Motorized impeller
- ETL Listed - for indoor or outdoor use
- Meets all electrical code requirements
- Rated for commercial and residential use

| Model | Watts | Max. Pressure "WC | Typical CFM vs. Static Pressure WC 0" | .5" | 1.0" | 1.5" | 2.0" | A" | B" | C" |
|---|---|---|---|---|---|---|---|---|---|---|
| RP140 | 14-20 | 0.8 | 134 | 68 | - | - | - | 9.7 | 7.9 | 4 |
| RP145 | 37-71 | 2.1 | 173 | 132 | 94 | 55 | 11 | 9.7 | 7.9 | 4 |
| RP260 | 52-72 | 1.8 | 275 | 180 | 105 | 20 | - | 11.8 | 9.9 | 6 |
| RP265 | 86-140 | 2.5 | 327 | 260 | 207 | 139 | 57 | 11.8 | 9.9 | 6 |
| RP380 | 103-156 | 2.3 | 510 | 393 | 268 | 165 | 35 | 13.41 | 10.53 | 8 |




Choice of model is dependent on building characteristics including sub-slab materials and should be made by a radon professional.

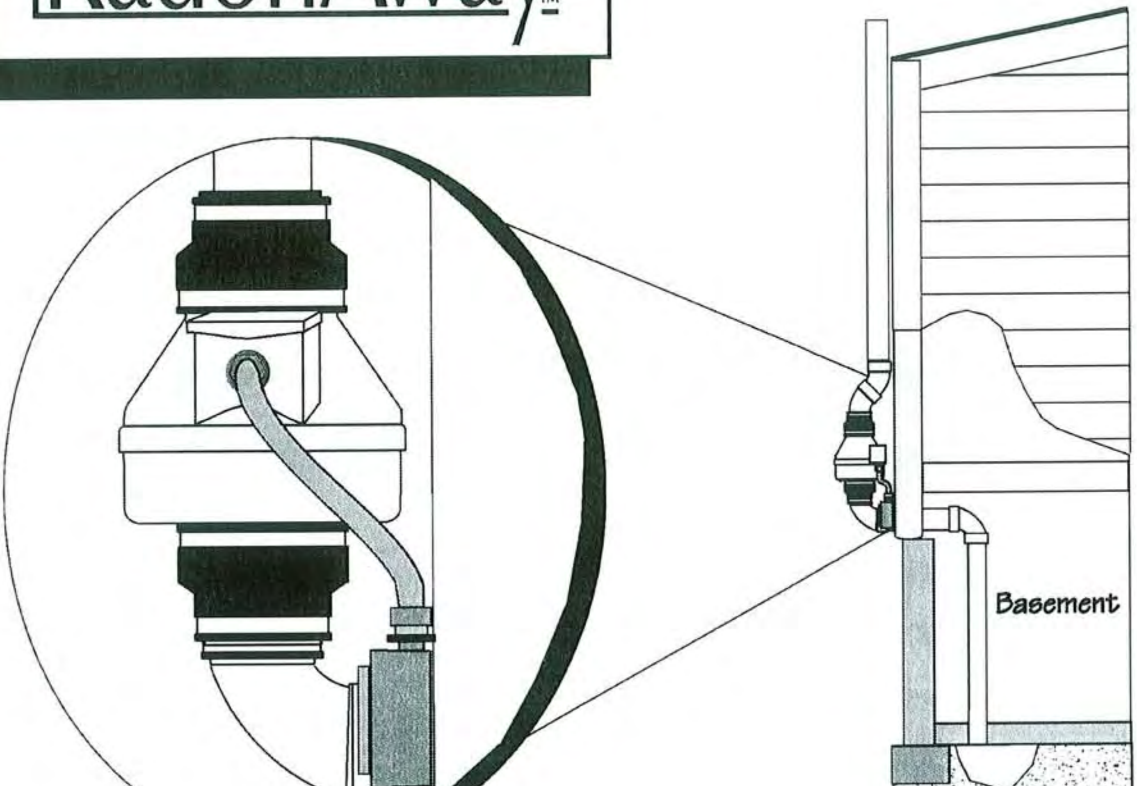
**For Further Information Contact:**

03/08
P/N 02008

# RP Series Installation Instructions

By

RadonAway™




Spruce Environmental Technologies, Inc.
Ward Hill, MA P/N IN020 Rev H

RadonAway

## Series Fan Installation Instructions

## *Please Read and Save These Instructions.*

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

1. **WARNING!** Do not use fan in hazardous environments where fan electrical system could provide ignition to combustible or flammable materials.

2. **WARNING!** Do not use fan to pump explosive or corrosive gases.

3. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.

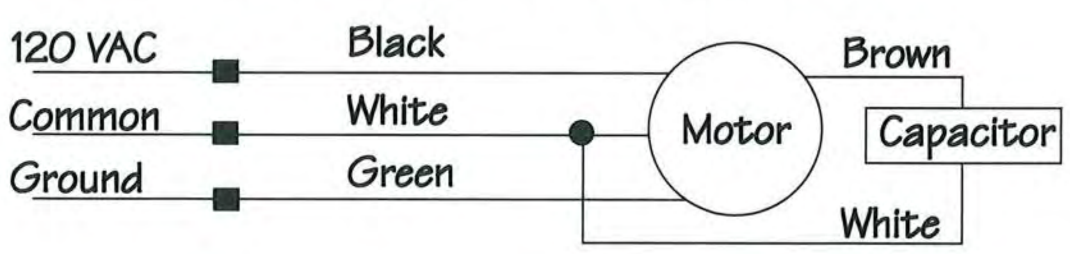
4. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.

5. **NOTICE!** There are no user serviceable parts located inside the fan unit. **Do NOT attempt to open.** Return unit to the factory for service.

6. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA)"National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician

7. **WARNING!** Do not leave fan unit installed on system piping without electrical power for more than 48 hours. Fan failure could result from this non-operational storage.

## DynaVac RP Series Fan Wiring Diagram



DynaVac - RP Series
RP140 p/n 23029-1
RP145 p/n 23030-1
RP155 p/n 23031-1
RP260 p/n 23032-1
RP265 p/n 23033-1
RP380 p/n 28208

RadonAway™

## 1.0 SYSTEM DESIGN CONSIDERATIONS

### 1.1 INTRODUCTION

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

### 1.2 ENVIRONMENTALS

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

### 1.3 ACOUSTICS

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

### 1.4 GROUND WATER

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

### 1.5 SLAB COVERAGE

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

## 1.6 CONDENSATION & DRAINAGE

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

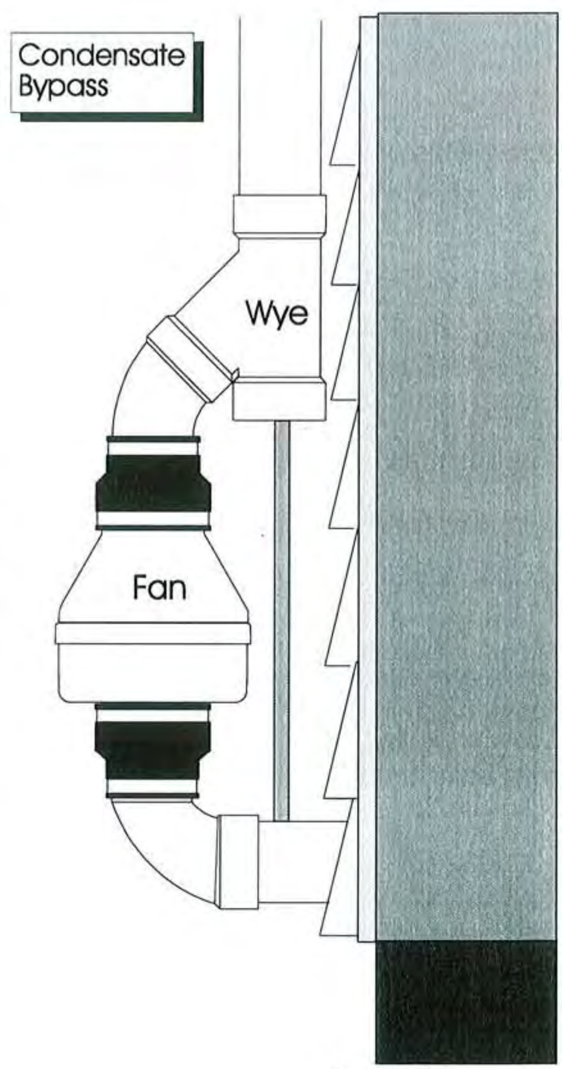
For RP Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

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


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

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

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




## 1.7 "SYSTEM ON" INDICATOR

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

1.8 ELECTRICAL WIRING

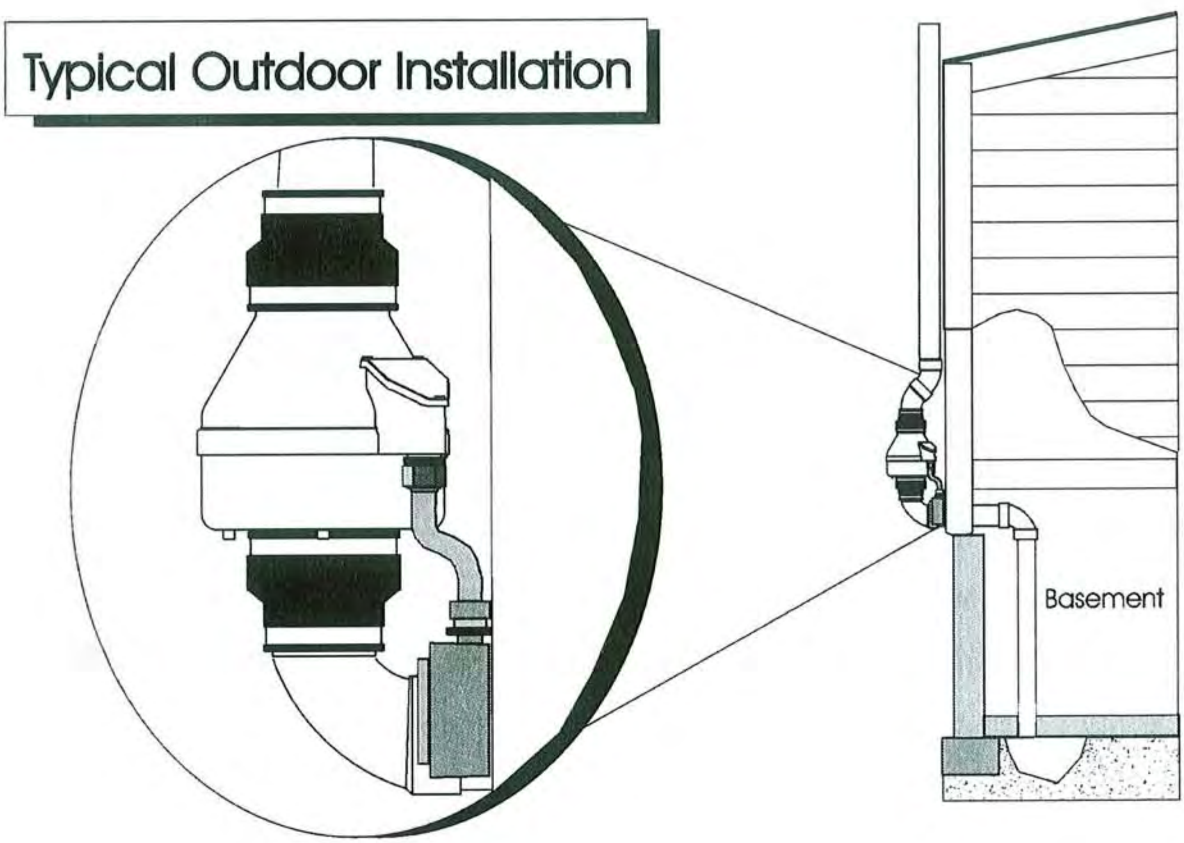
The RP Series Fans operate on standard 120V 60 Hz. AC. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA)"National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must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

1.9 SPEED CONTROLS

The RP Series Fans are rated for use with electronic speed controls ,however , they are generally not recommended.

2.0 INSTALLATION

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



2.1 MOUNTING

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

2.2 MOUNTING BRACKET (optional)

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

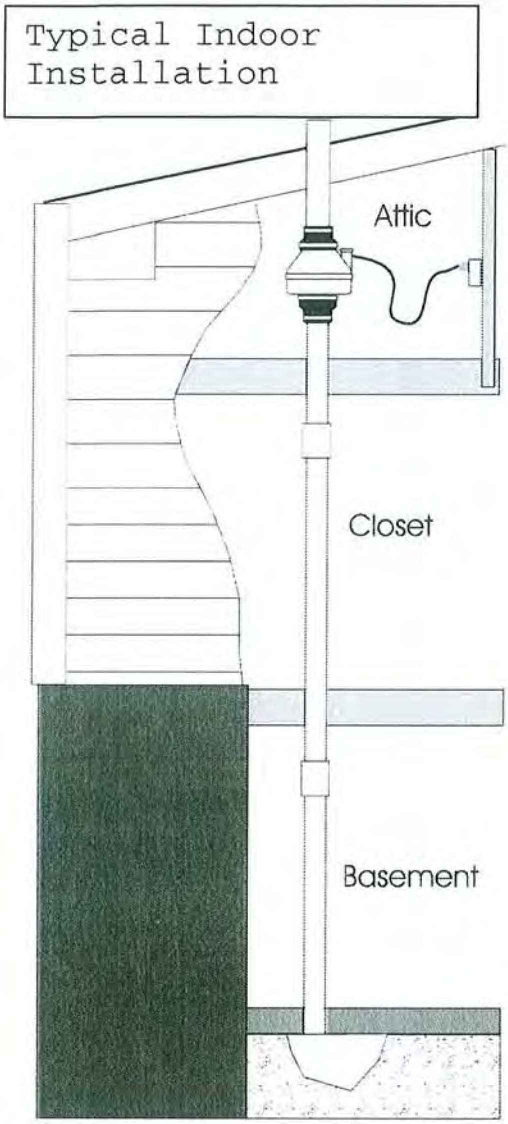
2.3 SYSTEM PIPING

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

2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections:

| Fan Wire | Connection |
|---|---|
| Green | Ground |
| Black | AC Hot |
| White | AC Common |




2.5 VENT MUFFLER (optional)

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

2.6 OPERATION CHECKS

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

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

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

*(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 Feet.)*

*(Further reduce Maximum Operating Pressure by 10% for High Temperature environments)*

*See Product Specifications. If this is exceeded, increase the number of suction points.*

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

## RP SERIES PRODUCT SPECIFICATIONS

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

| | Typical CFM Vs Static Pressure "WC | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 0" | .25" | .5" | .75" | 1.0" | 1.25" | 1.5" | 1.75" | 2.0" |
| RP140 | 134 | 101 | 68 | 10 | - | - | - | - | - |
| RP145 | 173 | 152 | 132 | 115 | 94 | 73 | 55 | 37 | - |
| RP155 | 185 | 161 | 137 | 115 | 94 | 73 | 55 | 37 | - |
| RP260 | 275 | 225 | 180 | 140 | 105 | 70 | 20 | - | - |
| RP265 | 327 | 302 | 260 | 230 | 207 | 176 | 139 | 101 | 57 |
| RP380* | 420 | 375 | 330 | 260 | 220 | 170 | 130 | 70 | 30 |

* Tested with 6" inlet and discharge pipe.

| Power Consumption 120 VAC, 60Hz 1.5 Amp Maximum | | |
|---|---|---|
| RP140 | 14 - 20 | watts |
| RP145 | 37 - 71 | watts |
| RP155 | 37 - 75 | watts |
| RP260 | 52 - 72 | watts |
| RP265 | 86 - 140 | watts |
| RP380 | 95 - 152 | watts |

| Maximum Recommended Operating Pressure* (Sea Level Operation)** | |
|---|---|
| RP140 | 0.8" W.C. |
| RP145 | 1.7" W.C. |
| RP155 | 1.7" W.C. |
| RP260 | 1.5" W.C. |
| RP265 | 2.2" W.C. |
| RP380 | 2.0" W.C. |

**Reduce by 10% for High Temperature Operation*
***Reduce by 4% per 1000 feet of altitude*

| | Size | Weight | Inlet/Outlet |
|---|---|---|---|
| RP140 | 8.5H" x 9.7" Dia. | 5.5 lbs. | 4.5" OD (4.0" PVC Sched 40 size compatible) |
| RP145 | 8.5H" x 9.7" Dia. | 5.5 lbs. | 4.5" OD (4.0" PVC Sched 40 size compatible) |
| RP155 | 8.5H" x 9.7" Dia. | 5.5 lbs. | 5.0" OD |
| RP260 | 8.6H" x 11.75" Dia. | 5.5 lbs. | 6.0" OD |
| RP265 | 8.6H" x 11.75" Dia. | 6.5 lbs. | 6.0" OD |
| RP380 | 10.53H" x 13.41" Dia. | 11.5 lbs. | 8.0" OD |

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

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

**Storage temperature range**: 32 - 100 degrees F.

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

**Maximum inlet air temperature:** 80 degrees F.

**Continuous Duty**

**Class B Insulation**

**Thermally protected**

**3000 RPM**

**Rated for Indoor or Outdoor Use**

LISTED Electric Fan — Tested to UL Std. 507
77728

## IMPORTANT INSTRUCTIONS TO INSTALLER

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

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

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

WARRANTY

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

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

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

5 YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

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

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

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

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

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

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

**Record the following information for your records:**

Serial No. 108398
Purchase Date 1/28/2011

# Appendix C

# Inspection Schedule/Form and Checklist

# Periodic Operations Visit Form

☐ Check box if new sys info

System ID: ______

Date of Visit: ______

Owner Name: ______ Date Installed: ______

System Address: ______ Telephone: ______

City: ______ Zip: ______ Alt. Telephone: ______

Performed By: ______ Site No: ______

Company: ______ Site Name: ______

EXTERIOR

**Fan Operation Confirmation**

| | Fan #1 | Fan #2 | Fan #3 |
|---|---|---|---|
| Fan Model No(s). | ______ | ______ | ______ |
| Is Fan Operating (arrival)? | ○ Yes ○ No | ○ Yes ○ No | ○ Yes ○ No |
| Confirmation Method | | | |
| Is Fan Operating (departure)? | ○ Yes ○ No | ○ Yes ○ No | ○ Yes ○ No |

Requested to inspect interior system components? ○ Yes ○ No

If yes, when and by whom? ______ Date: ______

INTERIOR

**Structural Review**

| | | | Notes |
|---|---|---|---|
| Change in building footprint since last inspection? | ○ Yes | ○ No | ______ |
| Basement occupied (>4 hrs per day)? | ○ Yes | ○ No | ______ |
| Heating/ventilation system modifications? | ○ Yes | ○ No | ______ |
| Crawlspace inspected? | ○ Yes | ○ No | ______ |
| Large cracks in floor or near sumps? | ○ Yes | ○ No | ______ |
| Wall penetrations or cracks noted? | ○ Yes | ○ No | ______ |

**Piping, Slab & Wall**

| | | | |
|---|---|---|---|
| Are system suction points sealed? | ○ Yes | ○ No | ______ |
| Is piping system in need of repair? | ○ Yes | ○ No | ______ |

**Miscellaneous**

| | | | |
|---|---|---|---|
| Are manometer levels equal? | ○ Yes | ○ No | ______ |
| Are system labels accurate and applied correctly? | ○ Yes | ○ No | ______ |

Maintenance completed (check all that apply): ☐ Replace fan ☐ Seal pipe ☐ Electrical ☐ Other

Describe repairs made and any proposed actions requiring a subsequent visit (if necessary):

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| EA Engineering and Its Affiliate<br>EA Science & Technology<br>6712 Brooklawn Parkway, Suite 104<br>Syracuse, NY 13211 | | Project #: | 14368.47 |
| | | Project Name: | NYSDEC Clinton West Plaza |
| | | Location: | Ithaca NY |
| | | Project Manager: | Scott Fonte/Dave Chiusano |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 | | | Sampler(s): | David Crandall/Jim Peterson |
| PID Meter Used: (Model, Serial #) | ppb RAE | | | Building I.D. No.: | STRUCTURE 01 |

**SUMMA Canister Record:**

BA-DUP 01

| ~~INDOOR AIR - FIRST FLOOR~~ | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | BC1016 | Flow Regulator No.: | BC1606 | Flow Regulator No.: | BC1014 | Flow Regulator No.: | |
| Canister Serial No.: | BC3345 | Canister Serial No.: | BC3414 | Canister Serial No.: | BC3415 | Canister Serial No.: | |
| Start Date/Time: | 2/9/11 934 | Start Date/Time: | 2/9/11 934 | Start Date/Time: | 2/9/11 933 | Start Date/Time: | |
| Start Pressure: (inches Hg) | -29 | Start Pressure: (inches Hg) | -30+ | Start Pressure: (inches Hg) | -29 | Start Pressure: (inches Hg) | |
| Stop Date/Time: | 2/10/11 934 | Stop Date/Time: | 2/10/11 934 | Stop Date/Time: | 2/10/11 933 | Stop Date/Time: | |
| Stop Pressure: (inches Hg) | -12 | Stop Pressure: (inches Hg) | -11 | Stop Pressure: (inches Hg) | -11 | Stop Pressure: (inches Hg) | |
| Sample ID: ~~755~~ 755015-BA-DUP01 | | Sample ID: 755015-BA-01 | | Sample ID: 755015-SS-01 | | Sample ID: | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | BSMT | Basement or Crawl Space? | BSMT | Direction from Building | |
| Room | | Room | STORAGE utility | Floor Slab Thickness (inches) *[if present]* | 4'' | Distance from Building | |
| Indoor Air Temp (°F) | | Indoor Air Temp | 60F | Potential Vapor Entry Points Observed? | open sump pit ≈ 5ft off. | Intake Height Above Ground Level (ft.) | |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 4ft. | If slab, intake Depth If Crawl Space, intake height | 4.5'' | Distance to nearest Roadway | |
| Noticeable Odor? | | Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | |
| PID Reading (ppb) | | PID Reading (ppb) | 0ppb | PID Reading (ppb) | 3146 ppb | PID Reading (ppb) | |
| Duplicate Sample? | | Duplicate Sample? | BA-DUP01 | Duplicate Sample? | | Duplicate Sample? | |

**Comments:**

Helium leak test — 100% He in Dome 0ppm Purge.
PPbRAE 3146 ppb.

Sampler Signature: [signature]

STRUCTURE 01

# NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID CRANDALL Date/Time Prepared 2/9/11

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation ____

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ____ First Name: ____

Address: ____

County: ____

Home Phone: ____ Office Phone: ____

Number of Occupants/persons at this location ____ Age of Occupants ____

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ____ First Name: ____

Address: ____

County: ____

Home Phone: ____ Office Phone: ____

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

Residential School Commercial/Multi-use

Industrial Church Other: ______________

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:____________ |

**If multiple units, how many?**
_______ **If the property is commercial, type?**

Business Type(s) ______________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**

Number of floors______ Building age______

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**

**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

## 5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ________ |
| **c. Basement floor:** | concrete | dirt | stone | other ________ |
| **d. Basement floor:** | uncovered | covered | covered with ______________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with ______________ | |
| **f. Foundation walls:** | poured | block | stone | other ________ |
| **g. Foundation walls:** | unsealed | sealed | sealed with ______________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ________(feet)
**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

## 6. HEATING, VENTING and AIR CONDITIONING

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters -
Stream radiation - Radiant floor - Electric baseboard - Wood stove -
Outdoor wood boiler - Other ___________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ____________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other___________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

## 7. OCCUPANCY

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ______________________________________________
1st Floor ______________________________________________
2nd Floor ______________________________________________
3rd Floor ______________________________________________
4th Floor ______________________________________________

**8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY**

| | | |
|---|---|---|
| **a. Is there an attached garage?** | Y / N | |
| **b. Does the garage have a separate heating unit?** | Y / N / NA | |
| **c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) | Y / N / NA | Please specify________________ |
| **d. Has the building ever had a fire?** | Y / N | When?________________ |
| **e. Is a kerosene or unvented gas space heater present?** | Y / N | Where? ________________ |
| **f. Is there a workshop or hobby/craft area?** | Y / N | Where & Type? ____________ |
| **g. Is there smoking in the building?** | Y / N | How frequently? ____________ |
| **h. Have cleaning products been used recently?** | Y / N | When & Type? ____________ |
| **i. Have cosmetic products been used recently?** | Y / N | When & Type? ____________ |
| **j. Has painting/staining been done in the last 6 months?** | Y / N | When & Type? ____________ |
| **k. Is there new carpet, drapes or other textiles?** | Y / N | Where & When? ____________ |
| **l. Have air fresheners been used recently?** | Y / N | When & Type? ____________ |
| **m. Is there a kitchen exhaust fan?** | Y / N | If yes, where vented? ________________ |
| **n. Is there a bathroom exhaust fan?** | Y / N | If yes, where vented? ________________ |
| **o. Is there a clothes dryer?** | Y / N | If yes, is it vented outside? Y / N |
| **p. Has there been a pesticide application?** | Y / N | When &Type? ____________ |

**Are there odors in the building?** Y / N

If yes, please describe:

________________________________________________________________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? ________________________________________

If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No

Yes, use dry-cleaning infrequently (monthly or less) Unknown

Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

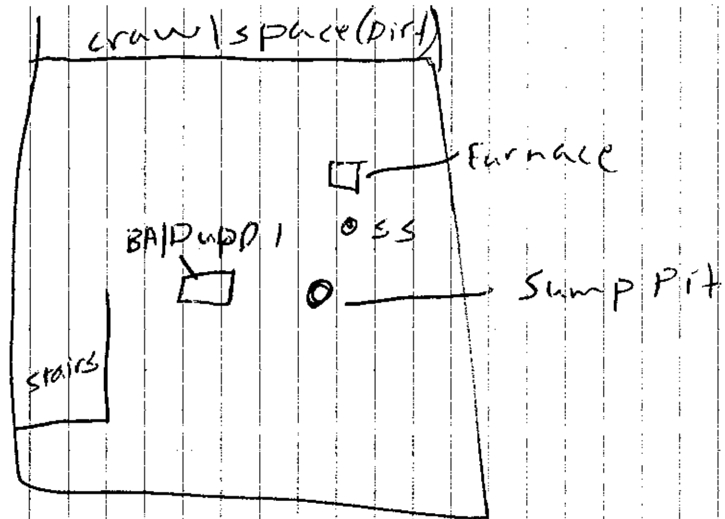
**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: _______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: _______

**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ____________________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

## 11. FLOOR PLANS

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

**Basement:**




**First Floor:**

## 12. OUTDOOR PLOT

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**

## 13. PRODUCT INVENTORY FORM

**Make & Model of field instrument used: ______________________________________**

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
| | Glidden spred house latex Paint | 1qt. | U | Titanium Oxide, 1,2 Etanediol, 1,2 propanediol propanoic Acid | 0 | Y |
| | spencer Kellogs Linseed Oil | 1qt. | U | — | 0 | Y |
| | Ferro Bondo enamel undercoat | 4oz | U | mineral spirits | 0 | Y |
| | minwax Poly shade. | 1qt | U | 450 g/L VOC | 0 | Y |
| | Aqua velvet latex Paint. | 1gal | U/D | 69.1% volatiles | 0 | Y |
| | | | | | | |
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| | | | | | | |

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

## Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 01

Leak Testing for Sub-Slab Point SS-01


Structure 01 – BA-01 and Basement Air Duplicate


Structure 01 – Sub-Slab Sample SS-01


Observed Chemicals in Structure 01


Observed Paint in Structure 01

# TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 01 - 402 Center Street | | | | | |
|---|---|---|---|---|---|---|---|
| | Sample ID | 755015-SS-01 | | 755015-BA-01 | | 755015-BA-DUP-01 | |
| | Lab ID | 11B0284-02 | | 11B0284-01 | | 11B0284-08 | |
| | Sample Type | Sub-slab Vapor | | Basement Indoor Air | | QA\QC - Duplicate | |
| | Sample Date | 2/10/2011 | | 2/10/2011 | | 2/10/2011 | |
| Acetone | (µg/m³) | 42 | | 10 | | 11 | |
| Benzene | (µg/m³) | 0.68 | | 0.76 | | 0.75 | |
| 2-Butanone | (µg/m³) | 6.6 | | 1.3 | | 1.5 | |
| Carbon Disulfide | (µg/m³) | 0.52 | | (<0.11) | U | (<0.11) | U |
| Dichlorodifluoromethane | (µg/m³) | 2.5 | | 3 | | 3.1 | |
| Ethanol | (µg/m³) | 7.5 | | 9.6 | | 8.2 | |
| Ethylbenzene | (µg/m³) | 0.45 | | 0.22 | | 0.18 | |
| Heptane | (µg/m³) | 0.43 | | 0.5 | | 0.22 | |
| Hexane | (µg/m³) | 3.1 | | 4.4 | | 4.2 | |
| 2-Hexanone | (µg/m³) | 0.48 | | 0.16 | | 0.17 | |
| Isopropanol | (µg/m³) | 3.1 | | 1.4 | | 1.4 | |
| Methylene Chloride | (µg/m³) | 1.7 | | 2.3 | | 2 | |
| Tetrachloroethylene | (µg/m³) | 2.2 | | 0.25 | | (<0.24) | U |
| Toluene | (µg/m³) | 3 | | 1 | | 0.99 | |
| Trichlorofluoromethane | (µg/m³) | 1.4 | J | 1.8 | J | 1.7 | J |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m³) | <0.77 | U | 0.75 | | 0.67 | |
| 1,2,4-Trimethylbenzene | (µg/m³) | 1.6 | | 0.28 | | 0.24 | |
| m&p-Xylene | (µg/m³) | 1.8 | | 0.64 | | 0.55 | |
| o-Xylene | (µg/m³) | 0.63 | | 0.27 | | 0.2 | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
U = The analyte was analyzed for, but was not detected above the sample reporting limit.
µg/m3 = micrograms per cubic meter

# TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | | | | | |
|---|---|---|---|---|---|
| | Property ID | Structure 01, 02, 04, Clinton West Laundry | | | |
| | Sample ID | 755015-OA-04 | | | |
| | Lab ID | 11B0284-09 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 2/10/2011 | | | |
| Acetone | (µg/m3) | 4.7 | | | |
| Benzene | (µg/m3) | 0.73 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.56 | | | |
| Chloromethane | (µg/m3) | 1.1 | | | |
| Dichlorodifluoromethane | (µg/m3) | 3.1 | | | |
| Ethanol | (µg/m3) | 4.1 | | | |
| Ethylbenzene | (µg/m3) | 0.16 | | | |
| Heptane | (µg/m3) | 0.18 | | | |
| Hexane | (µg/m3) | 1.7 | | | |
| Isopropanol | (µg/m3) | 0.45 | | | |
| Methylene Chloride | (µg/m3) | 0.81 | | | |
| Toluene | (µg/m3) | 0.85 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.8 | J | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.69 | | | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 0.19 | | | |
| m&p-Xylene | (µg/m3) | 0.46 | | | |
| o-Xylene | (µg/m3) | 0.17 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 01

Leak Testing for Sub-Slab Point SS-01


Structure 01 – BA-01 and Basement Air Duplicate


Structure 01 – Sub-Slab Sample SS-01


Observed Chemicals in Structure 01


Observed Paint in Structure 01

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| EA Engineering and Its Affiliate<br>EA Science & Technology<br><br>6712 Brooklawn Parkway, Suite 104<br><br>Syracuse, NY 13211 | | Project #: | 14368.47 |
| | | Project Name: | NYSDEC Clinton West Plaza |
| | | Location: | Ithaca NY |
| | | Project Manager: | Scott Fonte/Dave Chiusano |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 | | | Sampler(s): | David Crandall/Jim Peterson |
| PID Meter Used: (Model, Serial #) | ppb RAE | | | Building I.D. No.: | STRUCTURE 02 |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | | Flow Regulator No.: | BC1853 | Flow Regulator No.: | BC1650 | Flow Regulator No.: | |
| Canister Serial No.: | | Canister Serial No.: | BC3411 | Canister Serial No.: | BC3303 | Canister Serial No.: | |
| Start Date/Time: | | Start Date/Time: | 2/9/11 1030 | Start Date/Time: | 2/9/11 1030 | Start Date/Time: | |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | -29 | Start Pressure: (inches Hg) | -30 | Start Pressure: (inches Hg) | |
| Stop Date/Time: | | Stop Date/Time: | 945 | Stop Date/Time: | 1030 | Stop Date/Time: | |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -2 | Stop Pressure: (inches Hg) | -11 | Stop Pressure: (inches Hg) | |
| Sample ID: | | Sample ID: 755015-BA-02 | | Sample ID: 755015-SS-02 | | Sample ID: | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | BSMT | Basement or Crawl Space? | BSMT | Direction from Building | |
| Room | | Room | Storage | Floor Slab Thickness (inches) *[if present]* | 6 in. | Distance from Building | |
| Indoor Air Temp (°F) | | Indoor Air Temp | 60 f. | Potential Vapor Entry Points Observed? | No | Intake Height Above Ground Level (ft.) | |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 3.5 ft | If slab, intake Depth If Crawl Space, intake height | 6.5" | Distance to nearest Roadway | |
| Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | — | Noticeable Odor? | |
| PID Reading (ppb) | | PID Reading (ppb) | 0 | PID Reading (ppb) | 259 ppb | PID Reading (ppb) | |
| Duplicate Sample? | | Duplicate Sample? | — | Duplicate Sample? | — | Duplicate Sample? | |

**Comments:**

Helium Leaktest 100 % Dome, Purge. 0 ppm

Sampler Signature:

STRUCTURE 02

# NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID CRANDALL Date/Time Prepared 2/9/11

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation ____________

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

Number of Occupants/persons at this location ______ Age of Occupants ____________

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

| | | |
|---|---|---|
| Residential | School | Commercial/Multi-use |
| Industrial | Church | Other: ______________ |

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:______________ |

**If multiple units, how many?**
________ **If the property is commercial, type?**

Business Type(s) ______________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**

Number of floors______ Building age______

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**

**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

## 5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ________ |
| **c. Basement floor:** | concrete | dirt | stone | other ________ |
| **d. Basement floor:** | uncovered | covered | covered with ______________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with _______________ | |
| **f. Foundation walls:** | poured | block | stone | other ________ |
| **g. Foundation walls:** | unsealed | sealed | sealed with _______________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ________(feet)

**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

## 6. HEATING, VENTING and AIR CONDITIONING

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters -
Stream radiation - Radiant floor - Electric baseboard - Wood stove -
Outdoor wood boiler - Other ___________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ____________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other___________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

**7. OCCUPANCY**

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ________________________________________
1st Floor ________________________________________
2nd Floor ________________________________________
3rd Floor ________________________________________
4th Floor ________________________________________

**8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY**

**a. Is there an attached garage?** Y / N

**b. Does the garage have a separate heating unit?** Y / N / NA

**c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) Y / N / NA
Please specify____________________

**d. Has the building ever had a fire?** Y / N When?____________________

**e. Is a kerosene or unvented gas space heater present?** Y / N Where? ____________________

**f. Is there a workshop or hobby/craft area?** Y / N Where & Type? ______________

**g. Is there smoking in the building?** Y / N How frequently? ______________

**h. Have cleaning products been used recently?** Y / N When & Type? ______________

**i. Have cosmetic products been used recently?** Y / N When & Type? ______________

**j. Has painting/staining been done in the last 6 months?** Y / N When & Type? ______________

**k. Is there new carpet, drapes or other textiles?** Y / N Where & When? ______________

**l. Have air fresheners been used recently?** Y / N When & Type? ______________

**m. Is there a kitchen exhaust fan?** Y / N If yes, where vented? ____________________

**n. Is there a bathroom exhaust fan?** Y / N If yes, where vented? ____________________

**o. Is there a clothes dryer?** Y / N If yes, is it vented outside? Y / N

**p. Has there been a pesticide application?** Y / N When &Type? ______________

**Are there odors in the building?** Y / N
If yes, please describe:
________________________________________________________________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? ________________________________________
If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

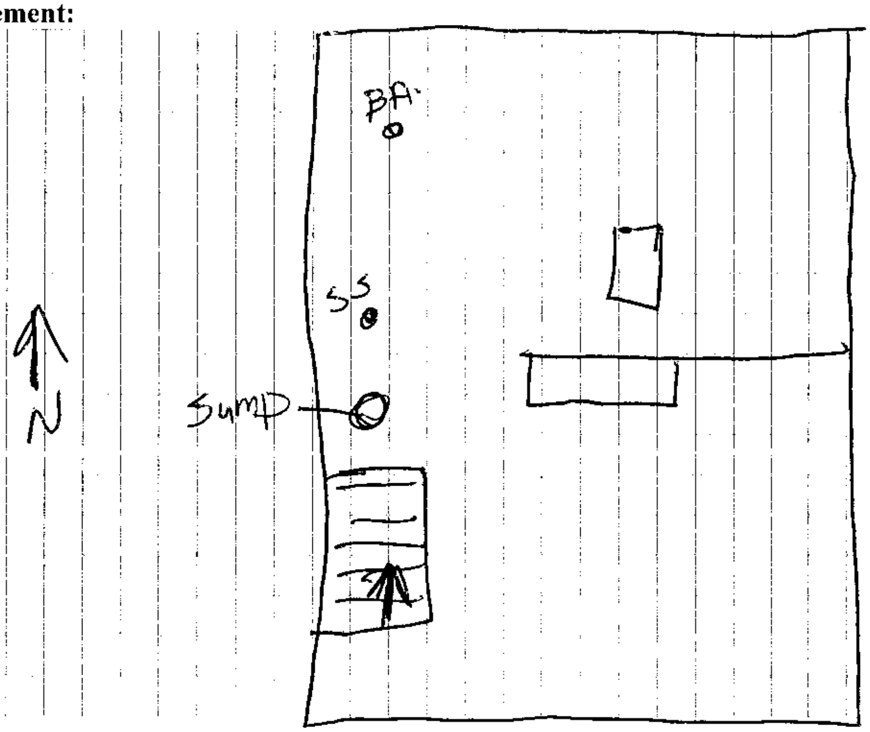
**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: ______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: ______

**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ______________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

## 11. FLOOR PLANS

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

**Basement:**




**First Floor:**

## 12. OUTDOOR PLOT

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**

## 13. PRODUCT INVENTORY FORM

**Make & Model of field instrument used:** ______________________

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
| BSMT | Valspar ultra Latex Paint | (2) qt. | U | Crystaline silica | 0 | |
| | Ever Coat Durabond | (1) qt | U | 512 g/L VOC | 22.8 ppm | |
| | Rustoleum enamel | 8 fl.oz | U | Petroleum distillates | 0 | |
| | Mineral spirits. | 1 qt | U | Petroleum distillates | 0 | |
| | CRC Sensor Cleaner | 11 oz | U. | Hexane + Carbon Dioxide | 0 | |
| | Omni, Au Topcoat Hardener | ½ pint | UO | 1,2,4 Trimethylbenzene. | 0 | |
| | Color horizons Metal lock. | ½ pint | U | Xylene, butanol | 0 | |
| | Shop Line JR 506 reducer | 1 qt | U. | MEK, xylene, toluene, 1,2,4 trimethylbenzene | 0 | |
| | Brakleen | 14 oz | UO | 50 state Formula No PCE! | 0 | |
| | Liquid Wrench | 11 oz | U | Petroleum Distillates | 0 | |
| | Permatex Disc Brake Quiet | 9 oz | U | Acetone, Hexane, P.D. | 0 | |
| | NAPA white Lithium | 10 oz | U | Mineral oil, Hexane, Butane. | 0 | |
| | STP Throttle Cleaner | 10 oz | U | Acetone, xylene, Isopropanol | 0 | |
| | Duplicolor Paint. | 5 oz | U | Ketones, Toluene. | 0 | |
| | Stoner invisible Glass. | 14 oz | U | — | 0 | |
| | Deltron Auto Paint | (2) Qt | U | Xylene/Ketones. | 0 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 02

Structure 02 – SS-02 Sub-Slab Sample


Structure 02 – BA-02 Basement Air Sample

Structure 02 – Sub-Slab Sample SS-02

Observed Chemicals in Structure 02


Observed Chemicals in Structure 02


Observed Chemicals in Structure 02

Observed Chemicals in Structure 02
Note – Brakleen was 50 state formula – no PCE

Observed Chemicals in Structure 02

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 02 - 410 Center Street | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-SS-02 | | 755015-BA-04 | |
| | Lab ID | 11B0284-04 | | 11B0284-05 | |
| | Sample Type | Sub-slab Vapor | | Basement Indoor Air | |
| | Sample Date | 2/10/2011 | | 2/10/2011 | |
| Acetone | (µg/m³) | 13 | | 18 | |
| Benzene | (µg/m³) | 0.77 | | 0.91 | |
| 2-Butanone | (µg/m³) | 1.5 | | 3.1 | |
| Carbon Disulfide | (µg/m³) | 6.3 | | (<0.11) | U |
| Carbon Tetrachloride | (µg/m³) | <0.63 | | 0.6 | |
| Chlorobenzene | (µg/m³) | <0.46 | | <0.16 | |
| Chloroform | (µg/m³) | 4.9 | | (<0.17) | U |
| Chloromethane | (µg/m³) | (<0.21) | U | 1 | |
| Cyclohexane | (µg/m³) | <0.34 | | 0.36 | |
| Dichlorodifluoromethane | (µg/m³) | 2.6 | | 3 | |
| 1,1-Dichloroethane | (µg/m³) | 1.2 | | (<0.14) | U |
| cis-1,2-Dichloroethylene | (µg/m³) | 16 | | (<0.14) | U |
| Ethanol | (µg/m³) | 5 | | 160 | |
| Ethyl Acetate | (µg/m³) | (<0.36) | U | 0.99 | |
| Ethylbenzene | (µg/m³) | (<0.43) | U | 0.57 | |
| 4-Ethyltoluene | (µg/m³) | (<0.49) | U | 0.18 | |
| Heptane | (µg/m³) | 0.55 | | 0.9 | |
| Hexane | (µg/m³) | 3.7 | | 2.4 | |
| Isopropanol | (µg/m³) | 1.1 | | 10 | |
| Methylene Chloride | (µg/m³) | 1.3 | | 0.34 | |
| Propene | (µg/m³) | 5.5 | | (<0.60) | U |
| Tetrachloroethylene | (µg/m³) | 4.8 | | (<0.24) | U |
| Toluene | (µg/m³) | 2 | | 9.7 | |
| 1,1,1-Trichloroethane | (µg/m³) | 2.2 | | (<0.19) | U |
| Trichloroethylene | (µg/m³) | 2.8 | | (<0.19) | U |
| Trichlorofluoromethane | (µg/m³) | 1.6 | J | 1.8 | J |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m³) | (<0.77) | U | 0.7 | |
| 1,2,4-Trimethylbenzene | (µg/m³) | 1.3 | | 0.55 | |
| m&p-Xylene | (µg/m³) | 1.7 | | 1.8 | |
| o-Xylene | (µg/m³) | 0.49 | | 0.51 | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
U = The analyte was analyzed for, but was not detected above the sample reporting limit.
µg/m3 = micrograms per cubic meter

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List<br>USEPA Method TO-15 | Property ID | Structure 01, 02, 04, Clinton West Laundry | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-04 | | | |
| | Lab ID | 11B0284-09 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 2/10/2011 | | | |
| Acetone | (µg/m3) | 4.7 | | | |
| Benzene | (µg/m3) | 0.73 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.56 | | | |
| Chloromethane | (µg/m3) | 1.1 | | | |
| Dichlorodifluoromethane | (µg/m3) | 3.1 | | | |
| Ethanol | (µg/m3) | 4.1 | | | |
| Ethylbenzene | (µg/m3) | 0.16 | | | |
| Heptane | (µg/m3) | 0.18 | | | |
| Hexane | (µg/m3) | 1.7 | | | |
| Isopropanol | (µg/m3) | 0.45 | | | |
| Methylene Chloride | (µg/m3) | 0.81 | | | |
| Toluene | (µg/m3) | 0.85 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.8 | J | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.69 | | | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 0.19 | | | |
| m&p-Xylene | (µg/m3) | 0.46 | | | |
| o-Xylene | (µg/m3) | 0.17 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 02

Structure 02 – SS-02 Sub-Slab Sample


Structure 02 – BA-02 Basement Air Sample

Structure 02 – Sub-Slab Sample SS-02

Observed Chemicals in Structure 02


Observed Chemicals in Structure 02


Observed Chemicals in Structure 02


Observed Chemicals in Structure 02
Note – Brakleen was 50 state formula – no PCE


Observed Chemicals in Structure 02

# FIELD AIR SAMPLING FORM

EA Engineering and Its Affiliate
EA Science & Technology

6712 Brooklawn Parkway, Suite 104

Syracuse, NY 13211

| | |
|---|---|
| Project #: | 14368.47 |
| Project Name: | Clinton West Plaza |
| Location: | Ithaca, NY |
| Project Manager: | Scott Forte / Dave Chiusano |

**Sample Location Information:**

| | | | | |
|---|---|---|---|---|
| Site ID Number: | 755015 ~~130110~~ | | Sampler(s): | DC |
| PID Meter Used: (Model, Serial #) | ppbRAE | | Building I.D. No.: | STRUCTURE 03 |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | | Flow Regulator No.: | BC3414 | Flow Regulator No.: | BC3345 | Flow Regulator No.: | BC3413 |
| Canister Serial No.: | | Canister Serial No.: | BC1021 | Canister Serial No.: | BC1300 | Canister Serial No.: | BC1807 |
| Start Date/Time: | | Start Date/Time: | 4/19/11 1103 | Start Date/Time: | 4/19/11 1101 | Start Date/Time: | 4/19/11 1113 |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | -30+ | Start Pressure: (inches Hg) | -29 | Start Pressure: (inches Hg) | -29 |
| Stop Date/Time: | | Stop Date/Time: | 4/20/11 1103 | Stop Date/Time: | 4/20/11 1101 | Stop Date/Time: | 4/20/11 1113 |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -10 | Stop Pressure: (inches Hg) | -10 | Stop Pressure: (inches Hg) | -14.5 |
| Sample ID: | | Sample ID: 755015-BA-03 | | Sample ID: 755015-SS-03 | | Sample ID: 755015-OA-03 | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | Bsmt | Basement or Crawl Space? | Bsmt | Direction from Building | N |
| Room | | Room | Bsmt | Floor Slab Thickness (inches) *(if present)* | 5" | Distance from Building | 30 ft |
| Indoor Air Temp (°F) | | Indoor Air Temp | 60F | Potential Vapor Entry Points Observed? | NA | Intake Height Above Ground Level (ft.) | 4ft |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | N |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 4.5ft | If slab, intake Depth If Crawl Space, intake height | 2" * | Distance to nearest Roadway | 80ft |
| Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | — | Noticeable Odor? | — |
| PID Reading (ppb) | | PID Reading (ppb) | — | PID Reading (ppb) | — | PID Reading (ppb) | — |
| Duplicate Sample? | | Duplicate Sample? | — | Duplicate Sample? | — | Duplicate Sample? | — |

**Comments:**

Purge & Leak Test previously completed & not measured for final Attempt to collect samples.

SS tubing set within concrete to ensure no water would enter during sampling.

Sampler Signature: [signature]

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| ® EA Engineering and Its Affiliate<br>EA Science & Technology<br>6712 Brooklawn Parkway, Suite 104<br>Syracuse, NY 13211 | | Project #: | 14368.47 |
| | | Project Name: | NYSDEC Clinton West Plaza |
| | | Location: | Ithaca NY |
| | | Project Manager: | Scott Fonte/Dave Chiusano |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 | | | Sampler(s): | David Crandall/Jim Peterson |
| PID Meter Used: (Model, Serial #) | ppbRAE | | | Building I.D. No.: | STRUCTURE 03 |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | ~~OUTDOOR AIR~~ SS-DUP 01 | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | | Flow Regulator No.: | BC3433 | Flow Regulator No.: | BC3056 | Flow Regulator No.: | BC1828 |
| Canister Serial No.: | | Canister Serial No.: | BC1096 | Canister Serial No.: | BC1318 | Canister Serial No.: | BC3253 |
| Start Date/Time: | | Start Date/Time: | 2/9/11 1120 | Start Date/Time: | 2/9/11 1123 | Start Date/Time: | 2/9/11 1123 |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | -28 | Start Pressure: (inches Hg) | -30+ | Start Pressure: (inches Hg) | -30+ |
| Stop Date/Time: | | Stop Date/Time: | 2/10/11 1120. | Stop Date/Time: | | Stop Date/Time: | |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -10 | Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | |
| Sample ID: | | Sample ID: | 755015-BA-03 | Sample ID: | 755015-SS-03 | Sample ID: | 755015-SS-DUP01 |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | BSMT | Basement or Crawl Space? | BSMT | Direction from Building | |
| Room | | Room | Bsmt/laundry | Floor Slab Thickness (inches) *[if present]* | 4 | Distance from Building | |
| Indoor Air Temp (°F) | | Indoor Air Temp | 60°F | Potential Vapor Entry Points Observed? | — | Intake Height Above Ground Level (ft.) | |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 4.5ft | If slab, intake Depth If Crawl Space, intake height | 4.5 | Distance to nearest Roadway | |
| Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | — | Noticeable Odor? | |
| PID Reading (ppb) | | PID Reading (ppb) | 0ppb | PID Reading (ppb) | 539ppb | PID Reading (ppb) | |
| Duplicate Sample? | | Duplicate Sample? | — | Duplicate Sample? | — | Duplicate Sample? | |

**Comments:**

Helium Leak Test ~ 100% Dome 0ppm Purge

Water Observed in Tubing of SS/SS-Dup 01 upon checking @ 1030AM. Collected BA sample & sealed SS point. Per RC/SF will hold extra canisters for POTENTIAL Resampling.

Sampler Signature:

STRUCTURE 03

**NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH**

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID CRANDALL Date/Time Prepared 2/9/11

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation ______

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

Number of Occupants/persons at this location ______ Age of Occupants ______

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

- Note -
Questionnaire Previously Completed -
Updated sketch & inventory only.

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

Residential School Commercial/Multi-use

Industrial Church Other: ________________

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:______________ |

**If multiple units, how many?**
________ **If the property is commercial, type?**

Business Type(s) ______________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**

Number of floors______ Building age______

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**

**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

## 5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ______ |
| **c. Basement floor:** | concrete | dirt | stone | other ______ |
| **d. Basement floor:** | uncovered | covered | covered with ____________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with ____________ | |
| **f. Foundation walls:** | poured | block | stone | other ______ |
| **g. Foundation walls:** | unsealed | sealed | sealed with ____________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ______(feet)
**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

## 6. HEATING, VENTING and AIR CONDITIONING

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters -
Stream radiation - Radiant floor - Electric baseboard - Wood stove -
Outdoor wood boiler - Other __________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other__________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

**7. OCCUPANCY**

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ______________________________________________

1st Floor ______________________________________________

2nd Floor ______________________________________________

3rd Floor ______________________________________________

4th Floor ______________________________________________

**8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY**

**a. Is there an attached garage?** Y / N

**b. Does the garage have a separate heating unit?** Y / N / NA

**c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) Y / N / NA
Please specify______________________

**d. Has the building ever had a fire?** Y / N When?______________________

**e. Is a kerosene or unvented gas space heater present?** Y / N Where? ______________________

**f. Is there a workshop or hobby/craft area?** Y / N Where & Type? ______________

**g. Is there smoking in the building?** Y / N How frequently? ______________

**h. Have cleaning products been used recently?** Y / N When & Type? ______________

**i. Have cosmetic products been used recently?** Y / N When & Type? ______________

**j. Has painting/staining been done in the last 6 months?** Y / N When & Type? ______________

**k. Is there new carpet, drapes or other textiles?** Y / N Where & When? ______________

**l. Have air fresheners been used recently?** Y / N When & Type? ______________

**m. Is there a kitchen exhaust fan?** Y / N If yes, where vented? ______________________

**n. Is there a bathroom exhaust fan?** Y / N If yes, where vented? ______________________

**o. Is there a clothes dryer?** Y / N If yes, is it vented outside? Y / N

**p. Has there been a pesticide application?** Y / N When &Type? ______________

**Are there odors in the building?** Y / N
If yes, please describe:
______________________________________________________________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? ______________________________________
If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

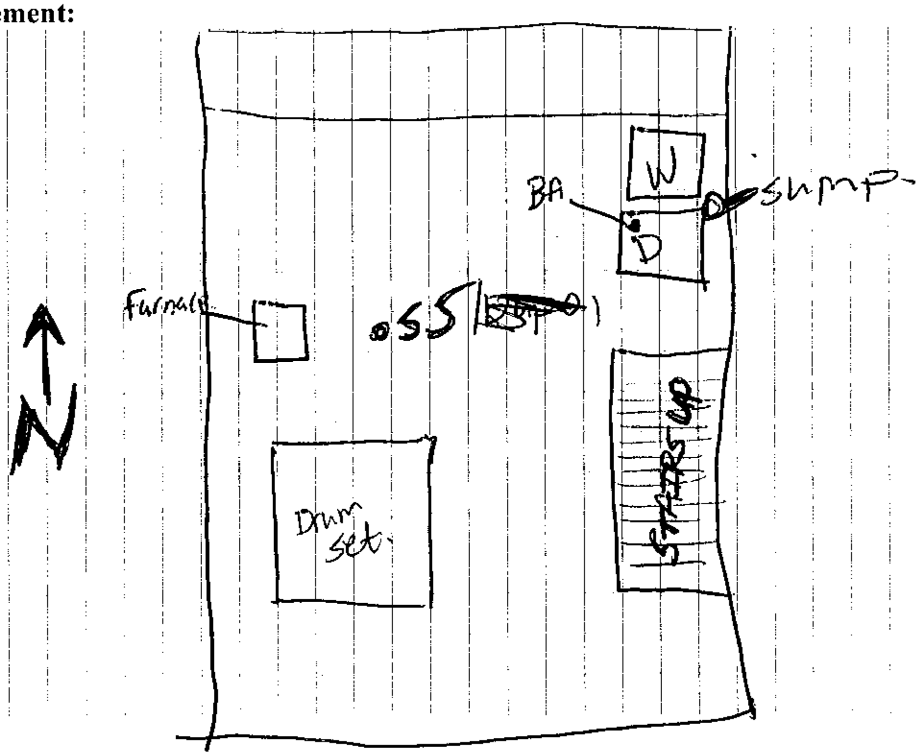
**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: ______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: ______

**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ______________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

**11. FLOOR PLANS**

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

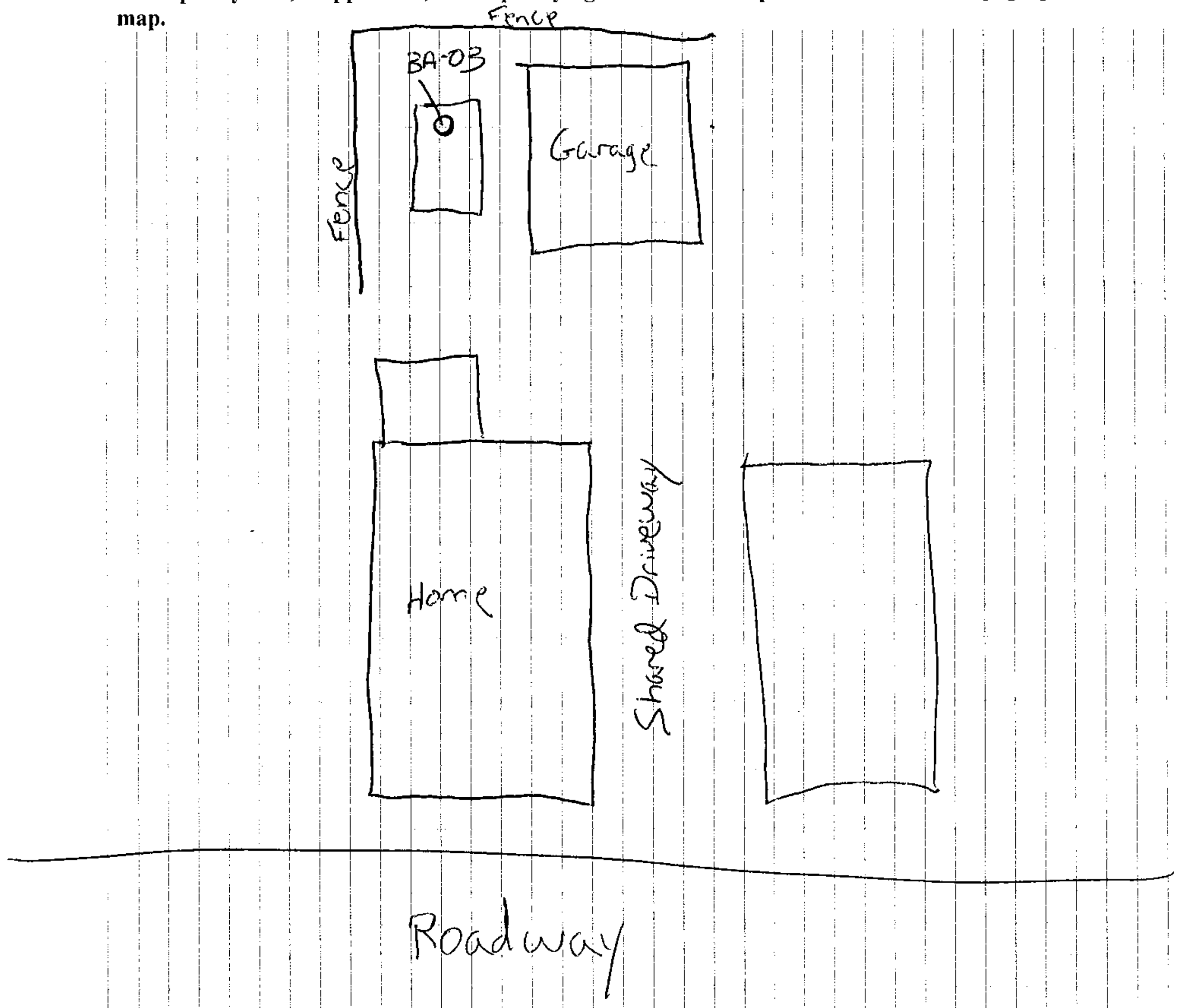
**Basement:**




**First Floor:**

## 12. OUTDOOR PLOT

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**



## 13. PRODUCT INVENTORY FORM

**Make & Model of field instrument used:** ppb RAE

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
| | Glidden paint | 1gal | U | — | 0 | Y |
| | Valspar Primer. | 1gal. | U | — | 0 | Y |
| | Quikrete Concrete stain | 1gal | U | = | 0 | Y |
| | Earth friendly toilet Cleaner. | 24oz. | U | Cedar Oil/Citric Acid. | 0 | Y |
| | Oatey PVC Cement. | 8oz. | U | M.E.K., Acetone, Tetrahydrofuran, Cyclohexane. | 62ppm | Y |
| | Spic + Span. | 22oz. | U | Ammonium Chloride. | 0 | Y |
| | LA's Laundry detergent. | (3) 42oz | U/UO | — | 0 | Y |
| | Henry concrete patch. | 1gal. | U | = | 0 | Y |
| | | | | | | |
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| | | | | | | |
| | | | | | | |

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February-April 2011
## Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Sub-Slab Sample SS-03 (February – Took in water, suitable sample not collected)

Water at Sub-Slab Sample (February 28, 2011)


Sub-slab sample SS-03 collected 4/19/11


Basement Air Sample collected 4/19/11


Outdoor Air Sample sample collected 4/19/11

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 03 - 412 Center Street | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-SS-03 | | 755015-BA-03 | |
| | Lab ID | 11D0685-01 | | 1012126AR1-05A/05B | |
| | Sample Type | Sub-slab Vapor | | Basement Indoor Air | |
| | Sample Date | 4/21/2011 | | 4/21/2011 | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | (µg/m3) | (<0.15) | U | 0.47 | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 0.73 | | 0.37 | |
| 1,4-Dichlorobenzene | (µg/m3) | 0.81 | | (<0.046) | U |
| 2-Hexanone | (µg/m3) | 0.92 | | 0.6 | |
| Acetone | (µg/m3) | 52 | | 37 | |
| Benzene | (µg/m3) | 0.82 | | 0.79 | |
| Carbon Disulfide | (µg/m3) | 1.3 | | (<0.022) | U |
| Carbon Tetrachloride | (µg/m3) | (<0.088) | U | 0.5 | |
| Chloroform | (µg/m3) | 1.4 | | (<0.031) | U |
| Chloromethane | (µg/m3) | (<0.029) | U | 0.81 | |
| cis-1,2-Dichloroethylene | (µg/m3) | 140 | | 0.37 | |
| Dichlorodifluoromethane | (µg/m3) | 1.8 | | 1.3 | |
| Ethanol | (µg/m3) | 5.6 | | 110 | |
| Ethyl Acetate | (µg/m3) | (<0.13) | U | 0.28 | |
| Ethylbenzene | (µg/m3) | (<0.069) | U | 0.28 | |
| Isopropanol | (µg/m3) | 2.2 | | 6.6 | |
| m&p-Xylene | (µg/m3) | 1.6 | | 0.66 | |
| Methyl Ethyl Ketone | (µg/m3) | 4 | | 13 | |
| Methyl Isobutyl Ketone | (µg/m3) | (<0.074) | U | 0.2 | |
| Methylene Chloride | (µg/m3) | 2.3 | | 1.9 | |
| N-Heptane | (µg/m3) | 1 | | 0.38 | |
| N-Hexane | (µg/m3) | 1.5 | | 0.73 | |
| O-Xylene | (µg/m3) | 0.58 | | 0.26 | |
| Tetrachloroethylene | (µg/m3) | 15 | | 0.24 | |
| Tetrahydrofuran | (µg/m3) | (<0.071) | U | 42 | |
| Toluene | (µg/m3) | 1.7 | | 2 | |
| Trans-1,2-Dichloroethene | (µg/m3) | 0.83 | | (<0.019) | U |
| Trichloroethylene | (µg/m3) | 26 | | (<0.041) | U |
| Trichlorofluoromethane | (µg/m3) | 0.87 | | 1 | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation to be completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
U = The analyte was analyzed for, but was not detected above the sample reporting limit.
µg/m3 = micrograms per cubic meter

# TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 03 | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-03 | | | |
| | Lab ID | 11D0685-03 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 4/21/2011 | | | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | (µg/m3) | 0.62 | | | |
| 1,2,4-TRIMETHYLBENZENE | (µg/m3) | 0.41 | | | |
| 2-Hexanone | (µg/m3) | 1.1 | | | |
| Acetone | (µg/m3) | 23 | | | |
| Benzene | (µg/m3) | 0.77 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.49 | | | |
| Chloromethane | (µg/m3) | 0.94 | | | |
| Dichlorodifluoromethane | (µg/m3) | 1.5 | | | |
| Ethanol | (µg/m3) | 6.7 | | | |
| Ethylbenzene | (µg/m3) | 0.22 | | | |
| Isopropanol | (µg/m3) | 2.1 | | | |
| m&p-Xylene | (µg/m3) | 0.6 | | | |
| Methyl Ethyl Ketone | (µg/m3) | 3.8 | | | |
| Methyl Isobutyl Ketone | (µg/m3) | 0.31 | | | |
| Methylene Chloride | (µg/m3) | 3 | | | |
| N-Heptane | (µg/m3) | 0.34 | | | |
| N-Hexane | (µg/m3) | 0.77 | | | |
| O-Xylene | (µg/m3) | 0.24 | | | |
| Tetrachloroethylene | (µg/m3) | 0.38 | J | | |
| Toluene | (µg/m3) | 1.2 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.1 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation to be completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February-April 2011
## Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Sub-Slab Sample SS-03 (February – Took in water, suitable sample not collected)

Water at Sub-Slab Sample (February 28, 2011)


Sub-slab sample SS-03 collected 4/19/11


Basement Air Sample collected 4/19/11


Outdoor Air Sample sample collected 4/19/11

## FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| EA ® | EA Engineering and Its Affiliate<br>EA Science & Technology<br>6712 Brooklawn Parkway, Suite 104<br>Syracuse, NY 13211 | Project #:<br>Project Name:<br>Location:<br>Project Manager: | 14368.47<br>NYSDEC Clinton West Plaza<br>Ithaca NY<br>Scott Fonte/Dave Chiusano |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 | | | Sampler(s): | David Crandall/Jim Peterson |
| PID Meter Used: (Model, Serial #) | ppbRAE | | | Building I.D. No.: | STRUCTURE 04 |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | | Flow Regulator No.: | BC3403 | Flow Regulator No.: | BC3352 | Flow Regulator No.: | BC3083 |
| Canister Serial No.: | | Canister Serial No.: | BC1172 | Canister Serial No.: | BC1664 | Canister Serial No.: | BC1671 |
| Start Date/Time: | | Start Date/Time: | 2/9/11 1238 | Start Date/Time: | 2/9/11 1234 | Start Date/Time: | 2/9/11 1248 |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | -30 | Start Pressure: (inches Hg) | -28 | Start Pressure: (inches Hg) | -29 |
| Stop Date/Time: | | Stop Date/Time: | 2/10/11 1238 | Stop Date/Time: | 2/10/11 1234 | Stop Date/Time: | 2/10/11 1248 |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -10 | Stop Pressure: (inches Hg) | -8 | Stop Pressure: (inches Hg) | -9 |
| Sample ID: | | Sample ID: 755015-BA-04 | | Sample ID: 755015-SS-04 | | Sample ID: 755015-OA-04 | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | Bsmt | Basement or Crawl Space? | BSMT | Direction from Building | NW |
| Room | | Room | storage Rm 1 | Floor Slab Thickness (inches) *[if present]* | 5" | Distance from Building | 8ft NW |
| Indoor Air Temp (°F) | | Indoor Air Temp | 55°F | Potential Vapor Entry Points Observed? | - | Intake Height Above Ground Level (ft.) | 4.5ft |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | — |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 4ft. | If slab, intake Depth If Crawl Space, intake height | 5.5" | Distance to nearest Roadway | 50ft TO SW |
| Noticeable Odor? | | Noticeable Odor? | | Noticeable Odor? | | Noticeable Odor? | |
| PID Reading (ppb) | | PID Reading (ppb) | 0ppb | PID Reading (ppb) | 0ppb | PID Reading (ppb) | 0ppb |
| Duplicate Sample? | | Duplicate Sample? | - | Duplicate Sample? | - | Duplicate Sample? | |

**Comments:**

Helium Leak Test - 100% Purge 6,900ppm.

Same Hole used as previous sampling.

Sampler Signature:

STRUCTURE 04

**NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH**

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID CRANDALL Date/Time Prepared 2/9/11

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation ______

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

Number of Occupants/persons at this location ______ Age of Occupants ______

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

Residential School Commercial/Multi-use

Industrial Church Other: ________________

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:______________ |

**If multiple units, how many?**
________ **If the property is**
**commercial, type?**

Business Type(s) ______________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**

Number of floors______ Building age______

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**

**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

## 5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ________ |
| **c. Basement floor:** | concrete | dirt | stone | other ________ |
| **d. Basement floor:** | uncovered | covered | covered with ______________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with ______________ | |
| **f. Foundation walls:** | poured | block | stone | other ________ |
| **g. Foundation walls:** | unsealed | sealed | sealed with ______________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ________(feet)
**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

## 6. HEATING, VENTING and AIR CONDITIONING

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters -
Stream radiation - Radiant floor - Electric baseboard - Wood stove -
Outdoor wood boiler - Other ___________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ____________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other___________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

## 7. OCCUPANCY

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ______________________________________________
1st Floor ______________________________________________
2nd Floor ______________________________________________
3rd Floor ______________________________________________
4th Floor ______________________________________________

## 8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

**a. Is there an attached garage?** Y / N

**b. Does the garage have a separate heating unit?** Y / N / NA

**c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) Y / N / NA
Please specify_______________

**d. Has the building ever had a fire?** Y / N When?_______________

**e. Is a kerosene or unvented gas space heater present?** Y / N Where? _______________

**f. Is there a workshop or hobby/craft area?** Y / N Where & Type? _______________

**g. Is there smoking in the building?** Y / N How frequently? _______________

**h. Have cleaning products been used recently?** Y / N When & Type? _______________

**i. Have cosmetic products been used recently?** Y / N When & Type? _______________

**j. Has painting/staining been done in the last 6 months?** Y / N When & Type? _______________

**k. Is there new carpet, drapes or other textiles?** Y / N Where & When? _______________

**l. Have air fresheners been used recently?** Y / N When & Type? _______________

**m. Is there a kitchen exhaust fan?** Y / N If yes, where vented? _______________

**n. Is there a bathroom exhaust fan?** Y / N If yes, where vented? _______________

**o. Is there a clothes dryer?** Y / N If yes, is it vented outside? Y / N

**p. Has there been a pesticide application?** Y / N When &Type? _______________

**Are there odors in the building?** Y / N
If yes, please describe:
_______________________________________________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? _______________
If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

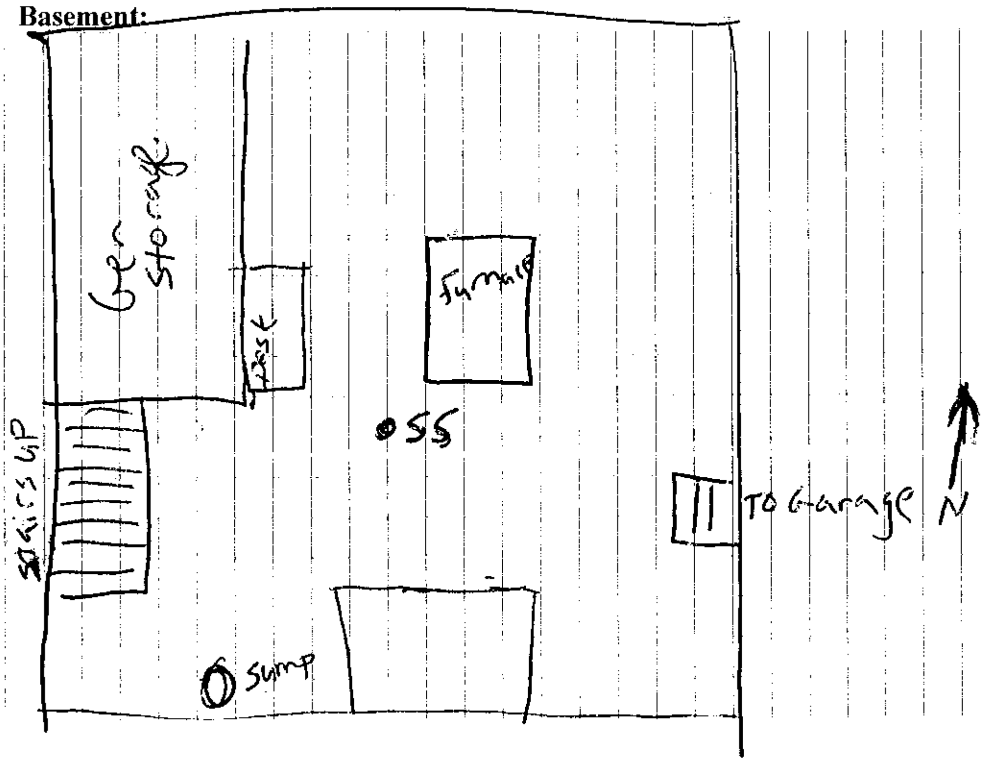
**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: _______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: _______

**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ______________________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

## 11. FLOOR PLANS

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

**Basement:**




**First Floor:**

## 12. OUTDOOR PLOT

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**

## 13. PRODUCT INVENTORY FORM

**Make & Model of field instrument used: ______________________________**

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
| | Open Air freshener | | U | — | 0 | Y |
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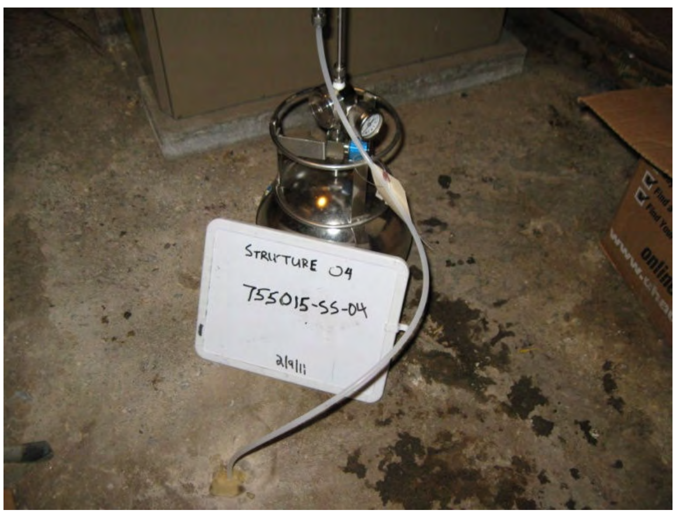
* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 04

Observed Chemicals in Structure 04


Helium Leak Testing in Structure 04



Sub-Slab Sample SS-04

Basement Air Sample BA-04


Outdoor Air Sample OA-03

# TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 04 - 514 North Titus Ave. | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-SS-04 | | 755015-BA-04 | |
| | Lab ID | 11B0284-06 | | 11B0284-05 | |
| | Sample Type | Sub-slab Vapor | | Basement Indoor Air | |
| | Sample Date | 2/10/2011 | | 2/10/2011 | |
| Acetone | (µg/m3) | 26 | | 9.3 | |
| Benzene | (µg/m3) | 2 | | 1.7 | |
| 2-Butanone | (µg/m3) | 3.9 | | 1.7 | |
| Carbon Tetrachloride | (µg/m3) | (<0.63) | U | 0.58 | |
| Chloroform | (µg/m3) | 0.56 | | (<0.17) | U |
| Chloromethane | (µg/m3) | 0.33 | | 1 | |
| Cyclohexane | (µg/m3) | 1.8 | | 0.7 | |
| Dichlorodifluoromethane | (µg/m3) | 2.6 | | 3 | |
| 1,2-Dichloroethane | (µg/m3) | (<0.40) | U | 0.28 | |
| Ethanol | (µg/m3) | 4.2 | | 28 | |
| Ethylbenzene | (µg/m3) | 1.2 | | 1.1 | |
| 4-Ethyltoluene | (µg/m3) | 0.57 | | 0.47 | |
| Heptane | (µg/m3) | 4.5 | | 1.4 | |
| Hexane | (µg/m3) | 8.4 | | 5.3 | |
| 2-Hexanone | (µg/m3) | 1 | | (<0.14) | U |
| Isopropanol | (µg/m3) | 1.3 | | 1 | |
| Methylene Chloride | (µg/m3) | 1 | | 1.1 | |
| Styrene | (µg/m3) | 0.73 | | (<0.15) | U |
| Tetrachloroethylene | (µg/m3) | 6.3 | | (<0.24) | U |
| Toluene | (µg/m3) | 4.5 | | 5 | |
| Trichloroethylene | (µg/m3) | 3.9 | | <0.19 | |
| Trichlorofluoromethane | (µg/m3) | 1.4 | J | 1.8 | J |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | (<0.77) | U | 0.72 | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 1.8 | | 1.7 | |
| 1,3,5-Trimethylbenzene | (µg/m3) | (<0.49) | U | 0.45 | |
| m&p-Xylene | (µg/m3) | 3.6 | | 3.8 | |
| o-Xylene | (µg/m3) | 1.6 | | 1.5 | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
U = The analyte was analyzed for, but was not detected above the sample reporting limit.
µg/m3 = micrograms per cubic meter

TABLE VAPOR INTRUSION ANALYTICAL DATA

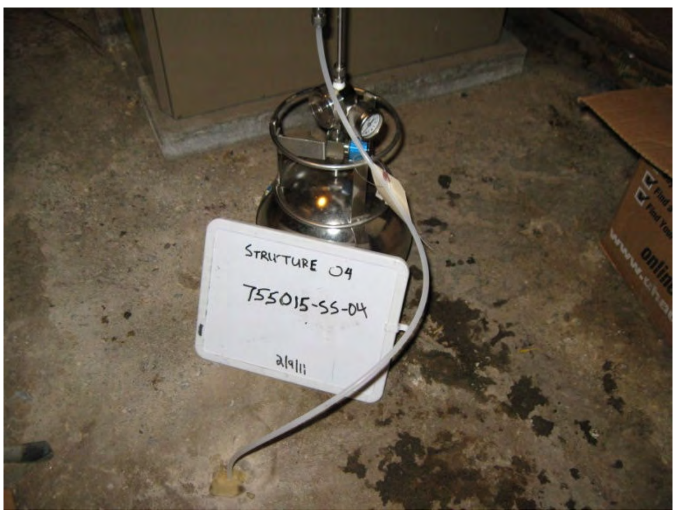
| Parameter List<br>USEPA Method TO-15 | Property ID | Structure 01, 02, 04, Clinton West Laundry | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-04 | | | |
| | Lab ID | 11B0284-09 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 2/10/2011 | | | |
| Acetone | (µg/m3) | 4.7 | | | |
| Benzene | (µg/m3) | 0.73 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.56 | | | |
| Chloromethane | (µg/m3) | 1.1 | | | |
| Dichlorodifluoromethane | (µg/m3) | 3.1 | | | |
| Ethanol | (µg/m3) | 4.1 | | | |
| Ethylbenzene | (µg/m3) | 0.16 | | | |
| Heptane | (µg/m3) | 0.18 | | | |
| Hexane | (µg/m3) | 1.7 | | | |
| Isopropanol | (µg/m3) | 0.45 | | | |
| Methylene Chloride | (µg/m3) | 0.81 | | | |
| Toluene | (µg/m3) | 0.85 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.8 | J | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.69 | | | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 0.19 | | | |
| m&p-Xylene | (µg/m3) | 0.46 | | | |
| o-Xylene | (µg/m3) | 0.17 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 04

Observed Chemicals in Structure 04


Helium Leak Testing in Structure 04



Sub-Slab Sample SS-04

Basement Air Sample BA-04


Outdoor Air Sample OA-03

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| EA Engineering and Its Affiliate<br>EA Science & Technology<br>6712 Brooklawn Parkway, Suite 104<br>Syracuse, NY 13211 | | Project #: | 14368.~~0~~ 47. |
| | | Project Name: | NYSDEC ~~C75012A Offsite Axiohm~~ Clinton West Plaza. |
| | | Location: | Ithaca, NY |
| | | Project Manager: | ~~Bob Casey/Karen Cahill~~ Scott Forte/Dave Chiusano |

**Sample Location Information:**

| | | | |
|---|---|---|---|
| Site ID Number: | 755015 ~~C75012A~~ | Sampler(s): | DC SF |
| PID Meter Used: (Model, Serial #) | ppbRAE | Building I.D. No.: | 05 |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | | Flow Regulator No.: | BC1457 | Flow Regulator No.: | BC1481 | Flow Regulator No.: | BC1126 |
| Canister Serial No.: | | Canister Serial No.: | BC3303 | Canister Serial No.: | BC2254 | Canister Serial No.: | BC3411 |
| Start Date/Time: | | Start Date/Time: | 2/28/11 1120 | Start Date/Time: | 2/28/11 1126 | Start Date/Time: | 2/28/11 1204 |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | ~~3/1/11~~ -28 | Start Pressure: (inches Hg) | ~~3/1/11~~ -28 | Start Pressure: (inches Hg) | -29.5 |
| Stop Date/Time: | | Stop Date/Time: | 3/1/11 1126 | Stop Date/Time: | 3/1/11 1126 | Stop Date/Time: | 3/1/11 1204 |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -5.5 | Stop Pressure: (inches Hg) | -10 | Stop Pressure: (inches Hg) | -9.5 |
| Sample ID: | | Sample ID: 755015-BA-05 | | Sample ID: 755015-SS-05 | | Sample ID: 755015-OA-05 | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | BSMT | Basement or Crawl Space? | BSMT | Direction from Building | N |
| Room | | Room | — | Floor Slab Thickness (inches) *[if present]* | 5" | Distance from Building | 30 ft. next to garage |
| Indoor Air Temp (°F) | | Indoor Air Temp | 62F | Potential Vapor Entry Points Observed? | Small cracks > 5ft. away | Intake Height Above Ground Level (ft.) | 5 ft. |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | — |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 5.5ft. | If slab, intake Depth If Crawl Space, intake height | 4.5" | Distance to nearest Roadway | 90 ft. 10 ft from parking lot (E) |
| Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | — | Noticeable Odor? | — |
| PID Reading (ppb) | | PID Reading (ppb) | 21-24 ppm | PID Reading (ppb) | 21 ppm | PID Reading (ppb) | — |
| Duplicate Sample? | | Duplicate Sample? | — | Duplicate Sample? | — | Duplicate Sample? | — |

**Comments:**

Helium-Dome 99.7% Purge. 1.9% Pass

Subslab reading consistent w/ Ambient Readings in Basement.

Sampler Signature: [signature]

Structure 05

# NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
## CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID Crandall Date/Time Prepared ____________

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation: Ithaca Offsite Former Axiohm Facility C75012A

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

Number of Occupants/persons at this location ______ Age of Occupants ____________

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

* Questionnaire previously completed 2008.

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

| | | |
|---|---|---|
| Residential | School | Commercial/Multi-use |
| Industrial | Church | Other: ________________ |

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:_______________ |

**If multiple units, how many?**
________ **If the property is commercial, type?**

Business Type(s) ________________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**

Number of floors______ Building age______

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**

**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

**5. BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ________ |
| **c. Basement floor:** | concrete | dirt | stone | other ________ |
| **d. Basement floor:** | uncovered | covered | covered with _______________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with ________________ | |
| **f. Foundation walls:** | poured | block | stone | other ________ |
| **g. Foundation walls:** | unsealed | sealed | sealed with ________________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ________(feet)
**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

**6. HEATING, VENTING and AIR CONDITIONING**

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters - Stream radiation - Radiant floor - Electric baseboard - Wood stove - Outdoor wood boiler - Other ___________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ____________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other___________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

## 7. OCCUPANCY

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ________________________________________
1st Floor ________________________________________
2nd Floor ________________________________________
3rd Floor ________________________________________
4th Floor ________________________________________

## 8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

**a. Is there an attached garage?** Y / N

**b. Does the garage have a separate heating unit?** Y / N / NA

**c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) Y / N / NA
Please specify_________________________

**d. Has the building ever had a fire?** Y / N When?____________________

**e. Is a kerosene or unvented gas space heater present?** Y / N Where? ____________________

**f. Is there a workshop or hobby/craft area?** Y / N Where & Type? ______________

**g. Is there smoking in the building?** Y / N How frequently? ______________

**h. Have cleaning products been used recently?** Y / N When & Type? ______________

**i. Have cosmetic products been used recently?** Y / N When & Type? ______________

**j. Has painting/staining been done in the last 6 months?** Y / N When & Type? ______________

**k. Is there new carpet, drapes or other textiles?** Y / N Where & When? ______________

**l. Have air fresheners been used recently?** Y / N When & Type? ______________

**m. Is there a kitchen exhaust fan?** Y / N If yes, where vented? ________________________

**n. Is there a bathroom exhaust fan?** Y / N If yes, where vented? ________________________

**o. Is there a clothes dryer?** Y / N If yes, is it vented outside? Y / N

**p. Has there been a pesticide application?** Y / N When &Type? ______________

**Are there odors in the building?** Y / N
If yes, please describe:

____________________________________________________________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? _______________________________________
If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: _______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: _______

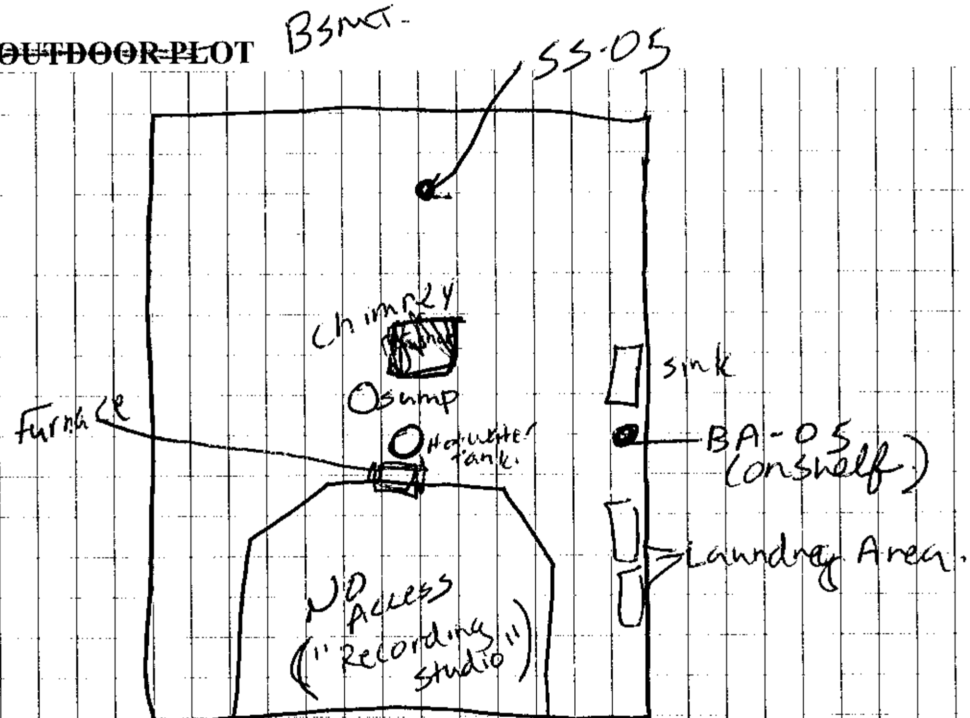
**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ______________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

**11. FLOOR PLANS**

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

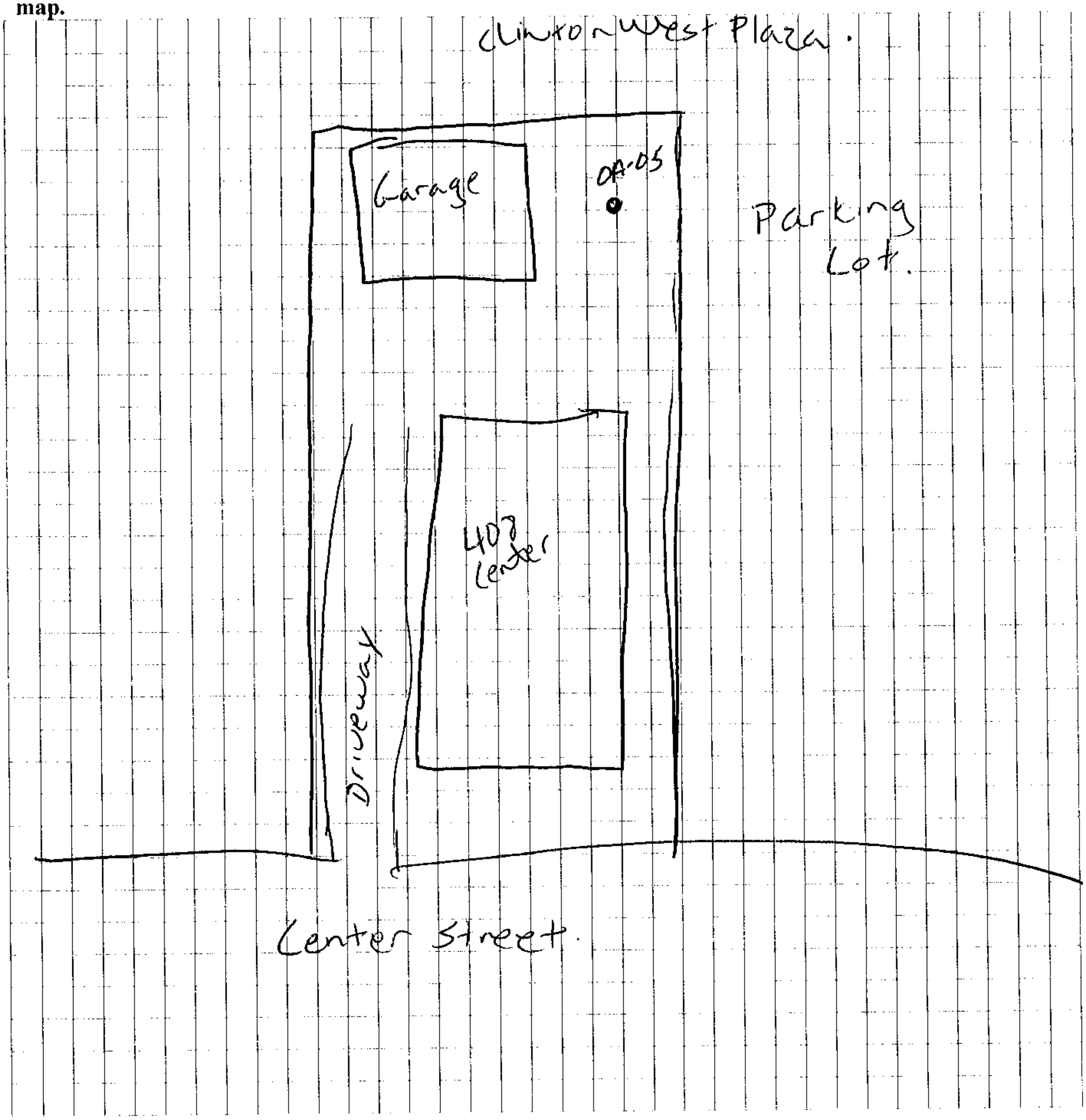
**Basement:**

**First Floor: 1~~2. OUTDOOR PL~~OT** BSMT.



Outdoor Plot.

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**



Ambient 21.00 - 29.00 ppm

## 13. PRODUCT INVENTORY FORM

**Make & Model of field instrument used:** ppbRAE 3000

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
| | Duro spray Adhesive | | U | hexane, Propane, butane, Acetone | 139.5 ppm | Y |
| | Fabulous Blaster | | UO | Hydrocarbon, Petr. Distillates, Surfactant, $CO_2$. | 29.04 ppm | |
| | Fast orange | 7.5oz | U | — | 30.13 ppm | |
| | Raid Roach & Ant (4) | 12oz | U | Petr. distillates. | 26.71 ppm | |
| | Clorox green works. | 32oz | U | Surfactant, ethanol | 24.00 ppm | |
| | Armstrong floor polish | 32oz | U | — | 27.15 | |
| | Aqua Mix seal & Finish. | 32oz. | U | — | 21.64 | |
| | Blue Coral Dry clean. | 22.8oz | U | — | 23.94 | |
| | Penske starting Fluid. | 11oz. | U | Heptane, Diethyl Ether. | 30.25 | |
| | Easy Off Oven Cleaner. | 16oz | U | — | 23.27 | |
| | Out! Repellant. | 14oz | U | Methyl nonyl ketone, | 25.68 | |
| | Valspar, Behr, Olympic, Sherwin Williams paints | 1qt to 1gal. | 16gal. 1qt. | — | 32 ppm | |
| | Lawrence McFadden Polyurethane | 8oz (2) | U | Linseed oil, Hydrocarbons. | 31.54. | |
| | Minwax wood Finish. | 8oz (6) | U | Hydrocarbons. | 34.92 | |
| | Zinsser Primer | 13oz | U | Acetone | 43.97 | |
| | Rustoleum Primer | 12oz | U | Toluene, Xylene. | 36.71 | |
| | Tec Caulk. | 10.5oz (3) | UO | 21.7 g/L VOC | Ambient | |
| | White Lightning Caulk. | 10oz (10) | UO | — | Ambient | |
| | Various Laundry detergent/fab. Softeners. | Vary | U | — | Ambient | Y |

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February-March 2011
# Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05


Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Basement Air Sample BA--05 Structure 05

Sub-Slab Sample SS-05 Structure 05

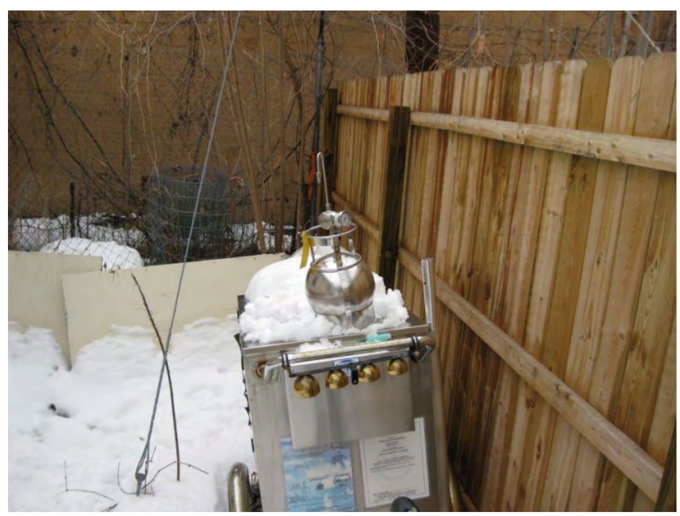

Outdoor Air Sample OA-05 Structure 05

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 05 - 408 Center Street | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-SS-05 | | 755015-BA-05 | |
| | Lab ID | 11C0044-01 | | 11C0044-02 | |
| | Sample Type | Sub-slab Vapor | | Basement Indoor Air | |
| | Sample Date | 3/1/2011 | | 3/1/2011 | |
| Acetone | (µg/m3) | 3,300 | | 1,400 | |
| Benzene | (µg/m3) | 2.3 | | 1 | |
| 2-Butanone | (µg/m3) | 8.8 | | 3 | |
| Carbon Disulfide | (µg/m3) | 3.4 | | (<0.11) | U |
| Carbon Tetrachloride | (µg/m3) | (<0.63) | U | 0.43 | |
| Chloromethane | (µg/m3) | 2.4 | | 1.8 | |
| Cyclohexane | (µg/m3) | 6.3 | | 3.2 | |
| 1,4-Dichlorobenzene | (µg/m3) | 1.6 | | (<0.21) | U |
| Dichlorodifluoromethane | (µg/m3) | 3.7 | | 2.7 | |
| Ethanol | (µg/m3) | 15 | | 600 | |
| Ethylbenzene | (µg/m3) | 1.7 | | 0.73 | |
| 4-Ethyltoluene | (µg/m3) | 0.65 | | 0.2 | |
| Heptane | (µg/m3) | 3.9 | | 0.75 | |
| Hexane | (µg/m3) | 2,400 | | 1,100 | |
| 2-Hexanone | (µg/m3) | 0.59 | J | 0.39 | J |
| Methylene Chloride | (µg/m3) | (<0.69) | U | 2.4 | |
| 4-Methyl-2-pentanone | (µg/m3) | (<0.41) | U | 0.57 | J |
| Styrene | (µg/m3) | (<0.43) | U | 0.22 | |
| Tetrachloroethylene | (µg/m3) | 2.4 | | 1.1 | |
| Tetrahydrofuran | (µg/m3) | 1.8 | | 0.75 | |
| Toluene | (µg/m3) | 6.2 | | 2 | |
| Trichlorofluoromethane | (µg/m3) | 2 | | 1.6 | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.86 | | 0.64 | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 3.5 | | 0.45 | |
| 1,3,5-Trimethylbenzene | (µg/m3) | 1.4 | | (<0.17) | U |
| m&p-Xylene | (µg/m3) | 8 | | 2.4 | |
| o-Xylene | (µg/m3) | 2.2 | | 0.61 | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
U = The analyte was analyzed for, but was not detected above the sample reporting limit.
µg/m3 = micrograms per cubic meter

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 05 | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-05 | | | |
| | Lab ID | 11C0044-03 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 3/1/2011 | | | |
| Acetone | (µg/m3) | 23 | | | |
| Benzene | (µg/m3) | 0.52 | | | |
| 2-Butanone | (µg/m3) | 1.5 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.42 | | | |
| Chloromethane | (µg/m3) | 0.94 | | | |
| Dichlorodifluoromethane | (µg/m3) | 2.5 | | | |
| Ethanol | (µg/m3) | 3.3 | | | |
| Heptane | (µg/m3) | 0.17 | | | |
| Hexane | (µg/m3) | 20 | | | |
| 2-Hexanone | (µg/m3) | 0.21 | J | | |
| Isopropanol | (µg/m3) | 0.34 | | | |
| Methylene Chloride | (µg/m3) | 2.3 | | | |
| Tetrachloroethylene | (µg/m3) | 0.25 | | | |
| Toluene | (µg/m3) | 0.6 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.3 | | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.63 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

## Indoor Air Sampling Photolog – Clinton West Plaza Site – February-March 2011
## Structure 05


Observed Chemicals in Structure 05


Observed Chemicals in Structure 05


Observed Chemicals in Structure 05


Observed Chemicals in Structure 05


Observed Chemicals in Structure 05


Observed Chemicals in Structure 05

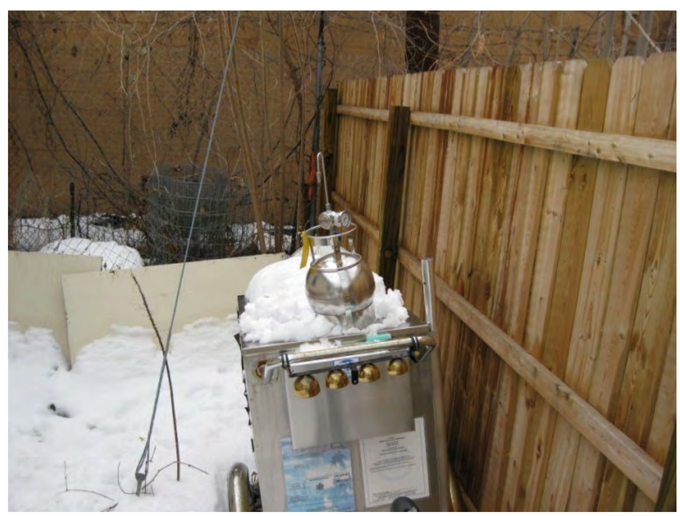
Observed Chemicals in Structure 05


Observed Chemicals in Structure 05


Observed Chemicals in Structure 05


Basement Air Sample BA--05 Structure 05


Sub-Slab Sample SS-05 Structure 05



Outdoor Air Sample OA-05 Structure 05

# FIELD AIR SAMPLING FORM

| | | |
|---|---|---|
| EA® | EA Engineering and Its Affiliate<br>EA Science & Technology<br><br>6712 Brooklawn Parkway, Suite 104<br><br>Syracuse, NY 13211 | Project #: 14368.47<br>Project Name: NYSDEC Clinton West Plaza<br>Location: Ithaca NY<br>Project Manager: Scott Fonte/Dave Chiusano |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 | | | Sampler(s): | David Crandall/Jim Peterson |
| PID Meter Used: (Model, Serial #) | ppbRAE | | | Building I.D. No.: | CWL |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - ~~BASEMENT~~ LAUNDROMAT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | ~~[illegible]~~ | Flow Regulator No.: | BC 3430 | Flow Regulator No.: | | Flow Regulator No.: | |
| Canister Serial No.: | | Canister Serial No.: | BC 1156 | Canister Serial No.: | | Canister Serial No.: | |
| Start Date/Time: | | Start Date/Time: | 2/9/11 1355 | Start Date/Time: | | Start Date/Time: | |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | -30+ | Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | |
| Stop Date/Time: | | Stop Date/Time: | 2/10/11 1355 | Stop Date/Time: | | Stop Date/Time: | |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -11 | Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | |
| Sample ID: ~~755015-IA-CWL~~ | | Sample ID: 755015-IA-CWL | | Sample ID: | | Sample ID: | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | First Fl. | Basement or Crawl Space? | | Direction from Building | |
| Room | | Room | Laundromat | Floor Slab Thickness (inches) *[if present]* | | Distance from Building | |
| Indoor Air Temp (°F) | | Indoor Air Temp | 65°F | Potential Vapor Entry Points Observed? | | Intake Height Above Ground Level (ft.) | |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | | Intake Tubing Used? | |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 5ft. | If slab, intake Depth If Crawl Space, intake height | | Distance to nearest Roadway | |
| Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | | Noticeable Odor? | |
| PID Reading (ppb) | | PID Reading (ppb) | 0 | PID Reading (ppb) | | PID Reading (ppb) | |
| Duplicate Sample? | | Duplicate Sample? | — | Duplicate Sample? | | Duplicate Sample? | |

**Comments:**

Used Tubing / set can ~~@~~ High (8ft) to Minimize chance for Disturbance

Sampler Signature: [signature]

Clinton West Laundry

**NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH**

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID CRANDALL Date/Time Prepared 2/9/11

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation ____________

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

Number of Occupants/persons at this location ______ Age of Occupants ____________

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

Questionnaire not completed
(former Dry Cleaner)

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

Residential School Commercial/Multi-use

Industrial Church Other: ______________

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:______________ |

**If multiple units, how many?**
________ **If the property is commercial, type?**

Business Type(s) ________________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**

**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

## 5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ________ |
| **c. Basement floor:** | concrete | dirt | stone | other ________ |
| **d. Basement floor:** | uncovered | covered | covered with ______________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with ______________ | |
| **f. Foundation walls:** | poured | block | stone | other ________ |
| **g. Foundation walls:** | unsealed | sealed | sealed with ______________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ________(feet)
**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

## 6. HEATING, VENTING and AIR CONDITIONING

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters - Stream radiation - Radiant floor - Electric baseboard - Wood stove - Outdoor wood boiler - Other ___________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ____________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other___________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

## 7. OCCUPANCY

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ______________________________________________

1st Floor ______________________________________________

2nd Floor ______________________________________________

3rd Floor ______________________________________________

4th Floor ______________________________________________

## 8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

**a. Is there an attached garage?** Y / N

**b. Does the garage have a separate heating unit?** Y / N / NA

**c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) Y / N / NA
Please specify_______________________

**d. Has the building ever had a fire?** Y / N When?_______________

**e. Is a kerosene or unvented gas space heater present?** Y / N Where? _______________

**f. Is there a workshop or hobby/craft area?** Y / N Where & Type? ___________

**g. Is there smoking in the building?** Y / N How frequently? ___________

**h. Have cleaning products been used recently?** Y / N When & Type? ___________

**i. Have cosmetic products been used recently?** Y / N When & Type? ___________

**j. Has painting/staining been done in the last 6 months?** Y / N When & Type? ___________

**k. Is there new carpet, drapes or other textiles?** Y / N Where & When? ___________

**l. Have air fresheners been used recently?** Y / N When & Type? ___________

**m. Is there a kitchen exhaust fan?** Y / N If yes, where vented? _______________

**n. Is there a bathroom exhaust fan?** Y / N If yes, where vented? _______________

**o. Is there a clothes dryer?** Y / N If yes, is it vented outside? Y / N

**p. Has there been a pesticide application?** Y / N When &Type? ___________

**Are there odors in the building?** Y / N
If yes, please describe:
___________________________________________________________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? _______________________________
If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: _______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: _______

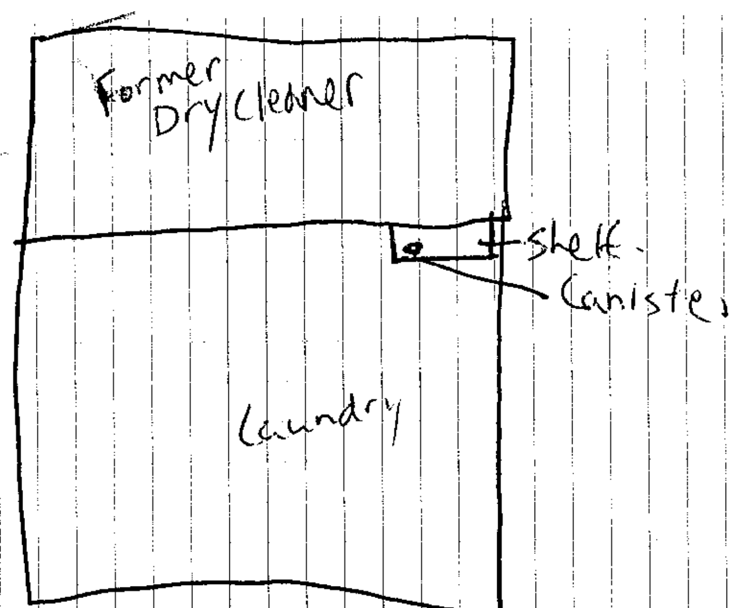
**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ________________________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

## 11. FLOOR PLANS

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

**Basement:**

**First Floor:**



## 12. OUTDOOR PLOT

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**

## 13. PRODUCT INVENTORY FORM

**Make & Model of field instrument used: ______________________________________**

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
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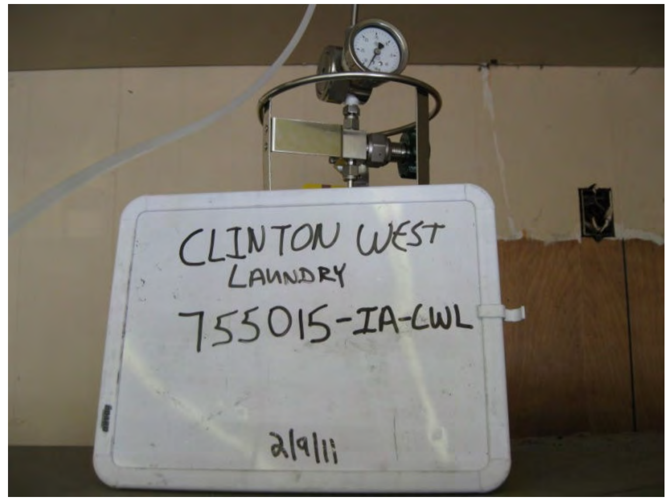
* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Clinton West Laundromat


Indoor Air Sample IA-CWL in Clinton West Laundromat




Indoor Air Sample IA-CWL in Clinton West Laundromat

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List<br>USEPA Method TO-15 | Property ID | Clinton West Laundry | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-IA-CWL | | | |
| | Lab ID | 1012126A-08A | | | |
| | Sample Type | First Floor Indoor Air | | | |
| | Sample Date | 2/10/2011 | | | |
| Acetone | (µg/m3) | 21 | | | |
| Benzene | (µg/m3) | 1.2 | | | |
| Bromodichloromethane | (µg/m3) | 1.6 | | | |
| 2-Butanone | (µg/m3) | 5.4 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.62 | | | |
| Chloroform | (µg/m3) | 6.7 | | | |
| Dibromochloromethane | (µg/m3) | 0.47 | | | |
| Dichlorodifluoromethane | (µg/m3) | 3.2 | | | |
| Ethanol | (µg/m3) | 36 | | | |
| Ethylbenzene | (µg/m3) | 0.46 | | | |
| 4-Ethyltoluene | (µg/m3) | 0.66 | | | |
| Heptane | (µg/m3) | 0.97 | | | |
| Hexane | (µg/m3) | 4.5 | | | |
| 2-Hexanone | (µg/m3) | 0.24 | | | |
| Isopropanol | (µg/m3) | 4 | | | |
| Methylene Chloride | (µg/m3) | 1.7 | | | |
| 4-Methyl-2-pentanone | (µg/m3) | 0.16 | | | |
| Tetrachloroethylene | (µg/m3) | 12 | | | |
| Tetrahydrofuran | (µg/m3) | 5.8 | | | |
| Toluene | (µg/m3) | 8.3 | | | |
| 1,1,1-Trichloroethane | (µg/m3) | 0.95 | | | |
| Trichlorofluoromethane | (µg/m3) | 2.3 | J | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.87 | | | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 2 | | | |
| 1,3,5-Trimethylbenzene | (µg/m3) | 0.6 | | | |
| m&p-Xylene | (µg/m3) | 1.9 | | | |
| o-Xylene | (µg/m3) | 0.57 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 01, 02, 04, Clinton West Laundry | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-04 | | | |
| | Lab ID | 11B0284-09 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 2/10/2011 | | | |
| Acetone | (µg/m3) | 4.7 | | | |
| Benzene | (µg/m3) | 0.73 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.56 | | | |
| Chloromethane | (µg/m3) | 1.1 | | | |
| Dichlorodifluoromethane | (µg/m3) | 3.1 | | | |
| Ethanol | (µg/m3) | 4.1 | | | |
| Ethylbenzene | (µg/m3) | 0.16 | | | |
| Heptane | (µg/m3) | 0.18 | | | |
| Hexane | (µg/m3) | 1.7 | | | |
| Isopropanol | (µg/m3) | 0.45 | | | |
| Methylene Chloride | (µg/m3) | 0.81 | | | |
| Toluene | (µg/m3) | 0.85 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.8 | J | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.69 | | | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 0.19 | | | |
| m&p-Xylene | (µg/m3) | 0.46 | | | |
| o-Xylene | (µg/m3) | 0.17 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
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USEPA = United States Environmental Protection Agency
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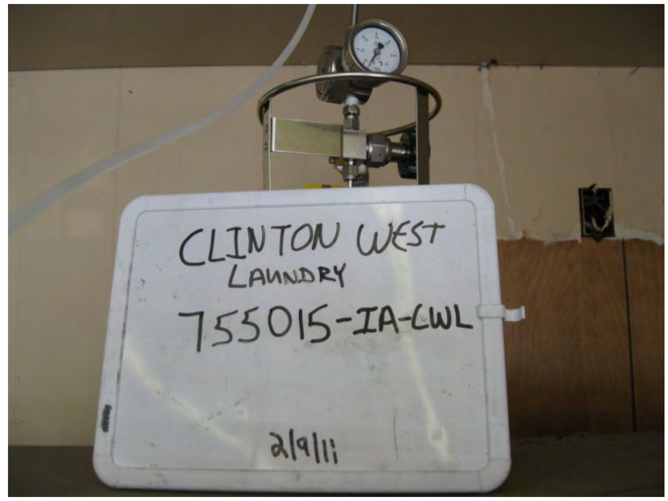

Indoor Air Sample IA-CWL in Clinton West Laundromat

# SUB-SLAB DEPRESSURIZATION SYSTEM

**INFORMATION PACKAGE**
**CLINTON WEST PLAZA**
**NYSDEC SITE NUMBER 755015**

609 W. Clinton Street, Ithaca, Tompkins County, New York
System Installed: 2/9/2011
System Tested: 2/11/2011

Work Assignment Number
D004438-47

*Prepared for*

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

*Prepared by*

EA Engineering, P.C., and Its Affiliate
EA Science and Technology
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Syracuse, New York 13211-2158
(315) 431-4610

February 2011
EA Project No. 14368.47

# CONTENTS

# LIST OF FIGURES

## 1.0 INTRODUCTION

An active Sub-Slab Depressurization (SSD) System was installed by the New York State Department of Environmental Conservation (NYSDEC) to prevent the intrusion of soil vapors [specifically Trichloroethene (TCE)] into the building through cracks and openings in the concrete slab. This was accomplished by sealing the identified cracks and openings and installing a SSD system, which uses a fan and piping to create a preferential pathway for soil vapors to move from beneath the building to the outside. For further information on soil vapor intrusion and TCE, please refer to the New York State Department of Health (NYSDOH) fact sheets provided in Attachments 1 and 2. The design for the system was based on the results of a communication test performed in the structure on December 9, 2010. The results of the communication test are shown in Attachment 3.

## 2.0 DESCRIPTION OF THE SUB-SLAB DEPRESSURIZATION SYSTEM

The SSD system installed in the building consists of one extraction point, fitted with a u-tube manometer, a fan, and a vent, and necessary piping to connect the extraction point to the fan and vent area. The extraction point was installed within the concrete slab of the structure. The components of a typical SSD system are shown in Figure 1. The fan draws air from the soil beneath the building at the extraction point and discharges it above the roof line at the vent location. The fan will also draw moisture which will condense on the walls of the piping. The condensation diverter allows condensate to collect above the fan and pass back into the system piping beneath the fan, while system piping remains pitched toward the extraction point, allowing condensate to migrate back to the extraction points and not remain in the system piping. The manometer measures the pressure in the SSD system piping and is used to verify that the system is operating properly. A photo log documenting installation of the SSD system is provided in Attachment 4.

## 3.0 INSTALLATION AND WARRANTY INFORMATION

Sub-Slab Depressurization Layout and Pressure Field Extension Test readings for the system are shown in Figure 2. The system was installed by Groundwater & Environmental Services, Inc., a NYSDOH Certified Radon Mitigation Contractor and is under warranty for five years. The fan that has been installed is the RP 265 manufactured by RadonAway. Since the system was professionally designed and installed, the fan is under warranty for five years. The fan specifications and warranty information are provided in Attachment 5.

## 4.0 HOW TO CHECK THAT THE SYSTEM IS OPERATING PROPERLY

The manometer, located along the vertical piping above the extraction point, should be used to verify that the system is operating properly. A manometer showing a properly operating system is shown in Figure 3. A manometer reading of zero indicates system failure, and a manometer reading significantly less than the original reading noted on the label indicates degradation of the system.

The initial manometer reading on February 11, 2011 for the manometer installed with this system is shown below:

| Initial Manometer Reading (February 11, 2011) | |
|---|---|
| Extraction Point | Manometer Reading (inches $H_20$) |
| EP1 | 1.9 |

If either of these two situations should occur, service is required. Please contact the NYSDEC at 1-888-459-8667 to arrange for a service visit.

## 5.0 MAINTENANCE AND INSPECTION OF THE SYSTEM

The SSD system requires minimal maintenance for continued operation. The NYSDEC will respond to requests for service, during which time the system will be audited for proper operation. The primary method of evaluating the system's operation is by the property owner/occupant. Quarterly assessments are recommended to verify that the system is operating properly, based on the information provided in Section 4.0.

If a problem is identified during a routine assessment or if there are any immediate problems or concerns regarding system operation, please contact the NYSDEC at 1-888-459-8667 to arrange for a service visit.

System audits will be performed by the NYSDEC during service visits to evaluate the continued performance of the system. Audits may include the following:

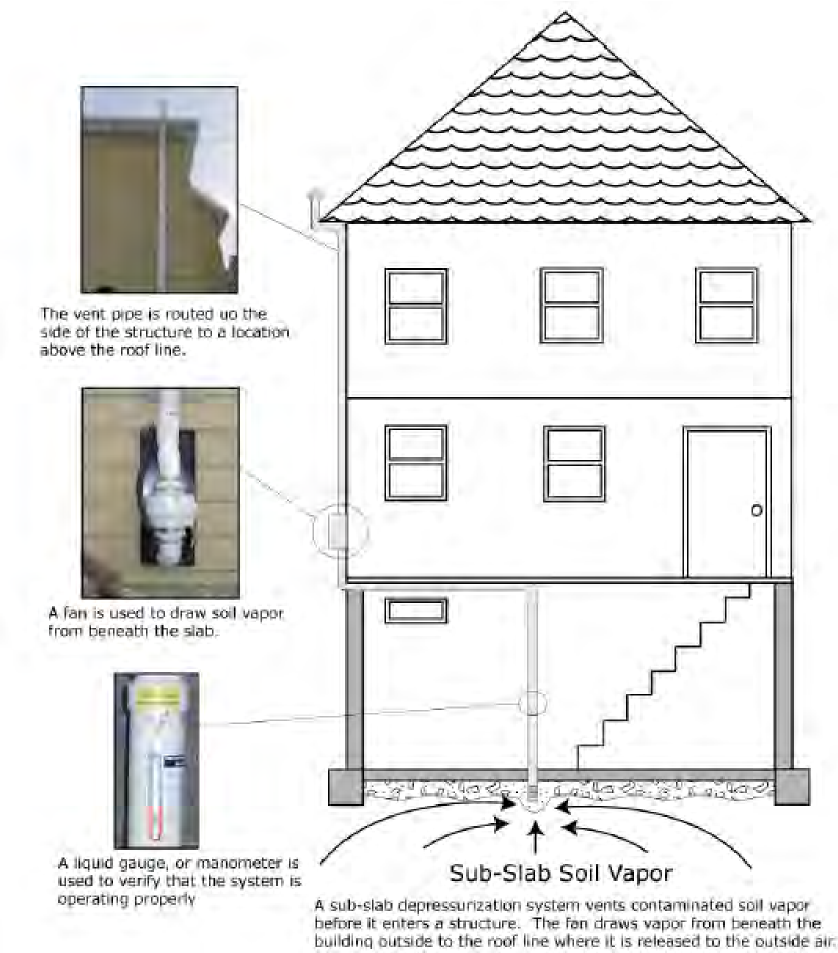
- Inspection of the manometer to determine if there is a failure or degradation of the system
- Inspection of the extraction point to determine if the seal remains intact
- Inspection of the system piping and vent network for cracks or leaks on the interior and exterior of the structure.
- Inspection of fan, rubber mounts, and condensate diverter for leaks
- Inspection of electrical connection, circuit breaker, and system power switch for adequate operation
- Collection of air samples.

## 6.0 CONTACT INFORMATION

If you have any comments or questions regarding the system, please contact the NYSDEC at 1-888-459-8667.

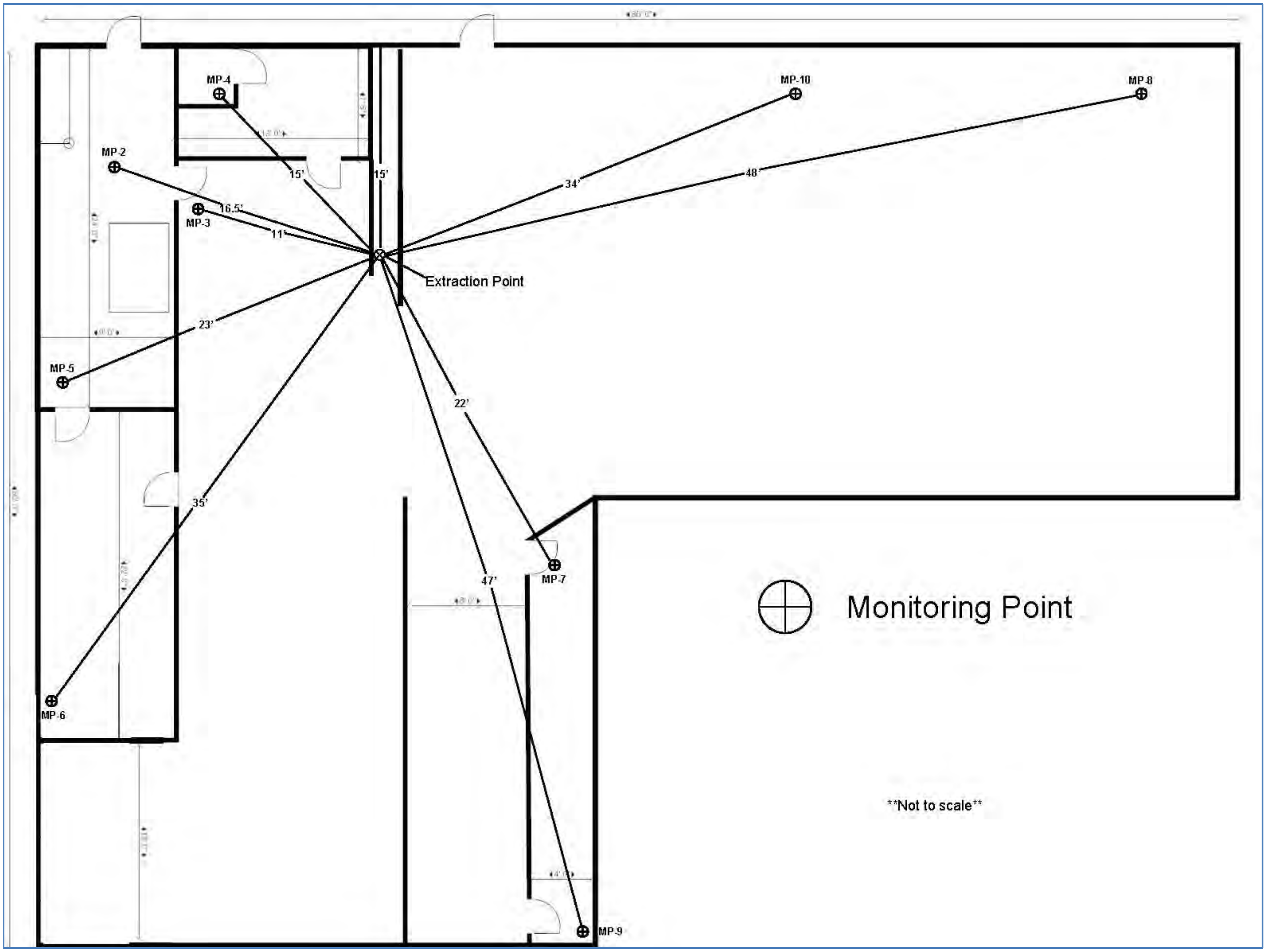
If you have any health comments or questions, please contact the NYSDOH project manager, Mr. Richard Jones at 1-315-477-8148.

## FIGURE 1: TYPICAL SUB-SLAB DEPRESSURIZATION SYSTEM CONSTRUCTION



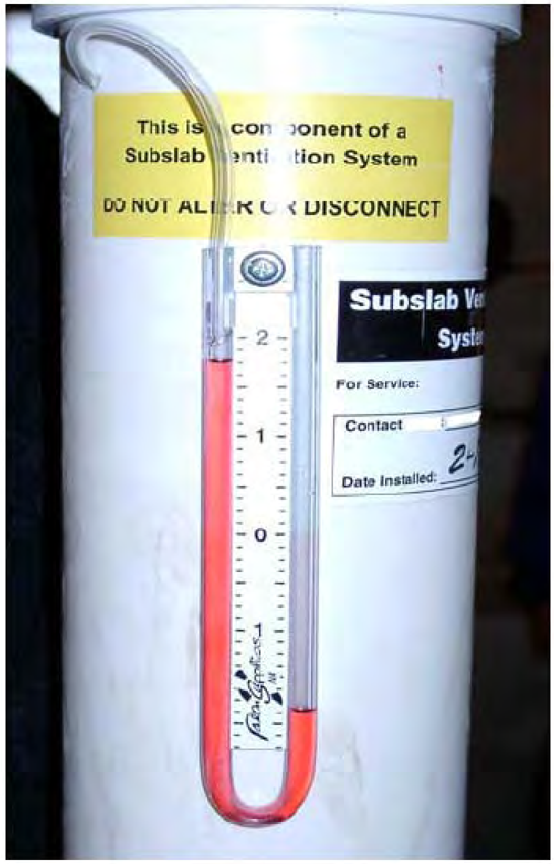

***Source: New York State Department of Health, 2009. Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October.***

**FIGURE 2: SUB-SLAB DEPRESSURIZATION SYSTEM LAYOUT AND PRESSURE FIELD EXTENSION TEST MONITORING POINT RESULTS**



| **Pressure Field Extension Testing at Clinton West Plaza<br>Ithaca, New York** | | |
|---|---|---|
| | | |
| Monitoring Point | Associated Extraction Point | Micromanometer Reading (- inches of $H_2O$) |
| MP-2 | EP1 | -0.076 |
| MP-3 | EP1 | -0.133 |
| MP-4 | EP1 | -0.092 |
| MP-5 | EP1 | -0.050 |
| MP-6 | EP1 | -0.017 |
| MP-7 | EP1 | -0.740 |
| MP-8 | EP1 | 0.0002 |
| MP-9 | EP1 | -0.510 |
| MP-10 | EP1 | -0.003 |
| Manometer reading at extraction point: EP1 (1.9 inches H2O) | | |

# FIGURE 3: SAMPLE MANOMETER SHOWING PROPERLY OPERATING SSD SYSTEM




***Source: New York State Department of Health, 2009. Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October.***

# Attachment 1

# NYSDOH Fact Sheet: Soil Vapor Intrusion

NEW YORK STATE
DEPARTMENT OF HEALTH

# SOIL VAPOR INTRUSION

## Frequently Asked Questions

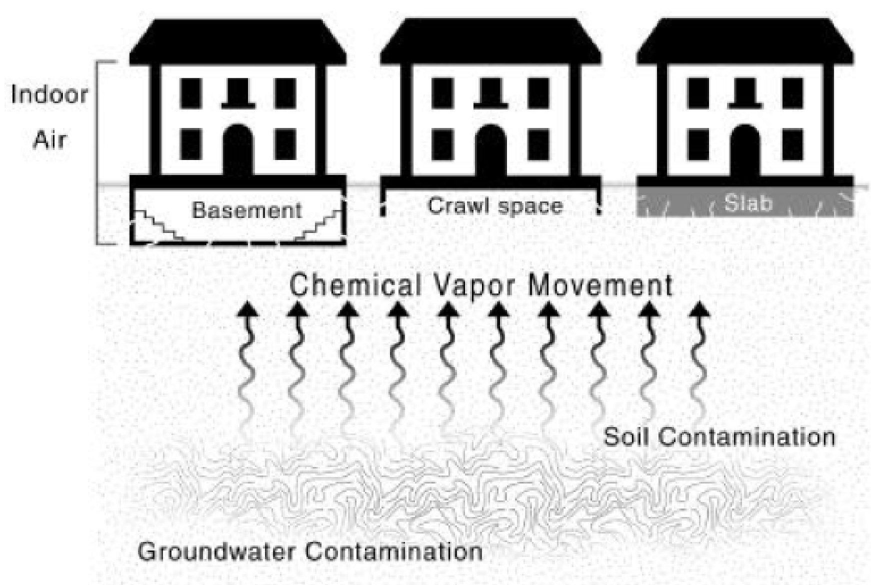
### What is soil vapor intrusion?

The phrase "soil vapor intrusion" refers to the process by which volatile chemicals move from a subsurface source into the indoor air of overlying buildings.

Soil vapor, or soil gas, is the air found in the pore spaces between soil particles. Because of a difference in pressure, soil vapor enters buildings through cracks in slabs or basement floors and walls, and through openings around sump pumps or where pipes and electrical wires go through the foundation. Heating, ventilation or air-conditioning systems may create a negative pressure that can draw soil vapor into the building. This intrusion is similar to how radon gas seeps into buildings.

Soil vapor can become contaminated when chemicals evaporate from subsurface sources and enter the soil vapor. Chemicals that readily evaporate are called "volatile chemicals." Volatile chemicals include volatile organic compounds (VOCs). Subsurface sources of volatile chemicals may include contaminated soil and groundwater, or buried wastes. If soil vapor is contaminated, and enters a building as described above, indoor air quality may be affected.

When contaminated vapors are present in the zone directly next to or under the foundation of the building, vapor intrusion is possible. Soil vapor can enter a building whether it is old or new, or whether it has a basement, a crawl space, or is on a slab (as illustrated in the figure).




[Source: United States Environmental Protection Agency, Region 3]

### How am I exposed to chemicals through soil vapor intrusion?

Humans can be exposed to soil vapor contaminated with volatile chemicals when vapors from beneath a building are drawn through cracks and openings in the foundation and mix with the indoor air. Inhalation is the route of exposure, or the manner in which the volatile chemicals actually enter the body, once in the indoor air.

*Current* exposures are when vapor intrusion is documented in an occupied building. *Potential* exposures are when volatile chemicals are present, or are accumulating, in the vapor phase beneath a building, but have not affected indoor air quality. Potential exposures also exist when there is a chance that contaminated soil vapors may move to existing buildings not currently affected or when there is a chance that new buildings can be built over existing subsurface vapor contamination. Both current and potential exposures are considered when evaluating soil vapor intrusion at a site that has documented subsurface sources of volatile chemicals.

In general, exposure to a volatile chemical does not necessarily mean that health effects will occur. Whether or not a person experiences health effects depends on several factors, including inhalation exposure, the length of exposure (short-term or acute versus long-term or chronic), the frequency of exposure, the toxicity of the volatile chemical, and the individual's sensitivity to the chemical.

### What types of chemicals associated with environmental contamination may be entering my home via soil vapor intrusion?

Volatile organic compounds, or VOCs, are the most likely group of chemicals found in soil vapor, and which can move through the soil and enter buildings. Solvents used for dry cleaning, degreasing and other industrial purposes (e.g., tetrachloroethene, trichloroethene, 1,1,1-trichloroethane and Freon 113) are examples of VOCs. Examples of petroleum-related VOCs from petroleum spills are benzene, toluene, ethyl benzene, xylenes, styrene, hexane and trimethylbenzenes.

### Is contaminated soil vapor the only source of volatile chemicals in my indoor air?

No. Volatile chemicals are also found in many household products. Paints, paint strippers and thinners, mineral spirits, glues, solvents, cigarette smoke, aerosol sprays, mothballs, air fresheners, new carpeting or furniture, hobby supplies, lubricants, stored fuels, refrigerants and recently dry-cleaned clothing all contain VOCs. Household products are often more of a source of VOCs in indoor air in homes than contaminated soil vapor.

Indoor air may also become affected when outdoor air containing volatile chemicals enters your home. Volatile chemicals are present in outdoor air due to their widespread use. Gasoline stations, dry cleaners, and other commercial/industrial facilities are important sources of VOCs to outdoor air.

### What should I expect if soil vapor intrusion is a concern near my home?

If you live near a site that has documented soil, groundwater and/or soil vapor contaminated with volatile chemicals, you should expect that the potential for vapor intrusion is being, or has been, investigated. You may be contacted by the site owner or others working on the cleanup with information about the project. Your cooperation and consent would be requested before any testing/sampling would be done on your property. You may ask the person contacting you any questions about the work being done. You can also contact the NYSDOH's project manager for the site at 1-800-458-1158 (extension 2-7850) for additional information.

### How is soil vapor intrusion investigated at sites contaminated with volatile chemicals?

The process of investigating soil vapor intrusion typically requires more than one set of samples to determine the extent of vapor contamination. Furthermore, four types of environmental samples are collected: soil vapor samples, sub-slab vapor samples, indoor air samples and outdoor air (sometimes referred to as "ambient air") samples.

<u>Soil vapor samples</u> are collected to characterize the nature and extent of vapor contamination in the soil in a given area. They are often collected before sub-slab vapor and/or indoor air samples to help identify buildings or groups of buildings that need to be sampled. Soil vapor samples are used to determine the *potential* for human exposures. *Soil vapor* samples are not the same as *soil* samples.

<u>Sub-slab vapor samples</u> are collected to characterize the nature and extent of vapor contamination in the soil immediately beneath a building with basement foundations or a slab. Sub-slab vapor results are used to determine the potential for *current* and *future* human exposures. For example, an exposure could occur in the future if cracks develop in the building's foundation or changes in the operation of the building's heating, ventilation or air-conditioning system are made that make the movement of contaminated soil vapor into the building possible.

<u>Indoor air samples</u> are collected to characterize the nature and extent of air contamination within a building. Indoor air sample results help to evaluate whether there are *current* human exposures. They are also compared to sub-slab vapor and outdoor air results to help determine where volatile chemicals may be coming from (indoor sources, outdoor sources, and/or beneath the building).

<u>Outdoor air samples</u> are collected to characterize site-specific background air conditions. Outdoor air results are used to evaluate the extent to which outdoor sources, such as automobiles, lawn mowers, oil storage tanks, gasoline stations, commercial/industrial facilities, and so forth, may be affecting indoor air quality.

### What should I expect if indoor air samples are collected in my home?

You should expect the following:

- Indoor air samples are generally collected from the lowest-level space in a building, typically a basement, during the heating season. Indoor air samples may also be collected from the first floor of living space. Indoor air is believed to represent the greatest exposure potential with respect to soil vapor intrusion.
- Sub-slab vapor and outdoor air samples are usually collected at the same time as indoor air samples to help determine where volatile chemicals may be coming from (indoor sources, outdoor sources, and/or beneath the building).
- More limited sampling may be performed outside of the heating season. For example, sub-slab vapor samples without indoor air or outdoor air samples may be collected to identify buildings and areas where comprehensive sampling is needed during the heating season.
- An indoor air quality questionnaire and building inventory will be completed. The questionnaire includes a summary of the building's construction characteristics; the building's heating, ventilation and air-conditioning system operations; and potential indoor and outdoor sources of volatile chemicals. The building inventory describes products present in the building that might contain volatile chemicals. In addition, we take monitoring readings from a real-time organic vapor meter (also known as a photoionization detector or PID). The PID is an instrument that detects many VOCs in the air. When indoor air samples are collected, the PID is used to help determine whether

products containing VOCs might be contributing to levels that are detected in the indoor air.

### What happens if soil vapor contamination or soil vapor intrusion is identified during investigation of a site?

Depending on the investigation results, additional sampling, monitoring or mitigation actions may be recommended. Additional sampling may be performed to determine the extent of soil vapor contamination and to verify questionable results. Monitoring (sampling on a recurring basis) is typically conducted if there is a significant potential for vapor intrusion to occur should building conditions change. Mitigation steps are taken to minimize exposures associated with soil vapor intrusion. Mitigation may include sealing cracks in the building's foundation, adjusting the building's heating, ventilation and air-conditioning system to maintain a positive pressure to prevent infiltration of subsurface vapors, or installing a sub-slab depressurization system beneath the building.

### What is a sub-slab depressurization system?

A sub-slab depressurization system, much like a radon mitigation system, essentially prevents vapors beneath a slab from entering a building. A low amount of suction is applied below the foundation of the building and the vapors are vented to the outside (see illustration). The system uses minimal electricity and should not noticeably affect heating and cooling efficiency. This mitigation system also essentially prevents radon from entering a building, an added health benefit. The party responsible for cleaning up the source of the soil vapor contamination is usually responsible for paying for the installation of this system. If no responsible party is available, New York State will install the system. Once the contamination is cleaned up, the system should no longer be needed. In areas where radon is a problem, the NYSDOH recommends that these systems remain in place permanently.

### What else can I do to improve my indoor air quality?

Household products and other factors, such as mold growth, carbon monoxide, and radon, can degrade the quality of air in your home. Consider the following tips to improve indoor air quality:

- Be aware of household products that contain VOCs. Do not buy more chemicals than you need at a time.
- Store unused chemicals in tightly-sealed containers in a well-ventilated location, preferably away from the living space in your home.
- Keep your home properly ventilated. Keeping it too air-tight may promote build up of chemicals in the air, as well as mold growth due to the build up of moisture.
- Fix all leaks promptly, as well as other moisture problems that encourage mold growth.
- Make sure your heating system, hot water, dryer and fireplaces are properly vented and in good condition. Have your furnace or boiler checked annually by a professional.
- Test your home for radon; take actions to reduce radon levels if needed.
- Install carbon monoxide detectors in your home; take immediate actions to reduce carbon monoxide levels if needed.

### Where can I get more information?

For additional information about soil vapor intrusion, contact the NYSDOH's Bureau of Environmental Exposure Investigation at 1-800-458-1158 (extension 2-7850).

# Attachment 2

# NYSDOH Fact Sheet: Trichloroethene (TCE)

NEW YORK STATE
DEPARTMENT OF HEALTH

# Trichloroethene (TCE) in Indoor and Outdoor Air

FACT SHEET

February 2005

## What is trichloroethene?

Trichloroethene is a manufactured, volatile organic chemical. It has been used as a solvent to remove grease from metal. Trichloroethene has also been used as a paint stripper, adhesive solvent, as an ingredient in paints and varnishes, and in the manufacture of other organic chemicals. Other names for trichloroethene include TCE and trichloroethylene. TCE is a common name for trichloroethene and will be used for the rest of this fact sheet.

TCE is a clear, colorless liquid, and has a somewhat sweet odor. It is non-flammable at room temperature and will evaporate into the air.

## How can I be exposed to TCE?

People can be exposed to TCE in air, water and food. Exposure can also occur when TCE, or material containing TCE, gets on the skin.

TCE gets into the air by evaporation when it is used. TCE can also enter air and groundwater if it is improperly disposed or leaks into the ground. People can be exposed to TCE if they drink groundwater contaminated with TCE, and if the TCE evaporates from the contaminated drinking water into indoor air during cooking and washing. They may also be exposed if TCE evaporates from the groundwater, enters soil vapor (air spaces between soil particles), and migrates through building foundations into the building's indoor air. This process is called "soil vapor intrusion."

## How can TCE enter and leave my body?

If people breathe air containing TCE, some of the TCE is exhaled unchanged from the lungs and back into the air. Much of the TCE gets taken into the body through the lungs and is passed into the blood, which carries it to other parts of the body. The liver changes most of the TCE taken into the blood into other compounds, called breakdown products, which are excreted in the urine in a day or so. However, some of the TCE and its breakdown products can be stored in the fat or the liver, and it may take a few weeks for them to leave the body after exposure stops.

## What kinds of health effects are caused by exposure to TCE in air?

In humans, long term exposure to workplace air containing high levels of TCE (generally greater than about 40,000 micrograms of TCE per cubic meter of air (mcg TCE/$m^3$)) is linked to effects on the central nervous system (reduced scores on tests evaluating motor coordination, nausea, headaches, dizziness) and irritation of the mucous membranes. Exposure to higher levels (generally greater than 300,000 mcg TCE/$m^3$) for short periods of time can irritate the eyes and respiratory tract, and can cause effects on the central nervous system, including dizziness, headache, sleepiness, nausea, confusion, blurred vision and fatigue. In laboratory animals, exposure to high levels of TCE has damaged the central nervous system, liver and kidneys, and adversely affected reproduction and development of offspring. Lifetime exposure to high levels of TCE has caused cancer in laboratory animals.

Some studies of people exposed for long periods of time to high levels of TCE in workplace air, or elevated levels of TCE in drinking water, show an association between exposure to TCE and increased risks for certain types of cancer, including cancers of the kidney, liver and esophagus, and non-Hodgkin's lymphoma. One study showed an association between elevated levels of TCE in drinking water and effects on fetal development. Other studies suggest an association between workplace TCE exposure and reproductive effects (alterations in sperm counts) in men. We do not know if the effects observed in these studies are due to TCE or some other possible factor (for example, exposure to other chemicals, smoking, alcohol consumption, socioeconomic status, lifestyle choices). Because all of these studies have limitations, they only suggest, but do not prove, that exposure to TCE can cause cancer in humans and can cause developmental and reproductive effects as well.

## What are background levels of TCE for indoor and outdoor air?

The exact meaning of background depends on how a study selected sampling locations and conditions. Generally, sampling locations are selected to be not near known sources of volatile chemicals (for example, a home not near a chemical spill, a hazardous waste site, a dry cleaner, or a factory). In some studies, the criteria for sampling indoor air may require checking containers of volatile chemicals to make sure they are tightly closed or removing those products before samples are taken. The New York State Department of Health (NYSDOH) has used several sources of information on background levels of TCE in indoor and outdoor air. One NYSDOH study of residences heated by fuel oil found that background concentrations of TCE in indoor and outdoor air are less than 1 mcg/m$^3$ in most cases. In this study, most homes did not have obvious sources of volatile organic compounds (VOCs). In those homes with VOC sources, samples were taken and the data are included in the study.

## What are sources of TCE in air in homes?

TCE is found in some household products, such as glues, adhesives, paint removers, spot removers, rug cleaning fluids, paints, metal cleaners and typewriter correction fluid. These and other products could be potential sources for TCE in indoor air.

Another source of TCE in indoor air is contaminated groundwater that is used for household purposes. Common use of water, such as washing dishes or clothing, showering, or bathing, can introduce TCE into indoor air through volatilization from the water.

TCE may also enter homes through vapor intrusion as described on page 1 in the question "How can I be exposed to TCE?".

## What is the level of TCE that people can smell in the air?

The reported odor threshold (the air concentration at which a chemical can be smelled) for TCE in air is about 540,000 mcg TCE/m$^3$. At this level, most people would likely be able to start smelling TCE in air. However, odor thresholds vary from person to person. Some people may be able to detect TCE at levels lower than the reported odor threshold and some people may only detect it at concentrations higher than the reported odor threshold.

### If I can't smell TCE in the air, am I being exposed?

Just because you can't smell TCE doesn't mean there is no exposure. Sampling and testing is the best way to know if TCE is present.

### What is the NYSDOH's guideline for TCE in air?

After a review of the toxicological literature on TCE, the NYSDOH set a guideline of 5 mcg/$m^3$ for TCE in air. This level is lower than the levels that have caused health effects in animals and humans. In setting this level, the NYSDOH also considered the possibility that certain members of the population (infants, children, the elderly, and those with pre-existing health conditions) may be especially sensitive to the effects of TCE.

The guideline is not a bright line between air levels that cause health effects and those that do not. The purpose of the guideline is to help guide decisions about the nature of the efforts to reduce TCE exposure. Reasonable and practical actions should be taken to reduce TCE exposure when indoor air levels are above background, even when they are below the guideline of 5 mcg/$m^3$. The urgency to take actions increases as indoor air levels increase, especially when air levels are above the guideline. In all cases, the specific corrective actions to be taken depend on a case-by-case evaluation of the situation. The goal of the recommended actions is to reduce TCE levels in indoor air to as close to background as practical.

### Should I be concerned about health effects if I am exposed to air levels slightly above the guideline? Below the guideline?

The possibility of health effects occurring is low even at air levels slightly above the guideline. In addition, the guideline is based on the assumption that people are continuously exposed to TCE in air all day, every day for as long as a lifetime. This is rarely true for most people who are likely to be exposed for only part of the day and part of their lifetime.

### How can I limit my exposure to TCE?

TCE can get into indoor air through household sources (for example, commercial products that contain TCE), from contaminated drinking water, or by vapor intrusion. As with any indoor air contaminant, removing household sources of TCE will help reduce indoor air levels of the chemical. Maintaining adequate ventilation will also help reduce the indoor air levels of TCE. If TCE is in the indoor air as a result of vapor intrusion, a sub-slab depressurization system, much like a radon mitigation system, will reduce exposures by minimizing the movement of vapors that are beneath a slab into a building. If TCE is in the water supply of a house, a carbon filter on the water supply to remove the TCE will minimize ingestion and inhalation exposures.

### Is there a medical test that can tell me whether I have been exposed to TCE?

TCE can be measured in people's breath soon after they are exposed. TCE and some of its breakdown products can be measured in the urine and blood. These tests are not routinely available at a doctor's office. Urine and blood tests can indicate that you may have recently (within the last few days) been exposed to a large amount of the chemical. However, they cannot tell you the source of the exposure. Some of the breakdown products of TCE can also be formed from other chemicals.

## When should my children or I see a physician?

If you believe you or your children have symptoms that you think are caused by TCE exposure, you or your children should see a physician. You should tell the physician about the symptoms and about when, how and for how long you think you and/or your children were exposed to TCE.

## What is the NYSDOH doing to educate physicians about TCE?

The NYSDOH maintains an Infoline (1-800-458-1158) that physicians or the public can call when they have questions related to various types of chemical exposures. A certified occupational and environmental health nurse is available to triage physicians' questions and to direct their inquiries to the appropriate staff member.

The NYSDOH also works closely with the federal Agency for Toxic Substances and Disease Registry (ATSDR), making their educational materials available to physicians upon request. One of these items is an environmental medicine case study entitled "Trichloroethylene (TCE) Toxicity," which provides the opportunity for physicians to earn continuing medical education credits from the Centers for Disease Control and Prevention. Physicians who would like to complete this training are encouraged to contact the NYSDOH for more information. A printed copy can be mailed to the physician or it can be accessed on-line at the following web site http://www.atsdr.cdc.gov/HEC/CSEM/tce/index.html.

## Where can I get more information?

If you have any questions about the information in this fact sheet or would like to know more about TCE, please call the NYSDOH at 1-800-458-1158 or write to the following address:

New York State Department of Health
Bureau of Toxic Substance Assessment
Flanigan Square, 547 River Street
Troy, NY 12180-2216

# Attachment 3

# Communication Testing Results

EA Engineering, P.C.
EA Science and Technology

6712 Brooklawn Parkway, Suite 104
Syracuse, NY 13211-2158
Telephone: 315-431-4610
Fax: 315-431-4280
www.eaest.com

13 December 2010

**MEMORANDUM**

**TO:** David Chiusano, NYSDEC **LOCATION:** NYSDEC DER

**FROM:** Scott Fonte **LOCATION:** EA

**RE:** Pressure Field Extension Testing – 609 West Clinton Street, Ithaca, NY
NYSDEC Site: Clinton West Plaza (755015)
Contract/WA No: D004438-47

On 9 December 2010, EA Engineering, P.C. and its affiliate EA Science and Technology (EA) oversaw the pressure field extension testing (PFE testing) of the sub-slab environment at the structure located at 609 West Clinton Street, Ithaca, New York. PFE testing was completed by Groundwater & Environmental Services, Inc. (GES), a New York State Department of Environmental Conservation (NYSDEC) standby contractor that was tasked with installation of a vapor intrusion mitigation system at the commercial property. The PFE testing was completed to evaluate the effectiveness of a proposed sub-slab depressurization system (SSDS), and to measure the ability of a suction field and air flow to extend through material beneath the concrete slab. The goal and design of the sub-slab depressurization system is to minimize soil vapor intrusion effectively while minimizing excess energy usage, to avoid compromising moisture and temperature controls and other comfort features, and to minimize noise. A diagram illustrating the extraction point and monitoring points installed during the PFE testing is provided in Attachment A.

The PFE test was performed on the concrete slab from a 2 inch extraction point located within the southwestern portion of the building to determine the effectiveness of sub-slab depressurization within the environment beneath the poured concrete slab. Material beneath the slab consisted of approximately 2 to 3 inches of small diameter stone and gravel fill material underlain by a native glacial till material. Nine monitoring points (MP-1 through MP-9) were installed utilizing a 1/2-in. hammer drill bit in order to measure the suction field and air flow beneath the slab between the extraction point (EXP-1) and various distances and locations throughout the buildings slab. An existing lint trap, constructed of a poured concrete casting, located adjacent to EXP-1 was measured to be 4 feet wide by 6 feet long and 44 inches deep. The seam between the top of the lint trap and the base of the concrete slab was sealed with concrete caulk to prevent influence to the sub-slab environment. Micromanometer and magnohelic readings were recorded at various monitoring points during the diagnostic testing. These results were used to develop a radius of influence based on the blower rate recorded during the testing and are provided in Attachment B.

Micromanometer and magnohelic readings reported good communication between the extraction point (EXP- 1) and eight monitoring points (MP-1, MP-2, MP-3, MP-4, MP-5, MP-6, MP-7, and MP-9) located up to 62 ft away from the extraction point. One monitoring point (MP-8) located approximately 66 ft away from the extraction point reported communication slightly below the

American Society for Testing and Materials (ASTM) International (ASTM E-2121-03, 10 February 2003) depressurization goal (Section X3.3.1) of 0.025-0.035 inches of water. Based on the results of the PFE testing, it appears that one extraction point, centrally located to the extent feasible, within the structure will provide sufficient draw to communicate with the entire sub-slab environment.

Based on the results of the PFE testing, an appropriately sized SSDS will be a suitable mitigation technique to minimize the potential for soil vapor intrusion into the structure located at 609 West Clinton Street in Ithaca, NY. EA will remain in contact with NYSDEC and GES for review and discussions regarding the SSDS design and installation. In addition, a post PFE test will be required once the SSDS has been installed in accordance with Section 4.3, Subsection 4.3.1, of the New York State Department of Health *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, October 2006.

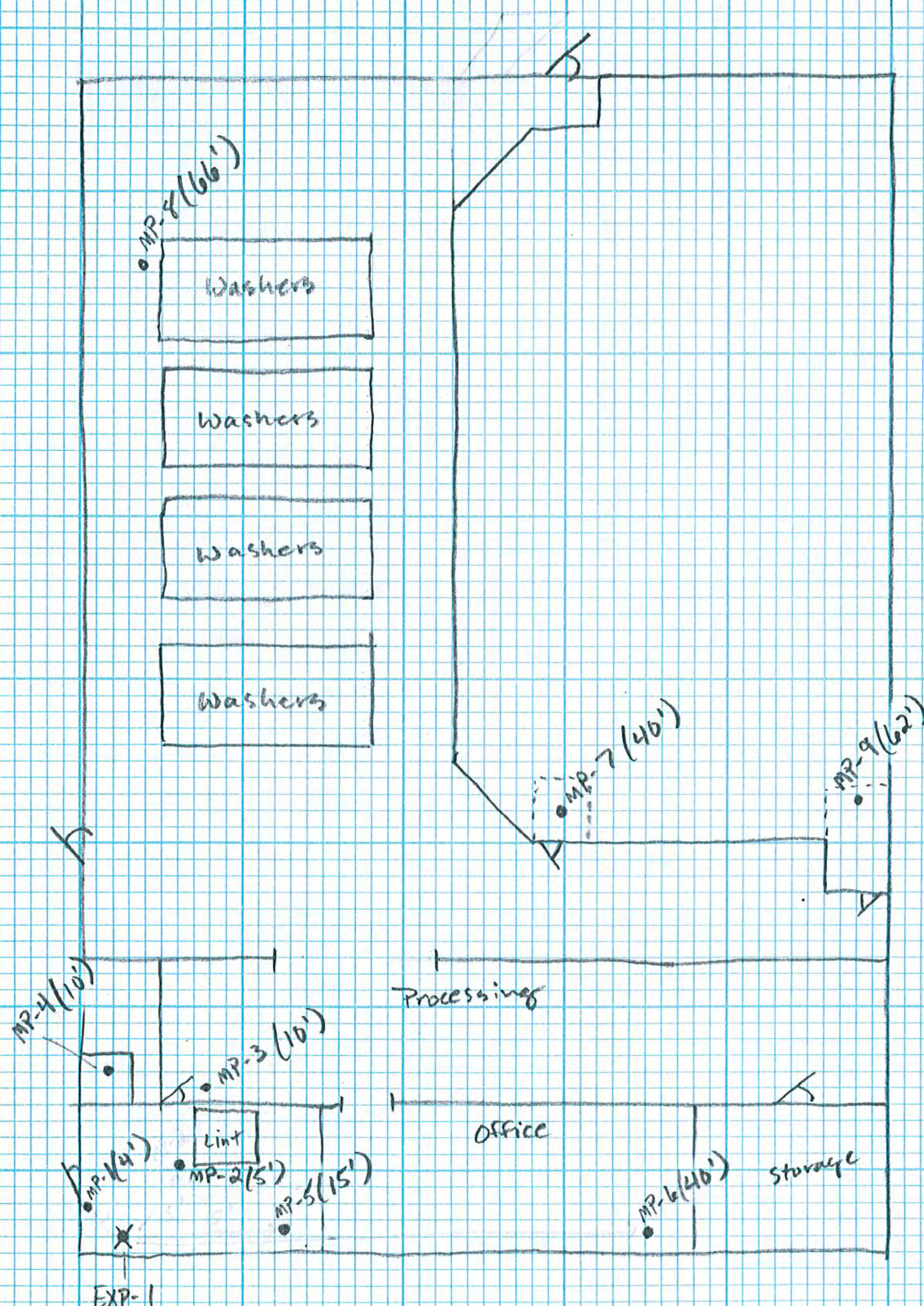
Also included as Attachment C to this memorandum are site notes and photographs recorded during the PFE testing by EA and GES.

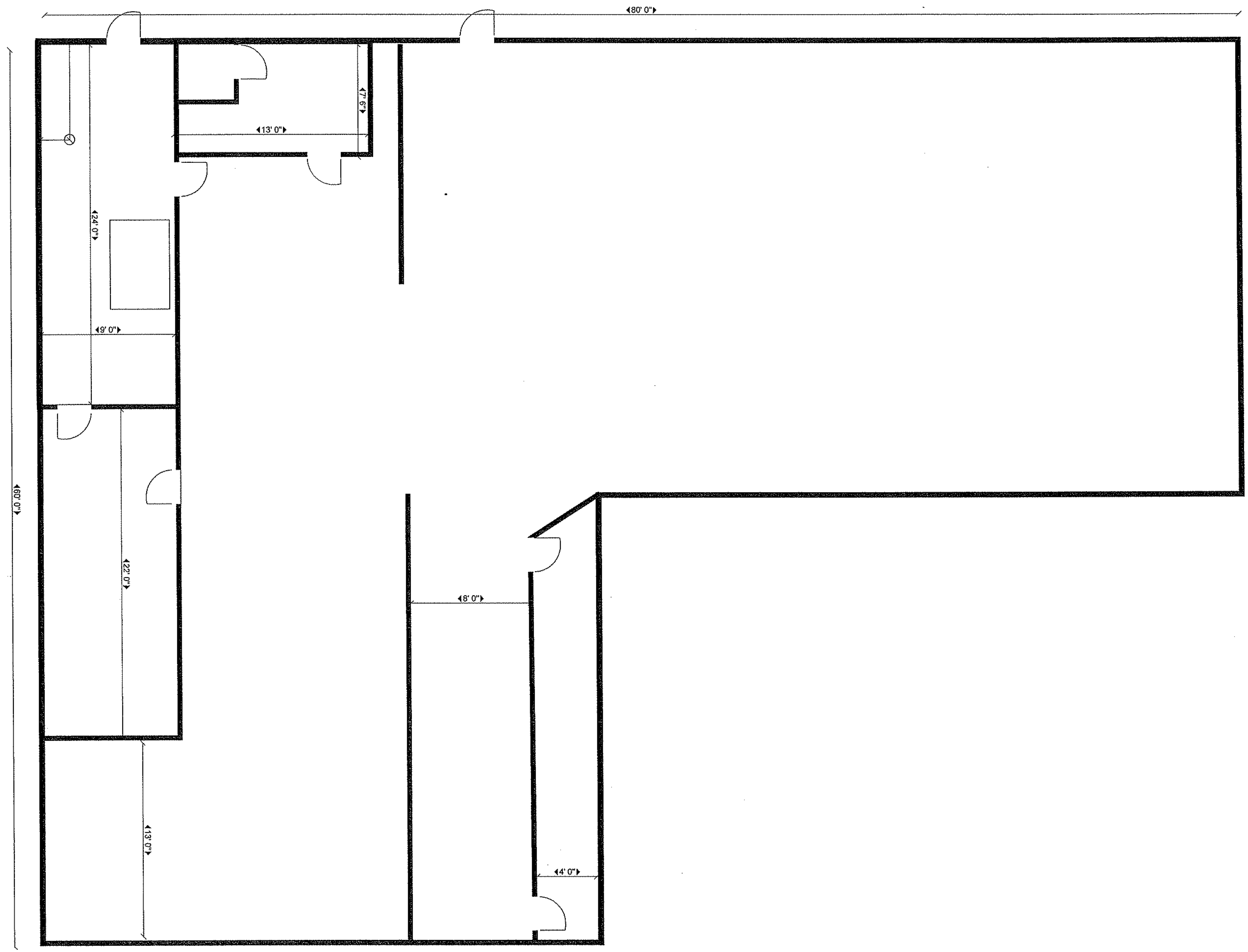
SF/drs
Attachments

# Attachment A
# Pressure Field Testing Diagram

Project Clinton West Plaza Project No. 14368.47
Subject PFE Testing @ 609 W. Clinton Sheet No. 1 of 1
Drawing No.
Computed by JCP Date 12/9/10 Checked by Date

- Approx. distance between EXP-1 and MPs indicated in paranthesis




80' 0"
60' 0"
13' 0"
7' 6"
24' 0"
9' 0"
22' 0"
13' 0"
8' 0"
4' 0"

# Attachment B
# Micromanometer/Magnohelic Results
# And Radius of Influence Results

# Pressure Field Extension Testing at 609 West Clinton Street, Ithaca, NY

| Monitoring Points | Time: 1145 | Time: 1150 | Time: 1155 | Time: 1200 | Time: 1205 | Time: 1210 |
|---|---|---|---|---|---|---|
| | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" |
| | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) |
| MP-1 | -0.75 | -0.75 | -0.75 | -0.75 | -0.75 | -0.75 |
| MP-2 | -0.457 | -0.412 | -0.402 | -0.395 | -0.389 | -0.378 |
| MP-3 | | | | | | |
| MP-4 | | | | | | |
| MP-5 | | | | | | |
| MP-6 | | | | | | |
| MP-7 | | | | | | |
| MP-8 | | | | | | |
| MP-9 | | | | | | |

Magnahelic Gauge used to collect data.

Fluke 922 Air Flow Meter used to collect data (Micromanometer).

| Monitoring Points | Time: 1215 | Time: 1220 | Time: 1225 | Time: 1230 | Time: 1235 | Time: 1240 |
|---|---|---|---|---|---|---|
| | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" |
| | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) |
| MP-1 | | | | | | |
| MP-2 | | | | | | |
| MP-3 | 0.088 | 0.086 | 0.089 | -0.459 | -0.465 | -0.466 |
| MP-4 | -0.35 | -0.35 | -0.35 | -0.35 | -0.35 | -0.35 |
| MP-5 | | | | -0.33 | -0.34 | -0.34 |
| MP-6 | | | | | | |
| MP-7 | | | | | | |
| MP-8 | | | | | | |
| MP-9 | | | | | | |

| Monitoring Points | Time: 1245 | Time: 1250 | Time: 1255 | Time: 1300 | Time: 1305 | Time: 1310 |
|---|---|---|---|---|---|---|
| | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" |
| | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) |
| MP-1 | | | | | | |
| MP-2 | | | | | | |
| MP-3 | | | | | | |
| MP-4 | | | | | | |
| MP-5 | -0.34 | -0.34 | -0.34 | | | |
| MP-6 | | | -0.04 | -0.04 | -0.04 | -0.04 |
| MP-7 | | | -0.068 | -0.072 | -0.08 | -0.08 |
| MP-8 | | | | -0.004 | -0.017 | -0.013 |
| MP-9 | | | | | | |

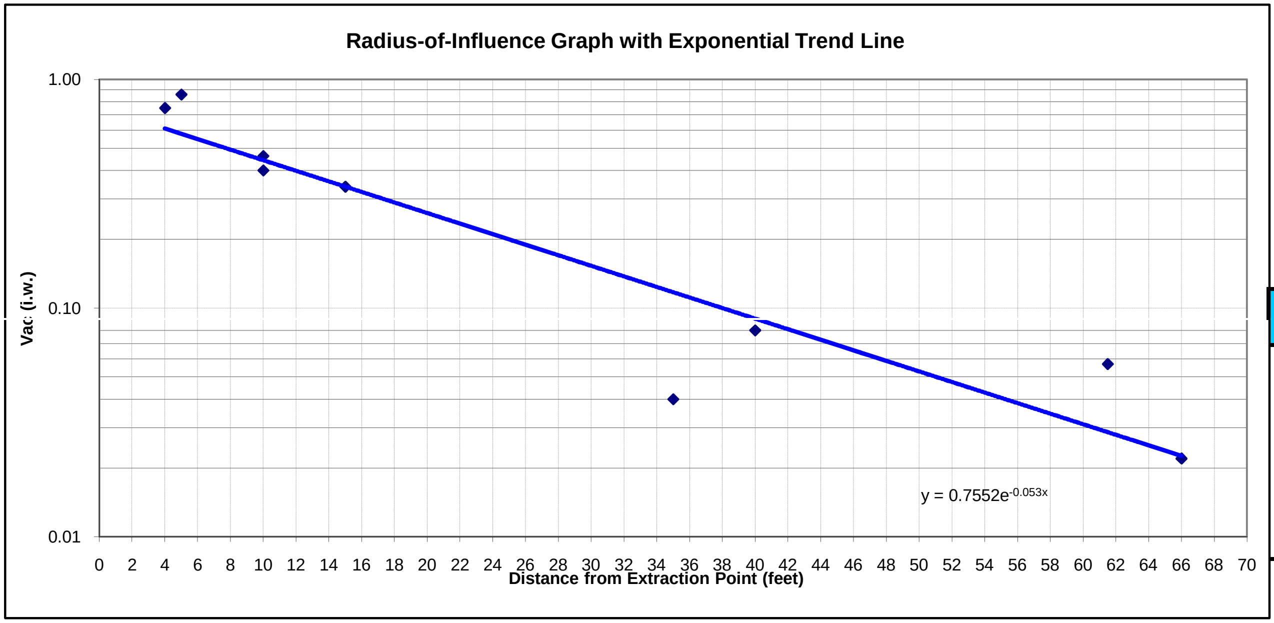
| Monitoring Points | Time: 1315 | Time: 1320 | Time: 1325 | Time: 1330 | Time: 1335 | Time: 1340 |
|---|---|---|---|---|---|---|
| | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" | EXP-1 (in $H_2O$): 7-8" |
| | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) | Vacuum (In. of $H_2O$) |
| MP-1 | | | | | | |
| MP-2 | | | | | | |
| MP-3 | | | | | | |
| MP-4 | | | | | | |
| MP-5 | | | | | | |
| MP-6 | -0.04 | | | | | |
| MP-7 | -0.08 | | | | | |
| MP-8 | -0.016 | -0.019 | -0.022 | -0.022 | | |
| MP-9 | | | | | | -0.057 |

| Monitoring Points | Time: 1345 |
|---|---|
| | EXP-1 (in $H_2O$): 7-8" |
| | Vacuum (In. of $H_2O$) |
| MP-1 | |
| MP-2 | |
| MP-3 | |
| MP-4 | |
| MP-5 | |
| MP-6 | |
| MP-7 | |
| MP-8 | |
| MP-9 | -0.056 |

| EXP-1 Effluent Total VOCs ppbRae reading (parts per billion) | | | |
|---|---|---|---|
| Time | ppb | Time | ppb |
| 1154 | 8850 | 1233 | 5576 |
| 1201 | 7220 | 1242 | 5441 |
| 1207 | 6722 | 1258 | 5053 |
| 1212 | 6420 | 1313 | 4877 |
| 1220 | 6105 | 1330 | 4638 |

# ROI Calculation Sheet

| | Extraction Well | MP-1 | MP-2 | MP-3 | MP-4 | MP-5 | MP-6 | MP-7 | MP-8 | MP-9 |
|---|---|---|---|---|---|---|---|---|---|---|
| Max Vac (inWC) | 8 | 0.75 | 0.86 | 0.46 | 0.40 | 0.34 | 0.04 | 0.08 | 0.02 | 0.06 |
| Distance from RW (ft) | 1E-15 | 4.00 | 5.00 | 10.00 | 10.00 | 15.00 | 35.00 | 40.00 | 66.00 | 61.50 |




| ROI calculated with exponential trend line | | |
|---|---|---|
| Equation: y = c *e ^(b * x) | | |
| **c =** | slope | |
| **b =** | Intercept | |
| **ROI limit =** | 0.025 | |
| | c | b |
| | 0.7552 | -0.0532 |
| **ROI (ft) =** | 64.0621577 | |

# Attachment C
# Field Notes and Photolog

Location Ithaca, NY Date 12/9/10

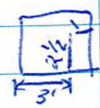
Project / Client Clinton West PFET

0900 EA (Bob Casey / Jim Peterson) on site

0955 GES on site (Kevin / Jason)

- Horizontal 2" x 18" extraction point (slotted manually w/ sawzall)
- Approx. 16" of gravel @ install pt. w/ ~3-4" of stone beneath slab.

- Lint trap 4' x 6' x 44" & 4" off wall
- MP-3 : ~~[illegible]~~ 2 1/2' x 1'




- Bathroom : 4' x 4'

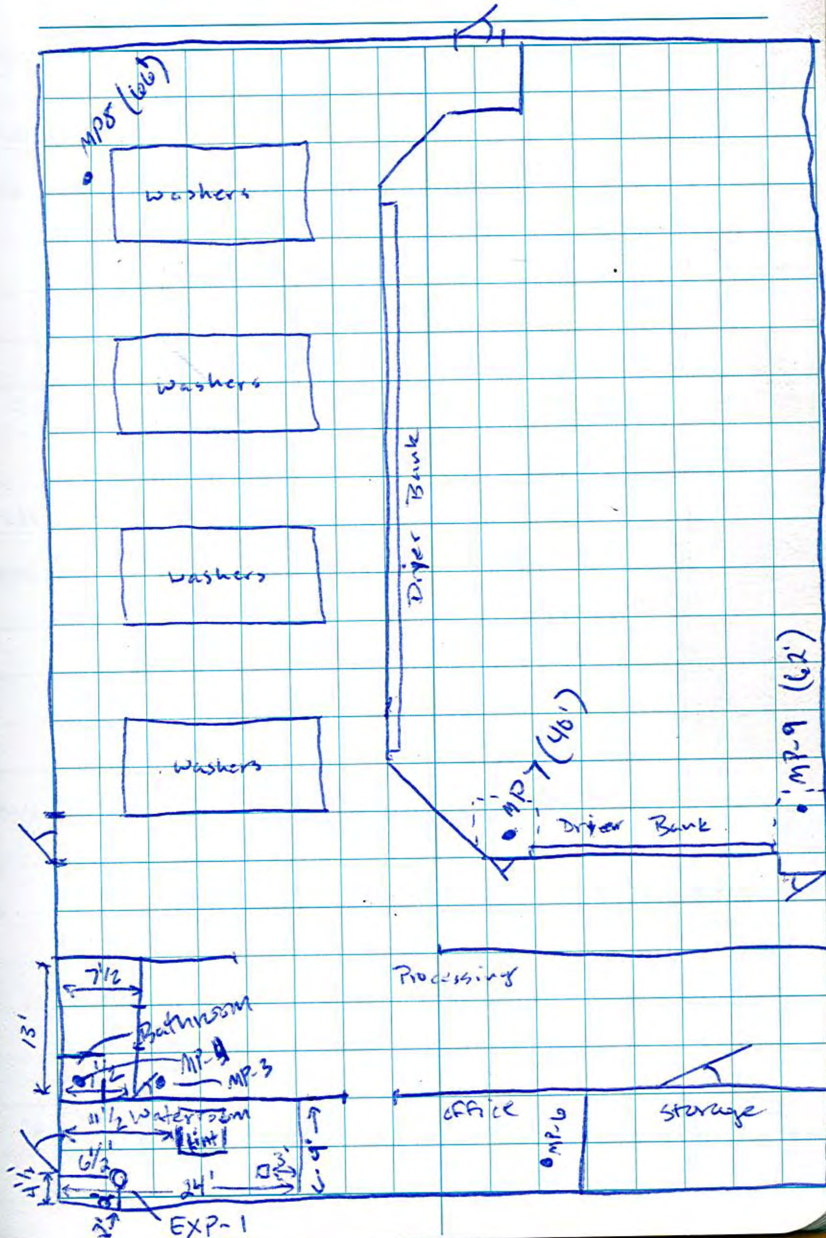
MP-1 : 4' - Mag
MP-2 : 5' - Fluke
MP-3 : 10'

- Air discharge 8550 ppb @ 1154
7220 ppb @ 1201
6722 ppb @ 1207
6420 ppb @ 1212
6105 ppb @ 1220



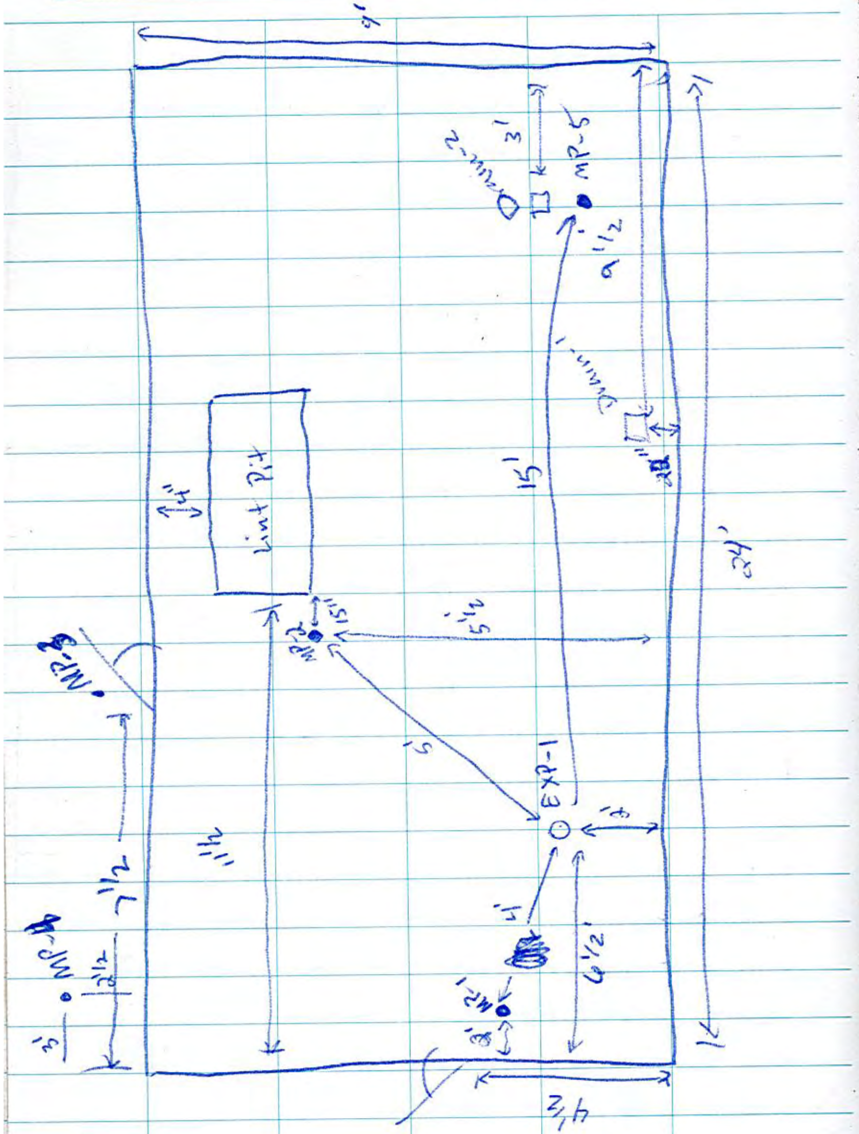
Location Ithaca, NY Date 12/9/10

Project / Client Clinton West PFET



Location Ithaca Date 12/9

Project / Client Clinton West PFET






Location Ithaca Date 12/9

Project / Client Clinton West PFET

Start: 1145 7-8" @ EXP-1

| | MPs | Int/Time | 5/Time | 10/Time | 15/Time | 20/Time |
|---|---|---|---|---|---|---|
| Fluke | MP2 | -.457/1145 | -.412/1150 | -.402/1155 | -.395/1200 | -.389/1205 |
| Mag | MP4 | -.75/1145 | -.75/1150 | -.75/1155 | -.75/1200 | -.75/1205 |

| 25/Time |
|---|
| .378/1210 |
| .75/1210 |

| | | Int/Time | 5/Time | 10/Time | 15/Time |
|---|---|---|---|---|---|
| Fluke | MP3 | *.088/1215 | *.080/1220 | *.089/1227 | -.459/1230 |
| Mag | MP4 | -.35/1215 | -.35/1220 | -.35/1227 | -.35/1230 |

| | 20/Time | 25/Time |
|---|---|---|
| MP3 | -.465/1235 | -.466/1240 |
| MP4 | -.35/1235 | -.35/1240 |

| | | Int/Time | 5/Time | 10/Time |
|---|---|---|---|---|
| Mag | MP5 | -.33/1230 | -.34/1235 | -.34/1240 |

| 15/Time | 20/Time | 25/Time |
|---|---|---|
| -.34/1245 | -.34/1250 | -.34/1255 |

* Recalibrated @ 1227

Location Ithaca Date 12/9/10

Project / Client Clinton West PFET

| | | |
|---|---|---|
| 5576 | ppb @ | 1233 |
| 5441 | ppb @ | 1242 |
| 5053 | ppb @ | 1258 |
| 4877 | ppb @ | 1313 |
| 4638 | ppb @ | 1330 |



Location Ithaca Date 12/9/10

Project / Client Clinton West PFET

| MP | Int/Time | 5/Time | 10/Time |
|---|---|---|---|
| mag MP6 | -.04/1255 | -.04/1300 | -.04/1305 |
| Fluke* MP7 | -.068/1255 | -.072/1300 | -.08/1305 |

| | 15/Time | 20/Time | 25/Time |
|---|---|---|---|
| | -.04/1310 | -.04/1315 | -.04/1320 |
| | -.08/1310 | -.08/1315 | -.08/1320 |

| | Int/Time | 5/Time | 10/Time |
|---|---|---|---|
| MP8 | -.004/1300 | -.017/1305 | -.013/1310 |

| 15/Time | 20/Time | 25/Time |
|---|---|---|
| -.016/1315 | -.019/1320 | -.022/1325 |

| 30/Time |
|---|
| -.022/1338 |

| | Int/Time | 5/Time |
|---|---|---|
| MP9 | -.057/1340 | -.056/1345 |

* Fluke replaced w/ mag @ 1300 on MP7.

12/9 0700-0800 PREP NYSDEC ITHACA
0800-1000 - TRAVEL
1000 ON SITE, H&S MEETING
ROBERT & JAMES PETERSON ON SITE
TO OVERSEE WORK
PID CALIBRATED BY PINE
↳ DID NOT WORK - LAMP
1130 - BEGIN TEST ⇒ BLOWER MAXED OUT @ 8" H2O
* FOR ALL DATA SEE TRACKING FORM & SITE MAPS
060230 2/05/270

| MP | DISTANCE FROM EP | MAX "H2O VACUUM | APPLIED VACUUM |
|---|---|---|---|
| 1 | 4 | .75 | 8" H2O |
| 2 | 5' | .86 | 4" |
| 3 | 10' | .47 | AIRFLOW |
| 4 | 10' | .40 | 115-128 |
| 5 | 15' | .34 | |
| 6 | 35' | .04 | MAX TEMP |
| 7 | 40' | .08 | 55.6 |
| 8 | 66' | .022 | |
| 9 | 61.5 | .057 | PID |

13:30 END TEST 8850 → 4638 ppb
13:30 - 14:45 CLEAN UP & BREAK DOWN
14:45 - 16:30 TRAVEL & DEMO

**Vapor Mitigation Test Data Tracking Form**
Extraction Well ___EP-1___

Date: 12/9/10

| ID | Sample Description | units | Time: 1145 | Time: 1200 | Time: 1215 | Time: 1230 | Time: 1245 | Time: 1300 | Time: 1315 | Time: 1330 | Time: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Applied Vacuum | "$H_2O$ | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| | Well Airflow 4" | scfm | 123 | 112.81 | 120.02 | 128.21 | 121.04 | 123.89 | 117.94 | 115.02 | |
| | Discharge Temp | °F | 46.2 | 39.1 | 53.8 | 53.5 | 55.6 | 51.2 | 40.8 | 43.5 | |
| | PID | PPB ~~ppmv~~ | 850 ppb | 7220 | 6237 | 5576 | 5441 | 4984 | 4783 | 4638 | |
| | ~~LEL~~ | % | | | | | | | | | |
| | ~~O2~~ | % | | | | | | | | | |
| | ~~PCE~~ | | | | | | | | | | |
| | ~~TCE~~ | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| Well ID | Distance From Extraction Well (feet) | Time: 1145 Vacuum (" H2O) | Time: 1200 Vacuum (" H2O) | Time: 1215 Vacuum (" H2O) | Time: 1230 Vacuum (" H2O) | Time: 1245 Vacuum (" H2O) | Time: 1300 Vacuum (" H2O) | Time: 1315 Vacuum (" H2O) | Time: Vacuum (" H2O) | Time: Vacuum (" H2O) |
|---|---|---|---|---|---|---|---|---|---|---|
| MP-1 | 4' | .75 | .75 | .75 | .75 | .75 | .75 | .75 | .75 | |
| MP-2 | 5' | .45 | .395 | .374 | .83 | .86 | .85 | .85 | .85 | |
| MP-3 | 10' | | | .095 | .463 | .470 | .44 | .45 | .45 | |
| MP-4 | 10' | | | .35 | .35 | .40 | .35 | .35 | .35 | |
| MP-5 | 15' | | | | .34 | .34 | .33 | .33 | .33 | |
| MP-6 | 35' | | | | | | .04 | .04 | .04 | |
| MP-7 | 40' | | | | | | .07 | .08 | .08 | |
| MP-8 | 66' | | | | | | .005 | .015 | .022 | |
| MP-9 | 61.5 | | | | | | | | .057 | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

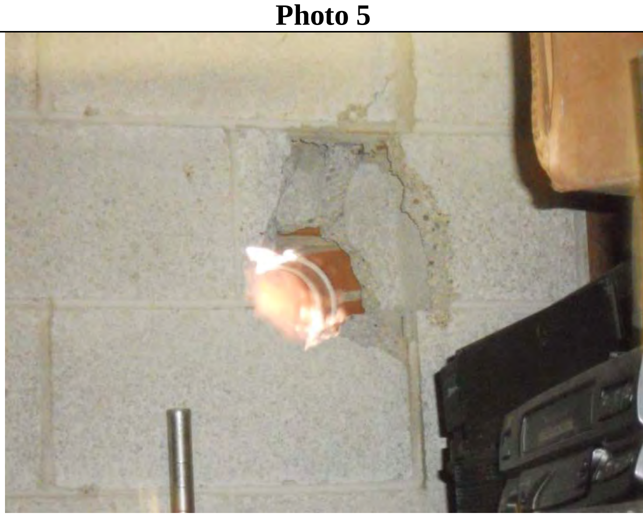
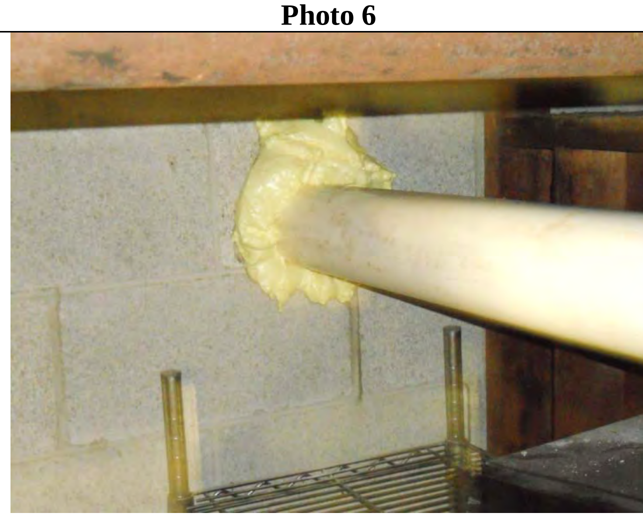
## Attachment C - Photolog

| **Photo 1** | **Photo 2** |
| --- | --- |
| <br>View of extraction point (EXP-1) from the northeast | <br>View of blower and effluent discharge setup from the west |
| **Photo 3** | **Photo 4** |
| <br>Seal applied to the slab and lint wall interface | <br>View of micromanometer data collection at MP-8 |

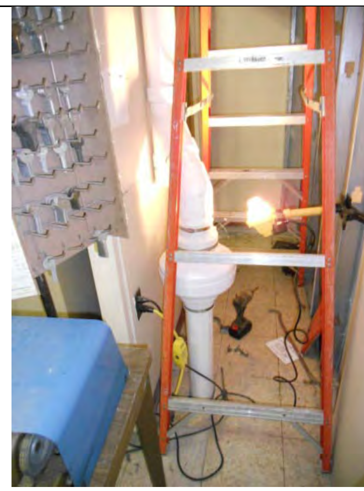
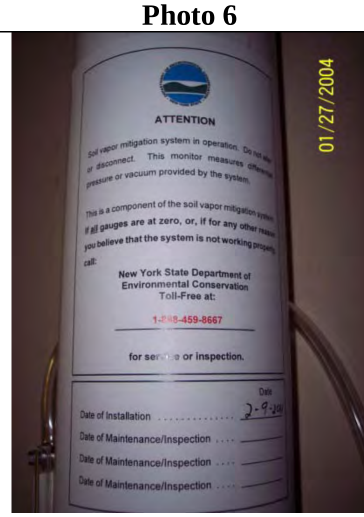
# Attachment 4

# SSD System Installation Photo Log

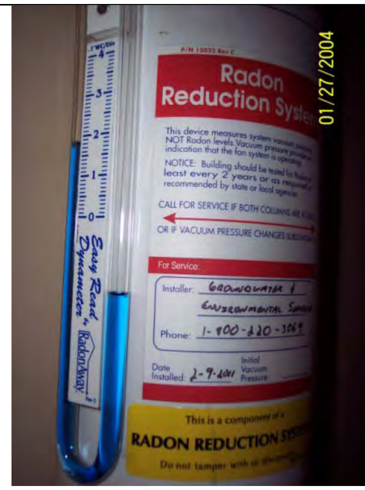
**Attachment 4 – Photo Log***

| **Photo 1** | **Photo 2** |
|---|---|
|  |  |
| View of extraction point location | View of cored extraction point |
| **Photo 3** | **Photo 4** |
|  |  |
| View of piping from extraction point to ceiling line | View of ceiling line piping to building exterior |
| **Photo 5** | **Photo 6** |
|  |  |
| View of piping hole through building wall | View of piping and seal through building wall |

## Attachment 4 – Photo Log

| **Photo 1** | **Photo 2** |
|---|---|
| <br>View of exhaust stack above building | <br>View of exhaust stack above building |
| **Photo 3** | **Photo 4** |
| <br>View of fan unit with condensate redirect | <br>View of fan unit set-up |
| **Photo 5** | **Photo 6** |
| <br>View of sealed extraction point | <br>View of informational placard at extraction point |

## Attachment 4 – Photo Log

| Photo 1 | Photo 2 |
|---|---|
|  |  |
| View of system manometer | View of system manometer and radon reduction system placard |

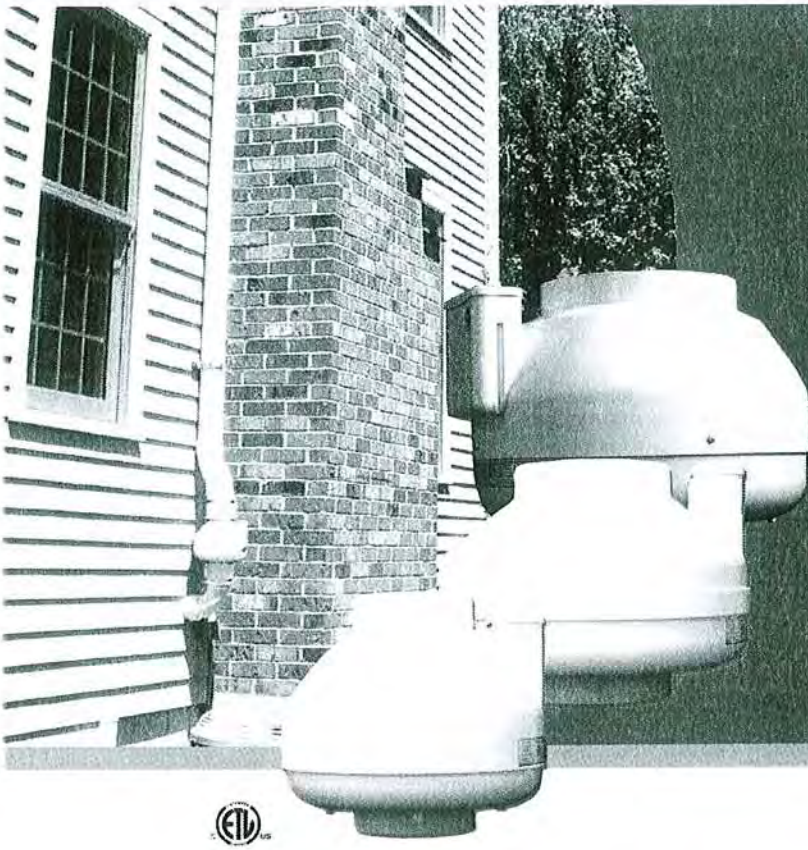
***NOTE: Date stamp on photographs are incorrect.**

# Attachment 5

# Fan Specifications and Warranty Information

RadonAway™
*The World's Leading Radon Fan Manufacturer*

# RP Series



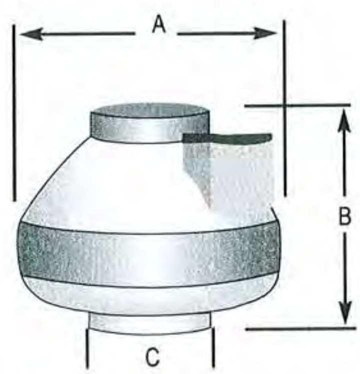
## Radon Mitigation Fans

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

## Features:

- Five-year hassle-free warranty
- Quiet and attractive
- Thermally protected
- Motorized impeller
- ETL Listed - for indoor or outdoor use
- Meets all electrical code requirements
- Rated for commercial and residential use

| Model | Watts | Max. Pressure "WC | Typical CFM vs. Static Pressure WC 0" | .5" | 1.0" | 1.5" | 2.0" | A" | B" | C" |
|---|---|---|---|---|---|---|---|---|---|---|
| RP140 | 14-20 | 0.8 | 134 | 68 | - | - | - | 9.7 | 7.9 | 4 |
| RP145 | 37-71 | 2.1 | 173 | 132 | 94 | 55 | 11 | 9.7 | 7.9 | 4 |
| RP260 | 52-72 | 1.8 | 275 | 180 | 105 | 20 | - | 11.8 | 9.9 | 6 |
| RP265 | 86-140 | 2.5 | 327 | 260 | 207 | 139 | 57 | 11.8 | 9.9 | 6 |
| RP380 | 103-156 | 2.3 | 510 | 393 | 268 | 165 | 35 | 13.41 | 10.53 | 8 |




Choice of model is dependent on building characteristics including sub-slab materials and should be made by a radon professional.

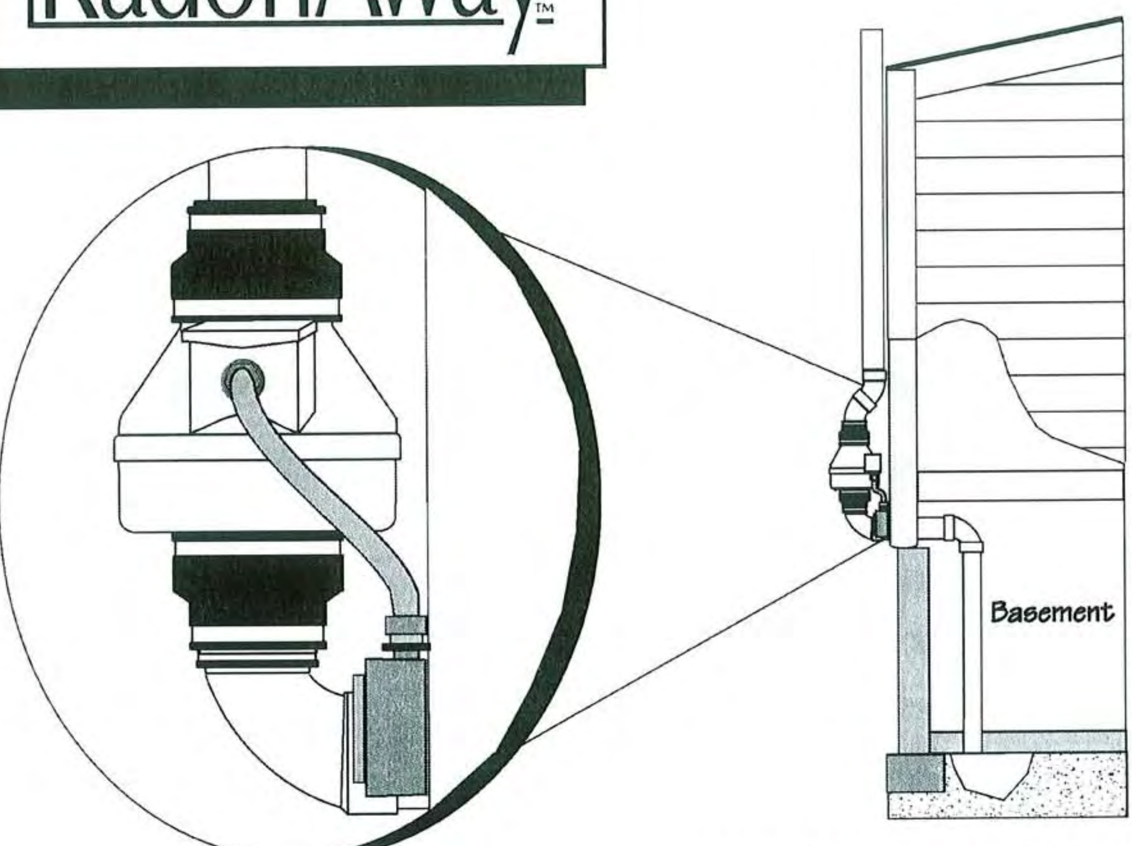
**For Further Information Contact:**

03/08
P/N 02008

# RP Series Installation Instructions

By

RadonAway™




Spruce Environmental Technologies, Inc.
Ward Hill, MA P/N IN020 Rev H

# Series Fan Installation Instructions

## *Please Read and Save These Instructions.*

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

1. **WARNING!** Do not use fan in hazardous environments where fan electrical system could provide ignition to combustible or flammable materials.

2. **WARNING!** Do not use fan to pump explosive or corrosive gases.

3. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.

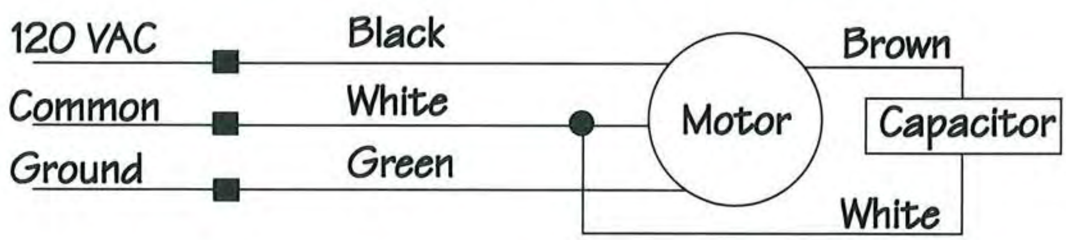
4. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.

5. **NOTICE!** There are no user serviceable parts located inside the fan unit.
**Do NOT attempt to open.** Return unit to the factory for service.

6. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA)"National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician

7. **WARNING!** Do not leave fan unit installed on system piping without electrical power for more than 48 hours. Fan failure could result from this non-operational storage.

## DynaVac RP Series Fan Wiring Diagram



**DynaVac - RP Series**

| | |
|---|---|
| **RP140** | **p/n 23029-1** |
| **RP145** | **p/n 23030-1** |
| **RP155** | **p/n 23031-1** |
| **RP260** | **p/n 23032-1** |
| **RP265** | **p/n 23033-1** |
| **RP380** | **p/n 28208** |

## 1.0 SYSTEM DESIGN CONSIDERATIONS

### 1.1 INTRODUCTION

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

### 1.2 ENVIRONMENTALS

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

### 1.3 ACOUSTICS

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

### 1.4 GROUND WATER

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

### 1.5 SLAB COVERAGE

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

## 1.6 CONDENSATION & DRAINAGE

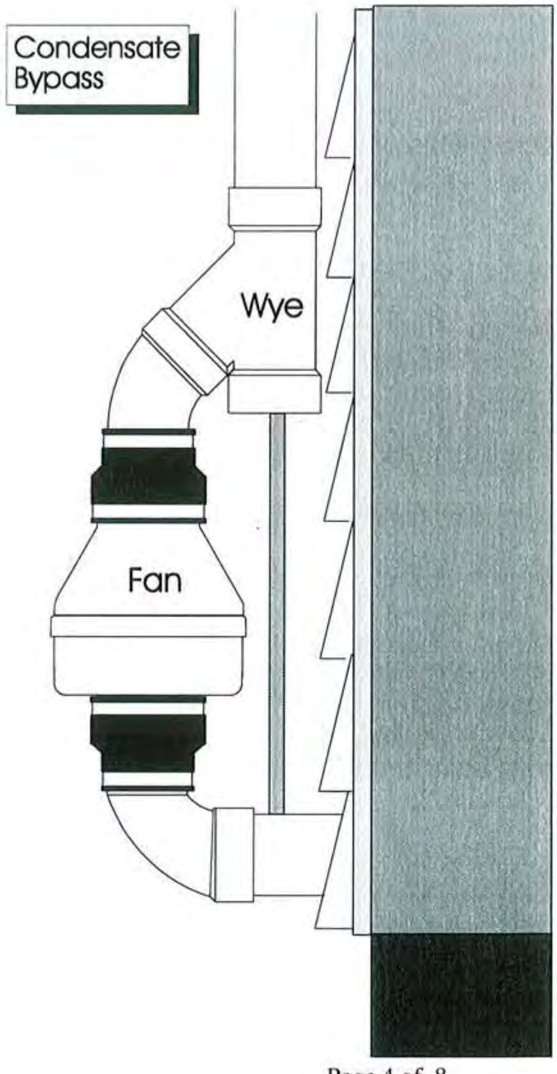
Condensation is formed in the piping of a mitigation system when the air in the piping is chilled below its dew point. This can occur at points where the system piping goes through unheated space such as an attic, garage or outside. The system design must provide a means for water to drain back to a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

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

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


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

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




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

## 1.7 "SYSTEM ON" INDICATOR

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

## 1.8 ELECTRICAL WIRING

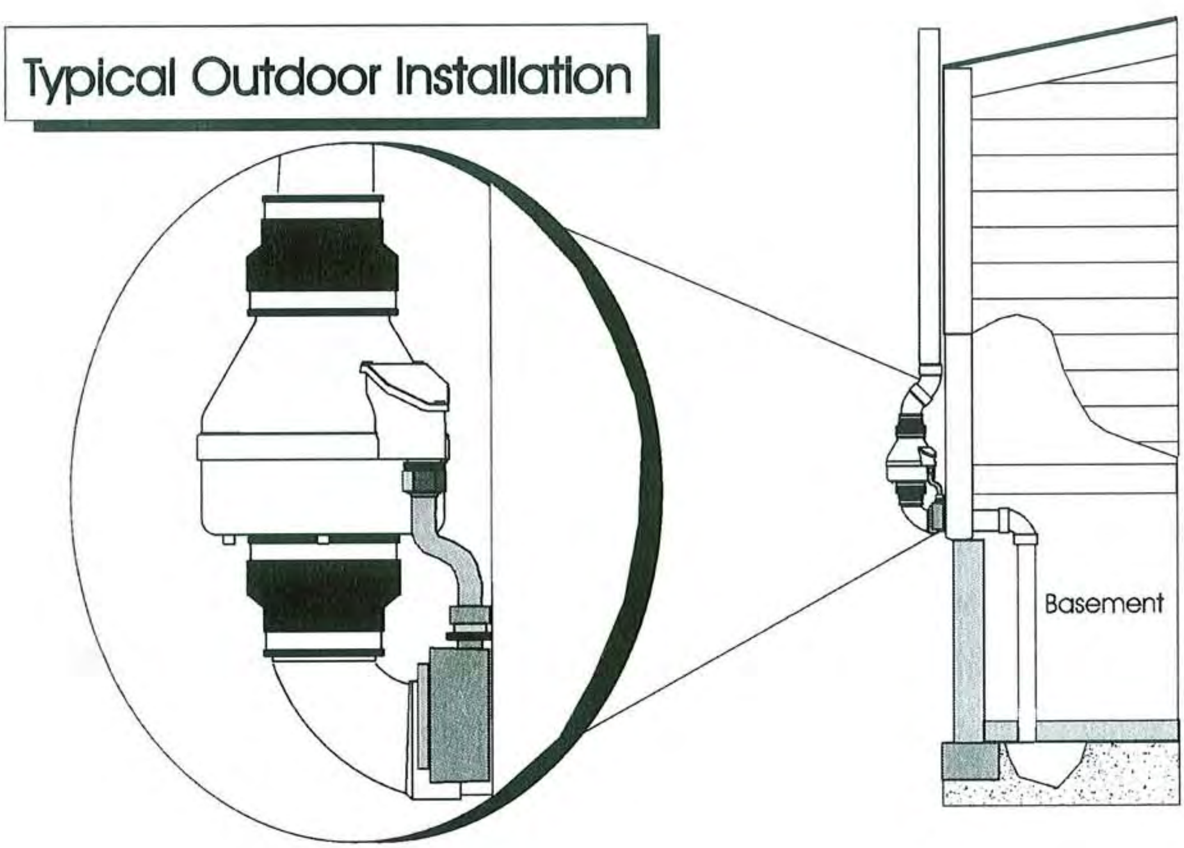
The RP Series Fans operate on standard 120V 60 Hz. AC. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA)"National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must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

## 1.9 SPEED CONTROLS

The RP Series Fans are rated for use with electronic speed controls ,however , they are generally not recommended.

## 2.0 INSTALLATION

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



2.1 MOUNTING

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

2.2 MOUNTING BRACKET (optional)

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

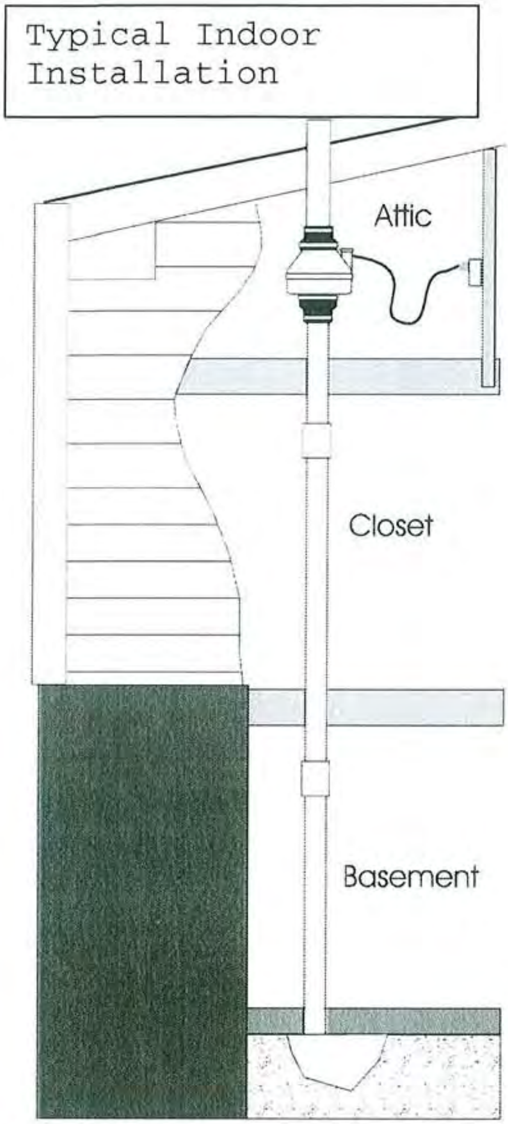
2.3 SYSTEM PIPING

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

2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections:

| Fan Wire | Connection |
|---|---|
| Green | Ground |
| Black | AC Hot |
| White | AC Common |




2.5 VENT MUFFLER (optional)

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

2.6 OPERATION CHECKS

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

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

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

*(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 Feet.)*

*(Further reduce Maximum Operating Pressure by 10% for High Temperature environments)*

*See Product Specifications. If this is exceeded, increase the number of suction points.*

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

## RP SERIES PRODUCT SPECIFICATIONS

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

| | Typical CFM Vs Static Pressure "WC | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 0" | .25" | .5" | .75" | 1.0" | 1.25" | 1.5" | 1.75" | 2.0" |
| RP140 | 134 | 101 | 68 | 10 | - | - | - | - | - |
| RP145 | 173 | 152 | 132 | 115 | 94 | 73 | 55 | 37 | - |
| RP155 | 185 | 161 | 137 | 115 | 94 | 73 | 55 | 37 | - |
| RP260 | 275 | 225 | 180 | 140 | 105 | 70 | 20 | - | - |
| RP265 | 327 | 302 | 260 | 230 | 207 | 176 | 139 | 101 | 57 |
| RP380* | 420 | 375 | 330 | 260 | 220 | 170 | 130 | 70 | 30 |

* Tested with 6" inlet and discharge pipe.

| Power Consumption 120 VAC, 60Hz 1.5 Amp Maximum | | | Maximum Recommended Operating Pressure* (Sea Level Operation)** | |
|---|---|---|---|---|
| RP140 | 14 - 20 | watts | RP140 | 0.8" W.C. |
| RP145 | 37 - 71 | watts | RP145 | 1.7" W.C. |
| RP155 | 37 - 75 | watts | RP155 | 1.7" W.C. |
| RP260 | 52 - 72 | watts | RP260 | 1.5" W.C. |
| RP265 | 86 - 140 | watts | RP265 | 2.2" W.C. |
| RP380 | 95 - 152 | watts | RP380 | 2.0" W.C. |

**Reduce by 10% for High Temperature Operation*
***Reduce by 4% per 1000 feet of altitude*

| | Size | Weight | Inlet/Outlet |
|---|---|---|---|
| RP140 | 8.5H" x 9.7" Dia. | 5.5 lbs. | 4.5" OD (4.0" PVC Sched 40 size compatible) |
| RP145 | 8.5H" x 9.7" Dia. | 5.5 lbs. | 4.5" OD (4.0" PVC Sched 40 size compatible) |
| RP155 | 8.5H" x 9.7" Dia. | 5.5 lbs. | 5.0" OD |
| RP260 | 8.6H" x 11.75" Dia. | 5.5 lbs. | 6.0" OD |
| RP265 | 8.6H" x 11.75" Dia. | 6.5 lbs. | 6.0" OD |
| RP380 | 10.53H" x 13.41" Dia. | 11.5 lbs. | 8.0" OD |

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

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

**Storage temperature range**: 32 - 100 degrees F.

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

**Maximum inlet air temperature:** 80 degrees F.

**Continuous Duty**

**Class B Insulation**

**Thermally protected**

**3000 RPM**

**Rated for Indoor or Outdoor Use**

LISTED
Electric Fan
Tested to
UL
Std. 507
77728

## IMPORTANT INSTRUCTIONS TO INSTALLER

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

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

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

WARRANTY

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

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

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

5 YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

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

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

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

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

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

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

**Record the following information for your records:**

Serial No. 108398

Purchase Date 1/28/2011

# Appendix F

# Health and Safety Plan Addendum

# Health and Safety Plan Addendum
# Clinton West Plaza (755015)
# Ithaca, New York

*Prepared for*

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

*Prepared by*

EA Engineering, P.C., and Its Affiliate
EA Science and Technology
6712 Brooklawn Parkway, Suite 104
Syracuse, New York 13211
(315) 431-4610

June 2013
Version: DRAFT
EA Project No. 14907.04

# Health and Safety Plan Addendum
# Clinton West Plaza (755015)
# Ithaca, New York

*Prepared for*

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

*Prepared by*

EA Engineering, P.C. and Its Affiliate
EA Science and Technology
6712 Brooklawn Parkway, Suite 104
Syracuse, New York 13211-2158
(315) 431-4610

| | |
|---|---|
| Christopher J. Canonica, P.E., Program Manager<br>EA Engineering, P.C. | Date |
| Robert S. Casey, Project Manager<br>EA Science and Technology | Date |

June 2013
Version: DRAFT
EA Project No. 14907.04

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# 1. INTRODUCTION

## 1.1 GENERAL

A Generic Health and Safety Plan (HASP) (EA, 2006)[1] was developed for field activities performed under the New York State Department of Environmental Conservation (NYSDEC) Standby Contract No. D007624. This HASP Addendum is to supplement the Generic HASP with site-specific information to protect the health and safety of personnel while performing field investigation activities during the site management activities for the Clinton West Plaza site, Tompkins County, Ithaca, New York (NYSDEC Site No. 755015).

This HASP Addendum describes the safety organization, procedures, and protective equipment that have been established based on an analysis of potential physical, chemical, and biological hazards. Specific hazard control methodologies have been evaluated and selected to minimize the potential for accidents or injuries to occur. One copy of the Generic HASP (EA 2006)[1] and this HASP Addendum will be maintained for use during the scheduled field investigation activities. The copies will be made available for site use and employee review at all times.

This HASP Addendum addresses regulations and guidance practices set forth in the Occupational Safety and Health Administration Standards for Construction Industry, 29 Code of Federal Regulations (CFR) 1926, including 29 CFR 1926.65, Hazardous Waste Operations and Emergency Response and 29 CFR 1926.59, Hazardous Communications.

The following are provided as attachments:

- **Attachment A**—Health and Safety Plan Addendum Review Record
- **Attachment B**—Site Entry and Exit Log
- **Attachment C**—Accident/Loss Report
- **Attachment D**—Emergency Telephone Numbers and Hospital Directions
- **Attachment E**—Emergency Equipment Available On-site
- **Attachment F**—Map to Hospital
- **Attachment G—**Personal Protective Equipment Activity Record.

**NOTE: This site-specific HASP Addendum should be left open to display Attachment D (Emergency Telephone Numbers and Hospital Directions) and made available to all site personnel in a conspicuous location for the duration of field investigation activities in the event of an emergency.**

1. EA Engineering, P.C. 2006. Generic Health and Safety Plan for Work Assignments under New York State Department of Environmental Conservation Contract Nos. D004438 and D004441. June.

## 1.2 SITE DESCRIPTION

The subject site is located on West Clinton Street near the intersection of New York State Routes 13 and 96B in the City of Ithaca, Tompkins County, New York (Figure 1). The property is approximately 2 acres in size and consists of a retail/commercial plaza in a mixed residential/commercial neighborhood. The property is bordered to the west by a CVS Pharmacy and North Titus Avenue, to the north by West Clinton Street, to the south by Center Street, and to the east by the residential properties. Six Mile Creek is located south of Center Street and flows in a northerly direction and discharges into Cayuga Lake approximately 1 mi north of the site.

## 1.3 SITE HISTORY

The Clinton West Plaza site was initially reported as a potential site with contamination after First Niagara Bank of Rochester, New York retained LCS, Inc. (LCS) of Buffalo, New York to conduct an Environmental Transaction Screening, Environmental Site Assessment Report in December 2005 (LCS 200X)[2]. The report concluded that a Phase II investigation was warranted to assess the environmental conditions on-site due to the former operational history of a dry cleaner at the site. LCS completed the Phase II subsurface investigation and determined that soil and groundwater contamination associated with dry cleaning chemicals existed at the site (LCS 2006)[3].

## 1.4 POLICY STATEMENT

EA Engineering, P.C. and its affiliate EA Science and Technology (EA) will take every reasonable step to provide a safe and healthy work environment; and to eliminate or control hazards in order to minimize the possibility of injuries, illnesses, or accidents to site personnel. EA and EA subcontractor employees will be familiar with this HASP Addendum for the project activities they are involved in. Prior to entering the site, the HASP Addendum will be reviewed and an agreement to comply with the requirements will be signed by EA personnel, subcontractors, and visitors (Attachment A).

Operational changes that could affect the health and safety of the site personnel, community, or environment will not be made without approval from the Project Manager and the Program Health and Safety Officer. This document will be periodically reviewed to ensure that it is current and technically correct. Any changes in site conditions and/or the scope of work will require a review and modification to the HASP Addendum. Such changes will be documented in the form of a revision to this addendum.

2 LCS. 200X. Environmental Site Assessment.
3 LCS. 2006. *Subsurface Soil and Groundwater Investigation and Supplemental Subsurface Soil and Groundwater Investigation.* West Clinton Plaza, 609-625 West Clinton Street, Ithaca, New York. April. May.

# 2. KEY PERSONNEL

The following table contains information on key project personnel:

| Title | Name | Telephone No. |
|---|---|---|
| Officer-in-Charge/Program Manager | Christopher Canonica, P.E. | 315-431-4610 |
| Program Health and Safety Officer | Peter Garger, CIH | 732-404-9370 |
| Quality Assurance/Quality Control Officer | Fred Tenbus | 315-431-4610 |
| Project Manager | Robert Casey | 315-431-4610 |
| Quality Assurance/Quality Control Coordinator | Christopher Schroer | 315-431-4610 |
| Site Manager/Site Health and Safety Officer | Sarah Nelson | 315-431-4610 |
| Site Geologist/Scientist | Rob Peterson/Charles Yarrington | 315-431-4610 |
| NYSDEC Project Manager | David Chiusano | 518-402-9814 |

# 3. SCOPE OF WORK

This HASP Addendum was developed to designate and define site-specific health and safety protocols applicable to project activities to be implemented and followed during field activities and consulting work at the Clinton West Plaza site, Ithaca, New York. The scope of work covered by this HASP Addendum includes the following:

- Site inspection
- Groundwater monitoring
- Soil vapor intrusion monitoring.

Each of these activities is summarized below, and additional detail for each activity is provided in the NYSDEC Remedial Investigation/Feasibility Study Scope of Work and letter Work Plan.

## 3.1 SITE INSPECTION

Site inspections shall be performed at the Clinton West Plaza site in conjunction with scheduled groundwater monitoring events unless otherwise requested by NYSDEC. The purpose of the inspections is to ensure that the sub-slab depressurization system is operating, that no modifications have been made to the sub-slab depressurization system, that the soil at the site is undisturbed, and that no unauthorized uses of the site are in place.

## 3.2 GROUNDWATER MONITORING

Groundwater samples will be collected during annual sampling events unless otherwise requested by NYSDEC. Eleven wells in the network of existing monitoring wells are included in the groundwater sampling program.

## 3.3 SOIL VAPOR INTRUSION MONITORING

Groundwater samples will be collected during annual sampling events unless otherwise requested by NYSDEC. Eleven wells in the network of existing monitoring wells are included in the groundwater sampling program.

# 4. POTENTIAL HAZARD ANALYSIS

Based on the field activities detailed in Section 3, the following potential hazard conditions may be anticipated:

- Personnel may be injured during physical lifting and handling of heavy equipment, construction materials, or containers. Additionally, personnel may encounter slip, trip, and fall hazards associated with sampling activities. Precautionary measures should be taken in accordance with the Generic HASP (EA 2006)[1] and this HASP Addendum.

- Field operations conducted during the winter months can impose excessive heat loss to personnel conducting strenuous activities during unseasonably cold weather days, and can impose cold-related illness symptoms during unseasonably cold weather days or when the wind chill is high. In addition, heavy rains, electrical storms, and high winds may create extremely dangerous situations for employees.

- Entry into a confined space in support of this project is forbidden. However, it is not anticipated that confined space entry will be required during the completion of the field activities.

- Field investigation activities intended to define potential sources of environmental contamination often require employees to be in direct proximity or contact with hazardous substances. Employees may be exposed through inhalation of toxic dusts, vapors, or gases. Normal dust particulates from surficial soil may have adsorbed or absorbed toxic solvents, petroleum compounds, or toxic metal salts or metal particulates. Air monitoring equipment will be used to monitor airborne organic vapors and particulates. Toxic materials contained in dusts or particulates can be ingested if eating, smoking, drinking, and gum chewing are permitted prior to personnel washing their hands and face or removing contaminated work clothing and personal protective equipment. Some chemicals may be absorbed directly through the skin. Personal protective equipment, properly designed for the chemicals of concern, will always be provided and worn when a potential for skin contact is present.

The potential chemicals of concern that may be present at the site include, but are not limited to, volatile organic compounds.

## 5. PERSONAL PROTECTIVE EQUIPMENT

Based upon currently available information, it is anticipated that Level D personal protective equipment will be required for currently anticipated conditions and activities. If, at any time, the sustained level of total organic vapors in the worker breathing zone exceeds 5 parts per million above background, site workers will evacuate the area and the condition will be brought to the attention of the Site Health and Safety Officer. Efforts will be undertaken to mitigate the source of the vapors. Once the sustained level of total organic vapors decreases to below 5 parts per million above background, site workers will be allowed to continue activities at the direction of the Site Health and Safety Officer. If dust level exceed the Occupational Safety and Health Administration Permissible Exposure Limit levels dust mask will be worn by all on-site personnel until water methods reduce the levels.

The personal protective equipment components for use during this project are detailed in the Generic HASP (EA 2006)[1]. The components of Level D personal protective equipment are summarized below.

Level D will be worn for initial entry on-site and initially for all activities and will consist of the following:

- Coveralls or appropriate work clothing
- Steel-toe, steel-shank safety boots/shoes
- Hard hats (when overhead hazards are present or as required by the Site Health and Safety Officer)
- Chemical resistant gloves (nitrile/neoprene) when contact with potentially contaminated soil or water is expected
- Safety glasses with side shields
- Hearing protectors (during operations producing excessive noise)
- Boot covers (optional unless in contact with visually contaminated soil or water).

Insulated clothing, hats, etc. must be worn when temperatures or wind chill fall below 40°F.

# 6. SITE CONTROL AND SECURITY

Only authorized personnel will be permitted to conduct field activities. Authorized personnel include those who have completed hazardous waste operations initial training, as defined under Occupational Safety and Health Administration Regulation 29 CFR 1910.120/29 CFR 1926.65, have completed their training or refresher training within the past 12 months, and have been certified by a physician as fit for hazardous waste operations.

## 6.1 SAFE WORK PRACTICES

Safe work practices that will be followed by site workers include, but are not limited to, the following rules:

- Working before or after daylight hours without special permission is prohibited.
- Do not enter restricted or posted areas without permission from the Site Health and Safety Officer.
- Smoking is limited to designated areas.
- Possessing, using, purchasing, distributing, or having controlled substances in their system throughout the day or during meal breaks is prohibited.
- Consuming or possessing alcoholic beverages is prohibited.
- Good housekeeping – employees will be instructed about housekeeping throughout field activities.
- Sitting or kneeling in areas of obvious contamination is prohibited.
- Avoid overgrown vegetation and tall grass areas.

## 6.2 DAILY STARTUP AND SHUTDOWN PROCEDURES

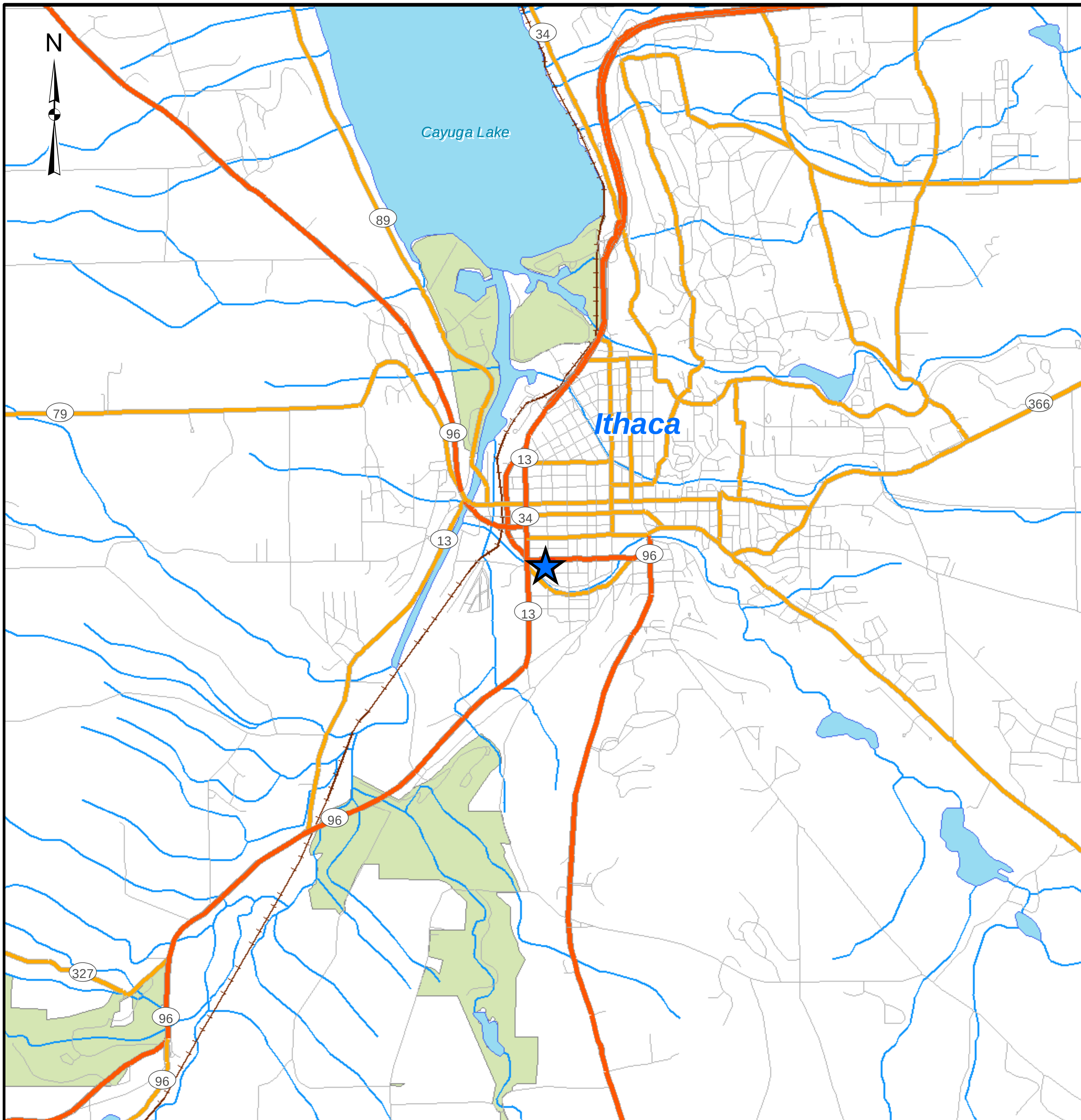
The following protocols will be followed daily prior to start of work activities:

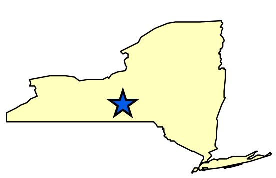
- The Site Health and Safety Officer will review site conditions to determine if modification of work and safety plans is needed.
- Personnel will be briefed and updated on new safety procedures as appropriate.

- Safety equipment will be checked for proper function.

- The Site Health and Safety Officer will ensure that the first aid kit is adequately stocked and readily available.

- On-site equipment and supplies will be locked and secure.



**Legend**

- Highway
- Major Road
- Local Road
- Park
- Rivers & Streams
- Surface Water Body

0 1 2 Miles

1 in = 1 miles

Source: ESRI Street Maps USA

CLINTON WEST PLAZA (755015)
SITE MANAGEMENT PLAN
ITHACA, NEW YORK

FIGURE 1
Site Location Map

| PROJECT MGR: | DESIGNED BY: | CREATED BY: | CHECKED BY: | SCALE: | DATE: | PROJECT NO: | FILE NO: |
|---|---|---|---|---|---|---|---|
| RSC | CJS | CJS | RSC | AS SHOWN | APRIL 2013 | 14907.04 | GIS/PROJECTS/ 14907.02_FIG1.MXD |

# Attachment A

# Health and Safety Plan Addendum Review Record

## ATTACHMENT A

## HEALTH AND SAFETY PLAN ADDENDUM REVIEW RECORD

I have read the Health and Safety Plan Addendum for this site and have been briefed on the nature, level, and degree of exposure likely as a result of participation in this project. I agree to conform to all the requirements of this Plan.

| **SITE:** Clinton West Plaza, Ithaca, New York | | | |
|---|---|---|---|
| Name | Signature | Affiliation | Date |
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# Attachment B

# Site Entry and Exit Log

## ATTACHMENT B

## SITE ENTRY AND EXIT LOG

| **SITE:** Clinton West Plaza, Ithaca, New York | | | | |
|---|---|---|---|---|
| **Name** | **Date** | **Time of Entry** | **Time of Exit** | **Initials** |
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# Attachment C

# Accident/Loss Report

# ACCIDENT/LOSS REPORT

THIS REPORT MUST BE COMPLETED BY THE INJURED EMPLOYEE OR SUPERVISOR AND FAXED TO EA CORPORATE HUMAN RESOURCES WITHIN 24 HOURS OF ANY ACCIDENT. THE FAX NUMBER IS **(410) 771-1780**.

**NOTE:** WHENEVER AN EMPLOYEE IS SENT FOR MEDICAL TREATMENT FOR A WORK RELATED INJURY OR ILLNESS, PAGE 4 OF THIS REPORT MUST ACCOMPANY THAT INDIVIDUAL TO ENSURE THAT ALL INVOICES/BILLS/CORRESPONDENCE ARE SENT TO HUMAN RESOURCES FOR TIMELY RESPONSE.

**A. DEMOGRAPHIC INFORMATION:**

NAME OF INJURED EMPLOYEE:______________________________________________
HOME ADDRESS:____________________________________________________
HOME PHONE:______________________ DATE OF BIRTH:
AGE:__________ SEX: M F
MARITAL STATUS:_____________ NAME OF SPOUSE (if applicable):______________
SOCIAL SECURITY NUMBER:_____________ DATE OF HIRE:_____________________
NUMBER OF DEPENDENTS:______________________________________________
EMPLOYEES JOB TITLE:________________________________________________
DEPT. REGULARLY EMPLOYED:___________________________________________
WAS THE EMPLOYEE INJURED ON THE JOB: Y N
PRIMARY LANGUAGE OF THE EMPLOYEE:_____________________________________

**B. ACCIDENT/INCIDENT INFORMATION:**

DATE OF ACCIDENT:___________________ TIME OF ACCIDENT:__________________
REPORTED TO WHOM:__________________ NAME OF SUPERVISOR:________________
EXACT LOCATION WHERE ACCIDENT OCCURRED (including street, city, state and County): ______________________________________________________________
______________________________________________________________________
______________________________________________________________________

EXPLAIN WHAT HAPPENED (include what the employee was doing at the time of the accident and how the accident occurred):___________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

DESCRIBE THE INJURY AND THE SPECIFIC PART OF THE BODY AFFECTED (i.e., laceration, right hand, third finger):_____________________________________________
______________________________________________________________________
______________________________________________________________________

OBJECT OR SUBSTANCE THAT DIRECTLY INJURED EMPLOYEE:___________________
_______________________________________________________________________________
NUMBER OF DAYS AND HOURS EMPLOYEE USUALLY WORKS PER WEEK:_________
IS THE EMPLOYEE EXPECTED TO LOSE AT LEAST ONE FULL DAY OF WORK?______
DOES THE EMPLOYEE HAVE A PREVIOUS CLAIM? Y N If yes, STATUS Open Closed
WAS THE EMPLOYEE ASSIGNED TO RESTRICTED DUTY?__________________________

**C. ACCIDENT INVESTIGATION INFORMATION**

WAS SAFETY EQUIPMENT PROVIDED? Y N If yes, was it used? Y N
WAS AN UNSAFE ACT BEING FORMED ? Y N If yes, describe________________________
WAS A MACHINE PART INVOLVED? Y N If yes, describe_____________________________
WAS THE MACHINE PART DEFECTIVE? Y N If yes, in what way_____________________
WAS A 3RD PARTY RESPONSIBLE FOR THE ACCIDENT/INCIDENT? Y N
If yes, list name, address, and phone number_______________________________________
_______________________________________________________________________________
WAS THE ACCIDENT/INCIDENT WITNESSED? Y N
If yes, list name, address, and phone number:_______________________________________
_______________________________________________________________________________

**D. PROVIDER INFORMATION**

WAS FIRST AID GIVEN ONSITE? Y N
If yes, what type of medical treatment was given_______________________________________
PHYSICIAN INFORMATION (if medical attention was administered)
NAME:_______________________________________________________________________
ADDRESS (include city, state, and zip):_______________________________________________
PHONE:______________________________________________________________________

HOSPITAL ADDRESS (include name, address, city, state, zip code, and phone)
_______________________________________________________________________________
_______________________________________________________________________________
WAS THE EMPLOYEE HOSPITALIZED? Y N If yes, on what date______________________
WAS THE EMPLOYEE TREATED AS AN OUTPATIENT, RECEIVE EMERGENCY
TREATMENT OR AMBULANCE SERVICE?_____________________________________________

PLEASE ATTACH THE PHYSICIANS WRITTEN RETURN TO WORK SLIP

**NOTE: A PHYSICIAN'S RETURN TO WORK SLIP IS REQUIRED PRIOR TO ALLOWING THE WORKER TO RETURN TO WORK.**

**E. AUTOMOBILE ACCIDENT INFORMATION (complete if applicable)**

AUTHORITY CONTACTED AND REPORT #_____________________________________________
EA EMPLOYEE VEHICLE YEAR, MAKE AND MODEL_________________________________

V.I.N. ________________________ PLATE/TAG#_____________________________________
OWNER'S NAME AND ADDRESS:___________________________________________
_____________________________________________________________________
DRIVER'S NAME AND ADDRESS:___________________________________________
_____________________________________________________________________
RELATION TO INSURED:________________ DRIVER'S LICENSE #___________________
DESCRIBE DAMAGE TO YOUR PROPERTY:__________________________________
_____________________________________________________________________
_____________________________________________________________________
DESCRIBE DAMAGE TO OTHER VEHICLE OR PROPERTY:______________________
_____________________________________________________________________
_____________________________________________________________________
OTHER DRIVER'S NAME AND ADDRESS:____________________________________
_____________________________________________________________________
OTHER DRIVER'S PHONE:________________________________________________
OTHER DRIVER'S INSURANCE COMPANY AND PHONE:_________________________
_____________________________________________________________________
LOCATION OF OTHER VEHICLE:___________________________________________
NAME, ADDRESS, AND PHONE OF OTHER INJURED PARTIES:___________________
_____________________________________________________________________
_____________________________________________________________________

WITNESSES

NAME:_________________________________PHONE:_________________________
ADDRESS:______________________________________________________________
STATEMENT:____________________________________________________________
______________________________________________________________________
SIGNATURE:____________________________________________________________

NAME:_________________________________PHONE:_________________________
ADDRESS:______________________________________________________________
STATEMENT:____________________________________________________________
______________________________________________________________________
SIGNATURE:____________________________________________________________

**F. ACKNOWLEDGEMENT**

NAME OF SUPERVISOR:__________________________________________________
DATE OF THIS REPORT:________REPORT PREPARED BY:_________________________

I have read this report and the contents as to how the accident/loss occurred are accurate to the best of my knowledge.

Signature:__________________________________________ Date:_____________________
Injured Employee

I am seeking medical treatment for a work related injury/illness.

Please forward all bills/invoices/correspondence to:

**EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.**
**11019 McCORMICK ROAD**
**HUNT VALLEY, MD 21031**

**ATTENTION: Michele Bailey**
**HUMAN RESOURCES**

**(410) 584-7000**

# Attachment D

# Emergency Telephone Numbers and Hospital Directions

## ATTACHMENT D

## EMERGENCY TELEPHONE NUMBERS AND HOSPITAL DIRECTIONS

| | |
|---|---|
| **SITE:** Clinton West Plaza, Ithaca, New York | |
| ***Police:*** Niagara County Police Department | 9-1-1 |
| ***Fire:*** Lockport Fire Department | 9-1-1 |
| ***Ambulance:*** | 9-1-1 |
| ***Hospital:*** | 607-274-4011 |
| ***New York Regional Poison Control Center:*** 750 E. Adams St., Syracuse, New York, 13210 | (585) 273-3854<br>800-222-1222 (emergency) |
| **Directions to Cayuga Medical Center, Ithaca :**<br>1. Head west on W Clinton St toward S Meadow St.<br>2. Take the 1st right onto S Meadow St.<br>3. Turn left onto W Buffalo St.<br>4. Continue onto NY-96 N/Cliff St.<br>5. Continue to follow NY-96 N.<br>6. Turn right toward Harris B Dates Dr.<br>7. Turn left onto Harris B Dates Dr.<br>8. Turn right toward Dates Dr.<br>9. Turn right onto Dates Dr.<br>Destination will be on the right<br>Total Distance: 3.7 miles Total Estimated Time: 12 minutes | |
| Program Safety and Health Officer:<br>***Pete Garger, CIH*** | (732) 404-9370 |
| Program Manager:<br>***Christopher Canonica, P.E.*** | (315) 431-4610 |
| EA Project Manager<br>***Robert S. Casey*** | (315) 431-4610 |
| In case of spill, contact<br>***NYSDEC Spill Response*** | |
| EA Medical Services<br>EMR<br>4360 Chamblee Dunwoody Road, Suite 202<br>Atlanta, Georgia 30341<br>***Contact: Dr. Elayne F. Theriault*** | (800) 229-3674 |
| Field Manager/Site Health and Safety Officer:<br>***Sarah Nelson*** | (315) 431-4610 |
| Site Geologist/Scientist:<br>***Rob Peterson / Charles Yarrington*** | (315) 431-4610 |
| In case of accident or exposure incident, contact Corporate Health and Safety Officer<br>***Peter Garger, CIH*** | (410) 584-7000 |

# Attachment E

# Emergency Equipment Available Onsite

## ATTACHMENT E

## EMERGENCY EQUIPMENT AVAILABLE ONSITE

| Type of Equipment | Location |
|---|---|
| **Communications Equipment** | |
| Mobile Telephone | EA Personnel |
| **Medical Support Equipment** | |
| First Aid Kits | In EA vehicle |
| Eye Wash Station | In EA vehicle |
| **Firefighting Equipment** | |
| Fire Extinguishers | In EA vehicle |

# Attachment F

# Map to Hospital

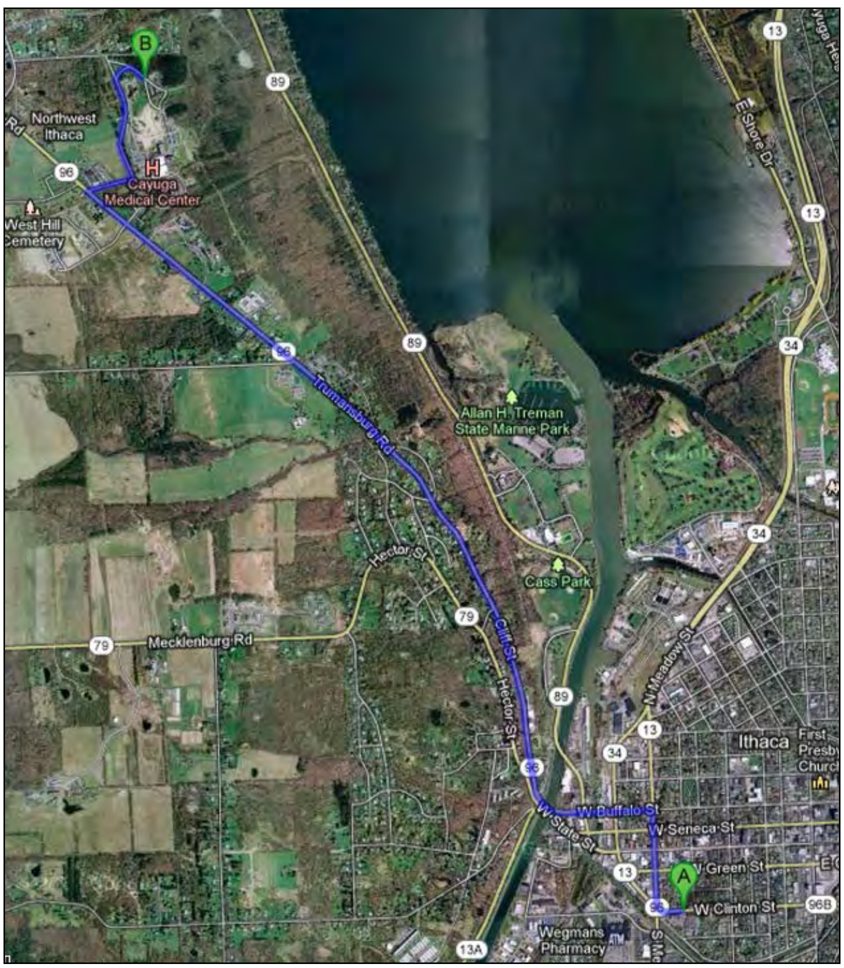
**ATTACHMENT F**

**MAP TO HOSPITAL**

**Directions to Cayuga Medical Center:**

1. Head west on W Clinton St toward S Meadow St.
2. Take the 1st right onto S Meadow St.
3. Turn left onto W Buffalo St.
4. Continue onto NY-96 N/Cliff St.
5. Continue to follow NY-96 N.
6. Turn right toward Harris B Dates Dr.
7. Turn left onto Harris B Dates Dr.
8. Turn right toward Dates Dr.
9. Turn right onto Dates Dr.

Destination will be on the right
Total Distance: 3.7 miles Total Estimated Time: 12 minutes



# Attachment G

# Personal Protective Equipment Activity Record

# ATTACHMENT G

## PERSONAL PROTECTIVE EQUIPMENT ACTIVITY RECORD

| | | |
|---|---|---|
| **SITE:** Clinton West Plaza, Ithaca, New York | | |
| Weather Condition: | | Onsite Hours: From<br>To |
| Changes in Personal Protective Equipment Levels[a] | Work Operations | Reasons for Change |
| | | |
| | | |
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| | | |
| | | |
| Site Health and Safety Plan Violations | Corrective Action Specified | Corrective Action Taken (yes/no) |
| | | |
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| | | |
| Observations and Comments: | | |
| Completed by:<br>________________________________________<br>Site Health and Safety Officer Date | | |
| (a) Only the Site Health and Safety Officer may change personal protective equipment levels, using only criteria specified in the Health and Safety Plan Addendum. | | |

# Appendix G

# Monitoring Well Boring and Construction Logs

| Monitoring Well Identification | Top of PVC Riser Elevation (ft AMSL) | Depth to Groundwater (ft btoc) May 2011 | Depth to Well Bottom (ft btoc) May 2011 | Groundwater Table Elevation (ft AMSL) May 2011 | Well Diameter | Flushmount or Stick-up | Comments |
|---|---|---|---|---|---|---|---|
| TPMW-1 | 389.08 | 2.49 | 9.17 | 386.59 | 1" | Flushmount | 0 ppm - well head space |
| TPMW-2 | 389.42 | 3.35 | 11.13 | 386.07 | 1" | Flushmount | 0 ppm - well head space |
| TPMW-3 | 389.25 | 2.90 | 12.20 | 386.35 | 1" | Stick-up | 0 ppm - well head space |
| TPMW-4 | 389.10 | 2.62 | 14.59 | 386.48 | 1" | Stick-up | 2.5 ppm - well head space, slight odor |
| TPMW-5 | 389.48 | 3.41 | 15.50 | 386.07 | 1" | Flushmount | 0 ppm - well head space |
| TPMW-6 | 389.42 | 3.71 | 13.83 | 385.71 | 1" | Flushmount | 0 ppm - well head space |
| MW-7 | 389.68 | 4.68 | 14.69 | 385.00 | --- | --- | |
| MW-8 | 389.61 | 3.84 | 14.69 | 385.77 | --- | --- | |
| MW-9 | 389.57 | 1.93 | 14.25 | 387.64 | --- | --- | |
| MW-10 | 388.69 | NG | NG | --- | --- | --- | Monitoring well not found. Well not gauged. |
| MW-11 | 389.79 | NG | NG | --- | --- | Flushmount | PVC riser elevation taken from Remedial Investigation Report; monitoring well was covered by a trailer during April 2011 survey and May 2011 sampling event. |
| MW-12 | 388.89 | NG | NG | --- | --- | --- | Monitoring well was filled with sediment and debris during May 2011 sampling event. Well not gauged. |
| MW-13 | 388.17 | 3.65 | 14.70 | 384.52 | NA | NA | 0 ppm - well head space |
| MW-14 | 389.02 | 3.23 | 13.75 | 385.79 | 0.75" | Flushmount | 0 ppm - well head space |
| MW-15 | 388.87 | 3.90 | 11.50 | 384.97 | 0.75 | Flushmount | 0 ppm - well head space |
| MW-16 | 389.41 | 2.64 | 13.50 | 386.77 | 1" | Flushmount | 0 ppm - well head space |
| MW-17 | Decommissioned 22 February 2012 | | | | | | |
| MMW-01 | 388.44 | 2.42 | 19.44 | 386.02 | 1.5" | Flushmount | 0 ppm - well head space |
| MMW-02 | 388.62 | 2.70 | 19.42 | 385.92 | 1.5" | Flushmount | 1.5 ppm - well head space |
| MMW-03 | 338.49 | 2.22 | 19.48 | 336.27 | 1.5" | Flushmount | 1 ppm - well head space |
| MMW-04 | 388.48 | 3.78 | 29.48 | 384.70 | 1.5" | Flushmount | 0 ppm - well head space |
| MMW-05 | 388.26 | 3.11 | 29.47 | 385.15 | 1.5" | Flushmount | 0 ppm - well head space |
| TPM-01 | NA | NA | 24.39* | NA | 1" | Flushmount | Temporary well, not surveyed |
| TPM-02 | NA | NA | 28.41* | NA | 1" | Stick-up | Temporary well, not surveyed |
| TPM-03 | NA | NA | 21.85* | NA | 1" | Flushmount | Temporary well, not surveyed |

NOTE:
AMSL = Above mean sea level
btoc = Below top of casing
NG = not gauged
NA = not available
ppm = parts per million
* = Gauged October 2012
Horizontal Datum NAD 83(1996) - New York State Plane Coordinate System, Central Zone, U.S. foot
Vertical Datum NAVD 1988, U.S. foot

**EA Engineering, P.C.**
**EA Science and Technology**

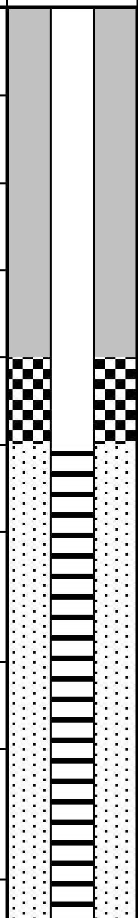
**EXAMPLE WELL CONSTRUCTION**

| | |
|---|---|
| **Job. No.** | 1436847 |
| **Client:** | NYSDEC |
| **Project:** | Clinton West Plaza |
| **Location:** | Ithaca, NY |
| **Drilling Method:** | GeoProbe ® Direct Push |
| **Soil Boring Number:** | MMW-01 |
| **Sampling Method:** | NA |
| **Sheet** | 1 of 1 |

**Coordinates:** Northing Easting:
**Surface Elevation:**
**Casing Below Surface:**
**Reference Elevation:**
**Reference Description:** TOC

| **Water Level:** | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 4-12-2011 | DATE: 4-12-2011 |
| **Date:** | | | | | TIME: | TIME: |

**Surface Conditions:** Grass / Topsoil
**Weather:**
**Temperature:**

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | |  | | 0 | | Installed pre-packed 2" PVC monitoring well |
| | | | | 1 | | |
| | | | | 2 | | |
| | | | | 3 | | |
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| | | | | 5 | | |
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| | | | | 19 | | |
| | | | | 20 | | End boring at 20' bgs |
| | | | | 21 | | |
| | | | | 22 | | |
| | | | | 23 | | |
| | | | | 24 | | |
| | | | | 25 | | |
| | | | | 26 | | |
| | | | | 27 | | |
| | | | | 28 | | |
| | | | | 29 | | |

**Monitoring Well Construction Information**

Monitoring Well Diameter: 2 in
Bottom of Monitoring Well: 20 ft bgs
Stick Up or Flush Mount: Flushmount
Screen Interval: 10 To 20 ft bgs
Riser Interval: 0 To 10 ft bgs
Sand Pack Interval: 10 To 20 ft bgs
Bentonite Seal: 8 To 10 ft bgs
Grout Interval: 0 To 8 ft bgs

**Soil Vapor Point Installation Information**

Depth of Soil Vapor Point: N/A ft
Bottom of Tubing: N/A ft
Top of Sand Pack: N/A ft
Top of Bentonite Seal: N/A ft

Logged by: Robert Peterson
Date: 11-6-12
Drilling Contractor: NYEG Drilling, LLC
Driller: Justin Bailey

# LCS, Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION: West Clinton Plaza, Ithaca, NY

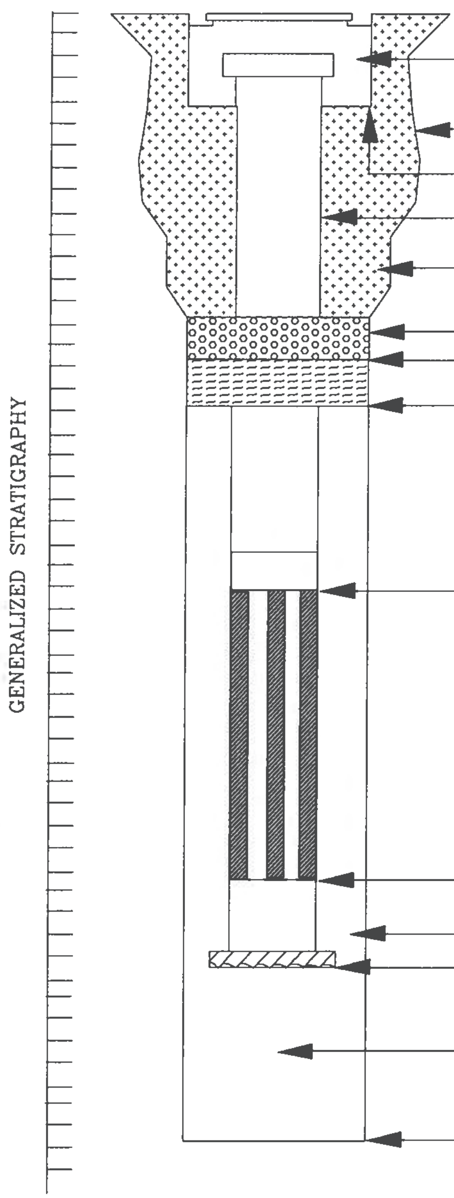
PROJECT No. 05R2711.22

CLIENT: First Niagara Bank

WELL No. TPMW3

DATE COMPLETED: 3/20/06

SUPERVISED BY: DC




REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: NA

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1.0 inch/schedule 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft.bgs
TYPE OF SEAL: Hydrated bentonite

TOP OF FILTER PACK Elevation/Depth: 2.0 ft. bgs
FILTER PACK MATERIAL: #00N silica sand

TOP OF SCREEN Elevation/Depth: 5.8 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch/schedule 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 15.8 ft. bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 15.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 15.9 ft. bgs

TYPE OF FILLER
BELOW PLUGGED BLANK: Native soils

BOTTOM OF BOREHOLE
Elevation/Depth: 16.0 ft. bgs

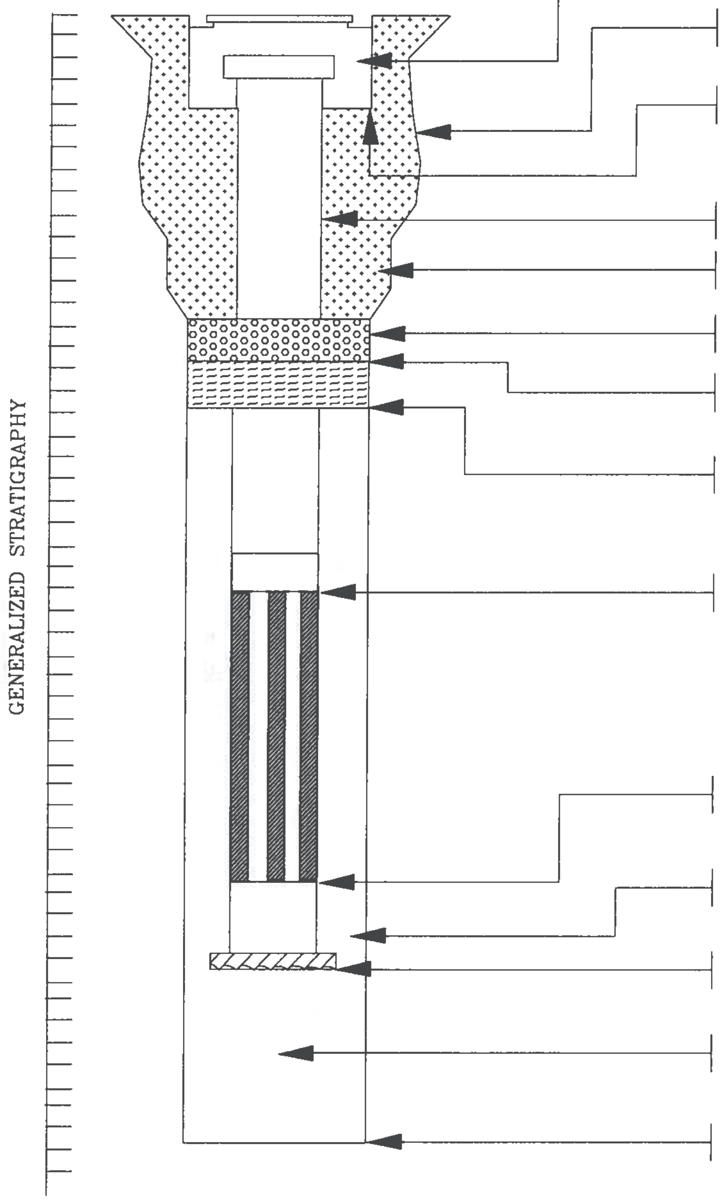
NOTES

# LCS, Inc. WELL CONSTRUCTION DETAIL

PROJECT/LOCATION: West Clinton Plaza, Ithaca, NY PROJECT No. 05S2711.22

CLIENT: First Niagara Bank WELL No. TPMW2

DATE COMPLETED: 3/20/06 SUPERVISED BY: DC




REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: NA

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1.0 inch/schedule 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft.bgs
TYPE OF SEAL: Hydrated bentonite

TOP OF FILTER PACK Elevation/Depth: 2.0 ft. bgs
FILTER PACK MATERIAL: #00N silica sand

TOP OF SCREEN Elevation/Depth: 5.8 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch/schedule 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 15.8 ft.bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 15.9 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 15.9 ft.bgs

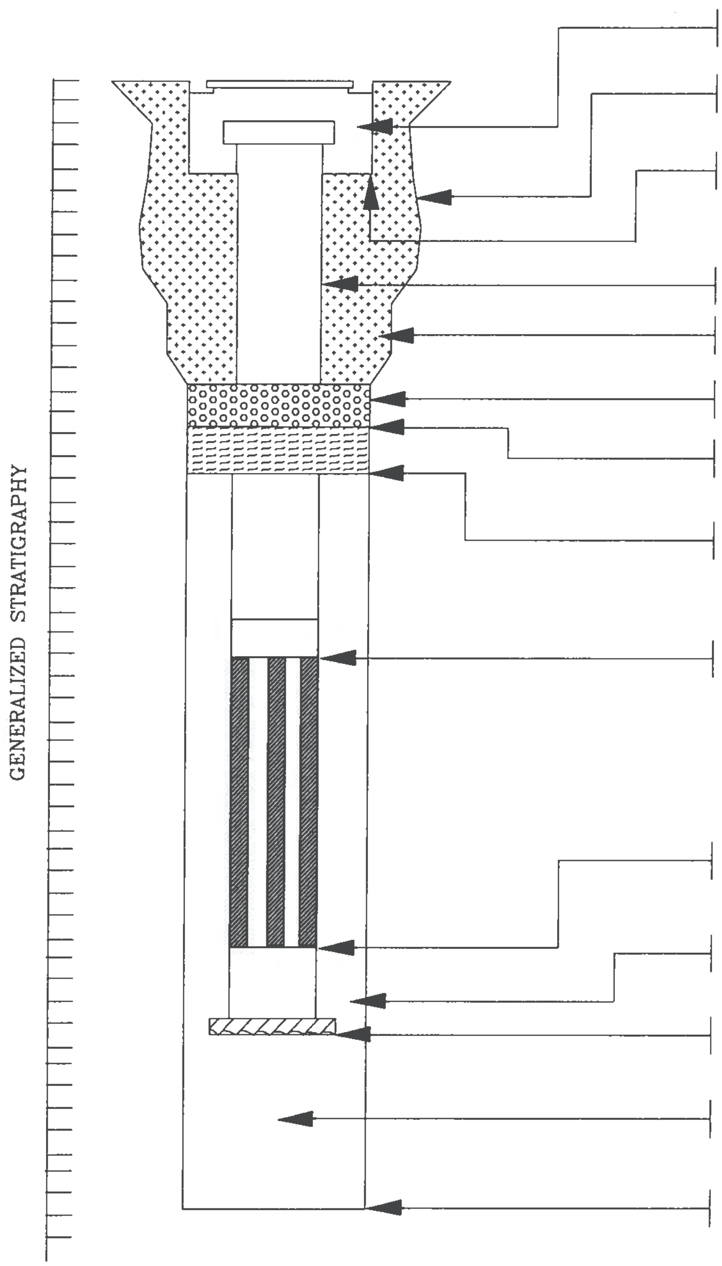
TYPE OF FILLER
BELOW PLUGGED BLANK: Native soils

BOTTOM OF BOREHOLE
Elevation/Depth: 16.0 ft. bgs

NOTES

# LCS, Inc. WELL CONSTRUCTION DETAIL

| | | | |
|---|---|---|---|
| PROJECT/LOCATION: | West Clinton Plaza, Ithaca, NY | PROJECT No. | 05R2711.22 |
| CLIENT: | First Niagara Bank | WELL No. | TPMW1 |
| DATE COMPLETED: | 3/20/06 | SUPERVISED BY: | DC |




REFERENCE POINT
Elevation/Depth: NA

SURFACE SEAL
Type/Depth: NA

DEPTH OF SURFACE CASING: NA

RISER PIPE Size/Type: 1.0 inch/schedule 40 PVC

DIAMETER OF BOREHOLE: 2.2 inches

TYPE OF FILL: NA

TOP OF SEAL Elevation/Depth: 0.0 ft.bgs
TYPE OF SEAL: Hydrated bentonite

TOP OF FILTER PACK Elevation/Depth: 1.6 ft. bgs
FILTER PACK MATERIAL: #00N silica sand

TOP OF SCREEN Elevation/Depth: 1.9 ft. bgs
SCREEN SIZE/TYPE: 0.010 inch/schedule 40 PVC

BOTTOM OF SCREEN Elevation/Depth: 11.9 ft.bgs

BOTTOM OF FILTER PACK
Elevation/Depth: 12.0 ft. bgs

BOTTOM OF PLUGGED BLANK SECTION
Elevation/Depth: 12.0 ft.bgs

TYPE OF FILLER
BELOW PLUGGED BLANK: Native soils

BOTTOM OF BOREHOLE
Elevation/Depth: 12.1 ft. bgs

NOTES

# Appendix H

# Field Forms

**DAILY OBSERVATION REPORT** **Day:____________ Date:______________**

NYSDEC

Temperature: (F) (am) (pm)

Wind Direction: (am) (pm)

Weather: (am)

(pm)

**Project Name**

**NYSDEC Site #**

**Contract #**

**Location, New York**

Arrive at site (am)

Leave site: (pm)

**HEALTH & SAFETY:**

Are there any changes to the Health & Safety Plan? Yes ( ) No ( )
(If yes, list the deviation under items for concern)

| Are monitoring results at acceptable levels? | | | | |
|---|---|---|---|---|
| | Soil | Yes ( ) | n/a ( ) | * No ( ) |
| | Waters | Yes ( ) | n/a ( ) | * No ( ) |
| | Air | Yes ( ) | n/a ( ) | * No ( ) |

- *If No, provide comments*

**OTHER ITEMS:**

| | | |
|---|---|---|
| Site Sketch Attached: | Yes ( ) | No ( ) |
| Photos Taken: | Yes ( ) | No ( ) |

**DESCRIPTION OF DAILY WORK PERFORMED:**

**PROJECT TOTALS:**

**SAMPLING (Soil/Water/Air)**

| Contractor Sample ID: | DEC Sample ID: | Description: |
|---|---|---|
| | | |
| | | |

## DAILY OBSERVATION REPORT Day:____________ Date:______________

**CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:**

*(Name of contractor) personnel:*

*(Name of Subcontractor) personnel:*

*(Name of contractor) equipment:*

***(*Indicates active equipment)***

*Other Subcontractors:*

**VISITORS TO SITE:**

1.

**PROJECT SCHEDULE ISSUES:**

**PROJECT BUDGET ISSUES:**

None.

**ITEMS OF CONCERN:**

**COMMENTS:**

**ATTACHMENT(S) TO THIS REPORT:**

**SITE REPRESENTATIVE:**

Name: (*signature*)
cc:

## DAILY PHOTOLOG

EA Engineering PC and its Affliate,
EA Science and Technology

# GROUNDWATER SAMPLING PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** | **EA Personnel:** | **Client:** NYSDEC |
| **Location:** Clinton West Plaza, Ithaca, NY | **Well Condition:** | **Weather:** |
| **Sounding Method:** | **Gauge Date:** | **Measurement Ref:** |
| **Stick Up/Down (ft):** | **Gauge Time:** | **Well Diameter (in):** |

| | |
|---|---|
| **Purge Date:** | **Purge Time:** |
| **Purge Method:** | **Field Technician:** |

| Well Volume | | |
|---|---|---|
| **A. Well Depth (ft):** | **D. Well Volume (ft):** | **Depth/Height of Top of PVC:** |
| **B. Depth to Water (ft):** | **E. Well Volume (gal) C*D):** | **Pump Type:** |
| **C. Liquid Depth (ft) (A-B):** | **F. Five Well Volumes (gal) (E3):** | **Pump Designation:** |

**Water Quality Parameters**

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temperatur (oC) | Conductivity (uS/cm) | DO (ug/L) | Turbidity (ntu) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total Quantity of Water Removed (gal):** ________ **Sampling Time:** ________
**Samplers:** ________ **Split Sample With:** ________
**Sampling Date:** ________ **Sample Type:** ________

**COMMENTS AND OBSERVATIONS:** ________

# Appendix I

# Quality Assurance Project Plan Addendum

# Quality Assurance Project Plan Addendum
# Clinton West Plaza (755015)
# Ithaca, New York

*Prepared for*

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

*Prepared by*

EA Engineering, P.C. and Its Affiliate
EA Science and Technology
6712 Brooklawn Parkway, Suite 104
Syracuse, New York 13211-2158
(315) 431-4610

June 2013
Version: DRAFT
EA Project No. 14907.04

# Quality Assurance Project Plan Addendum
# Clinton West Plaza (755015)
# Ithaca, New York

*Prepared for*

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

*Prepared by*

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6712 Brooklawn Parkway, Suite 104
Syracuse, New York 13211-2158
(315) 431-4610

______________________________________________

Christopher J. Canonica, P.E., Program Manager Date
EA Engineering, P.C.

______________________________________________

Robert S. Casey, Project Manager Date
EA Science and Technology

June 2013
Version: DRAFT
EA Project No. 14907.04

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# LIST OF TABLES

# 1. PURPOSE AND OBJECTIVES

## 1.1 PURPOSE

A Generic Quality Assurance Project Plan (QAPP) (EA, 2006)[1] was developed for field activities performed under the New York State Department of Environmental Conservation (NYSDEC) Standby Contract No. D007624. This QAPP Addendum is for site management under the Work Assignment for the Clinton West Plaza site in the City of Ithaca, Tompkins County, New York (NYSDEC Site No. 755015). This QAPP Addendum is to supplement the Generic QAPP with site-specific procedures for the collection, analysis, and evaluation of data that will be legally and scientifically defensible.

## 1.2 QUALITY ASSURANCE PROJECT PLAN OBJECTIVES

This QAPP Addendum provides site-specific information and standard operating procedures applicable to all work performed at the site that is not included in the Generic QAPP (EA 2006)[1]. The information includes definitions and generic goals for data quality and required types and quantities of quality assurance (QA)/quality control (QC) samples. The procedures address sampling and decontamination protocols; field documentation; sample handling, custody, and shipping; instrument calibration and maintenance; auditing; data reduction, validation, and reporting; corrective action requirements; and QA reporting. The Site Management Plan (SMP) contains a site description and information on site field activities, such as sample locations, sampling procedures, analytical methods, and reporting limits.

1. EA Engineering, P.C. 2006. Generic Quality Assurance Project Plan for Work Assignments under NYSDEC Contract Nos. D004438 and D004441. October.

# 2. PROJECT ORGANIZATION AND RESPONSIBILITIES

While all personnel involved in an investigation and the generation of data are implicitly a part of the overall project management and QA/QC program, certain members of the Project Team have specifically designated responsibilities. Project personnel responsibilities are summarized below.

## 2.1 EA ENGINEERING, P.C. AND ITS AFFILIATE EA SCIENCE AND TECHNOLOGY

EA Engineering, P.C. and its affiliate EA Science and Technology (EA) will provide oversight, coordination, health and safety, field support, and evaluation of analytical data. EA also will be responsible for evaluation of analytical test results, which will be submitted to NYSDEC. The EA personnel involved in this project are as follows:

- ***Fred Tenbus, Project QA/QC Officer*—**The QA/QC Officer will provide guidance on technical matters and review technical documents relating to the project. He will assess the effectiveness of the QA/QC program and recommend modifications when applicable. Additionally, the QA/QC Officer may delegate technical guidance to specially trained individuals under his direction.

- ***Robert S. Casey, EA Project Manager*—**The Project Manager provides overall coordination and preparation of the project within EA. This includes coordination with NYSDEC and New York State Department of Health, budget control, subcontractor performance, implementation of the QAPP, and allocation of resources and staffing to implement both the QA/QC program and the site Health and Safety Plan.

- ***Christopher Schroer, EA Project QA/QC Coordinator*—**The Project QA/QC Coordinator is responsible for project-specific supervision and monitoring of the QA/QC program. He will ensure that field personnel are familiar with and adhere to proper sampling procedures, field measurement techniques, sample identification, and chain-of-custody procedures. He will coordinate with the analytical laboratory for the receipt of samples and reporting of analytical results, and will recommend actions to correct deficiencies in the analytical protocol or sampling. Additionally, he will prepare QA/QC reports for management review.

- ***Sarah Nelson, EA Site Manager*—**The Site Manager will serve as the on-site contact person for field investigations and tests. She will be responsible for coordinating the field activities, including inspecting and replacing equipment, preparing daily and interim reports, scheduling sampling, and coordinating shipment and receipt of samples and containers.

The Program Health and Safety Officer is also an integral part of the project implementation team.

- ***Peter Garger, EA Program Health and Safety Officer—***The Program Health and Safety Officer will be responsible for the development, final technical review, and approval of the Health and Safety Plan. In addition, he will provide authorization, if warranted, to modify personal protective equipment requirements based on field conditions. He will also provide final review of all safety and health monitoring records and personal protective equipment changes to ensure compliance with the provisions of the Health and Safety Plan.

## 2.2 LABORATORY

Laboratory analyses for this project will be performed by Mitkem Laboratories in Warwick, Rhode Island and Con-Test Analytical Lab in East Longmeadow, Massachusetts under a subcontract agreement with EA. Christopher Schroer will have sample analysis and review responsibilities on this project. The laboratories will have their own provisions for conducting an internal QA/QC review of the data before they are released to EA. The laboratories' contract supervisors will contact EA's Project Manager with any sample discrepancies or data concerns.

Hard copy and electronic data deliverable formatted QA/QC reports will be filed by the analytical laboratories when data are submitted to EA. Corrective actions will be reported to the EA Project Manager along with the QA/QC report (Section 9 of the Generic QAPP[1]). The laboratories may be contacted directly by EA or NYSDEC personnel to discuss QA concerns. EA will act as laboratory coordinator on this project and all correspondence from the laboratories will be coordinated with EA's Project Manager.

# 3. SAMPLING RATIONALE, DESIGNATION, AND CONTAINERS

## 3.1 SAMPLING RATIONALE

The sampling rationale is presented for each planned field activity and is detailed in the SMP. The rationale and frequency of the QC samples collected is discussed in the Generic QAPP (EA 2006)[1]. The site management sampling program includes the number of samples for each sample location, as well as QA/QC samples (Table 1). The frequency of QA/QC samples is expressed as a percentage of the total number of samples collected for that matrix. The Generic QAPP also includes analytical methods and reporting limits.

## 3.2 SAMPLE DESIGNATION

Field samples collected from the site will be assigned a unique sample tracking number. Sample/designation will be an alpha-numeric code, which will identify each sample by the site identification, matrix sampled, location number, sequential sample number (or depth of top-of-sample interval for excavation soil samples), and date of collection. Each sampling location will be identified with a 2-digit number. Sequential sample numbers at each location for samples will begin with 01 and increase accordingly. For soil borings, the top depth of the sample interval will be used as the sample number. The final portion of the sample tracking number will be the sample date.

The following terminology will be used for the sample identification:

- **Soil Samples**
  - NYSDEC SITE ID-SB-xx-sample depth (for subsurface soil boring samples)

- **Groundwater Samples**
  - NYSDEC SITE ID-MW-18 through 22-YEAR.MONTH.DATE (monitoring wells) Field monitoring wells with existing numerical designations will be maintained.

- **Structure Air Samples**
  - SITE ID-IA-01 through 06 (for first floor indoor ambient air)
  - SITE ID-OA-01 through 02 (for outdoor ambient air).

## 3.3 SAMPLE CONTAINERS

Table 2 outlines the types of sample containers and preservatives required for sample collection. Please note that liquid waste samples that exhibit an oily characteristic do not require acid preservation.

# 4. ANALYTICAL LABORATORY

The data collected during this investigation will be used to determine the presence and concentration of certain analytes in soil and groundwater.

Groundwater and soil samples collected during execution of the Generic QAPP (EA 2006)[1] and this QAPP Addendum will be submitted to Mitkem Laboratories in Warwick, Rhode Island. Air/vapor samples will be submitted to Con-Test Analytical Laboratory in East Longmeadow, Massachusetts. Mitkem Laboratories and Con-Test Analytical Lab are New York State Department of Health Environmental Laboratory Analytical Program-certified laboratory, meeting specifications for documentation, data reduction, and reporting. Preliminary analytical results will be provide within 14 days of sample receipt and full NYSDEC Analytical Services Protocol Category B deliverables and associated electronic data deliverables will be provided to EA within 30 days of sample receipt.

# 5. ANALYTICAL TEST PARAMETERS

This QAPP Addendum will require the analysis of aqueous samples using U.S. Environmental Protection Agency (EPA) Method 8260B for volatile organic compounds (VOCs), EPA Method 352.1 for nitrate, EPA Method 375.4 for sulfate, EPA Method 6010B for target analyte list metals, EPA Method 2320B for alkalinity, RSK175 for methane/ethane/ethane, and EPA Method 9060 for total organic carbon. Compound lists for each analytical method are included in the Generic QAPP (EA 2006)[1].

Non-aqueous samples will be analyzed using EPA Method 8260B for VOCs. Compound lists for each analytical method are included in the Generic QAPP (EA 2006)[1].

Air/vapor samples will be analyzed using EPA Method TO-15 for VOCs analysis. Compound lists for this analytical method are included in the Generic QAPP (EA 2006)[1].

# 6. ANALYTICAL DATA VALIDATION

The laboratory will review data prior to its release from the laboratory. Objectives for review are in accordance with the QA/QC objectives stated in the Generic QAPP (EA 2006)[1]. The laboratories are required to evaluate their ability to meet these objectives. Outlying data will be flagged in accordance with laboratory standard operating procedures and corrective action will be taken to rectify the problem.

In order to ensure the validity of analytical data generated by a project, it will be validated by Environmental Data Services, Inc., who is independent from the analysts and the project. The resumes of the personnel providing the data validation services will be submitted for approval under a separate cover. The Generic QAPP (EA 2006)[1] addresses implementation of independent validation.

TABLE 1 PRE-REMEDIAL DESIGN INVESTIGATION AND PILOT STUDY ANALYTICAL PROGRAM

| | Sample Matrix | VOC | Alkalinity | Methane/ ethane/ ethene | Sulfate | Nitrate | TAL Metals | Grain Size Analysis | TOC |
|---|---|---|---|---|---|---|---|---|---|
| **SUBSURFACE SOIL SAMPLING** | | | | | | | | | |
| No. of Samples | Non-aqueous | 10 | --- | --- | --- | --- | --- | 4 | 4 |
| Field Duplicate | | 1 | --- | --- | --- | --- | --- | --- | --- |
| Trip Blank/Rinse Blank | | 1 | --- | --- | --- | --- | --- | --- | --- |
| Matrix Spike/Matrix Spike Duplicate | | 2 | --- | --- | --- | --- | --- | --- | --- |
| **Total No. of Analyses** | | 14 | --- | --- | --- | --- | --- | 4 | 4 |
| **BASELINE GROUNDWATER SAMPLING (PRE-DESIGN INVESTIGATION)** | | | | | | | | | |
| No. of Samples | Aqueous | 15 | 7 | 7 | 7 | 7 | 7 | --- | 7 |
| Field Duplicate | | 1 | 1 | 1 | 1 | 1 | 1 | --- | 1 |
| Trip Blank/Rinse Blank | | 1 | --- | --- | --- | --- | --- | --- | --- |
| Matrix Spike/Matrix Spike Duplicate | | 2 | 2 | 2 | 2 | 2 | 2 | --- | --- |
| **Total No. of Analyses** | | 19 | 10 | 10 | 10 | 10 | 10 | --- | 8 |
| **PROCESS GROUNDWATER MONITORING (PILOT STUDY)** | | | | | | | | | |
| No. of Samples | Aqueous | 64 | --- | 64 | 64 | 64 | --- | --- | 64 |
| Field Duplicate | | --- | --- | --- | --- | --- | --- | --- | --- |
| Trip Blank/Rinse Blank | | 4 | --- | --- | --- | --- | --- | --- | --- |
| Matrix Spike/Matrix Spike Duplicate | | --- | --- | --- | --- | --- | --- | --- | --- |
| **Total No. of Analyses** | | 68 | --- | 64 | 64 | 64 | --- | --- | 64 |

NOTE: VOC = Volatile organic compound by U.S. Environmental Protection Agency (EPA) Method 8260B.
TAL = Target Analyte List metals by EPA Method 6010B.
TOC = Total Organic Carbon by EPA Method 9060 (aqueous), Lloyd Kahn Method (non-aqueous)
Alkalinity by EPA Method 310.1.
Methane/Ethane/Ethene by RSK175.
Sulfate by EPA Method 375.4.
Nitrate by EPA Method 352.1.
Gain Size Analysis by ASTM-D422.
Dashes (---) indicate no sample taken.
Laboratory quality control samples will be collected at a rate of 1 per 20 samples, per matrix.

# TABLE 1 PRE-REMEDIAL DESIGN INVESTIGATION AND PILOT STUDY ANALYTICAL PROGRAM

| | Sample Matrix | VOC | Alkalinity | Methane/ ethane/ ethene | Sulfate | Nitrate | TAL Metals | Grain Size Analysis | TOC |
|---|---|---|---|---|---|---|---|---|---|
| **PERFORMANCE GROUNDWATER MONITORING (PILOT STUDY)** | | | | | | | | | |
| No. of Samples | Groundwater | 27 | --- | 27 | 27 | --- | --- | --- | 27 |
| Field Duplicate | | --- | --- | --- | --- | --- | --- | --- | --- |
| Trip Blank/Rinse Blank | | 3 | --- | --- | --- | --- | --- | --- | --- |
| Matrix Spike/Matrix Spike Duplicate | | --- | --- | --- | --- | --- | --- | --- | --- |
| **Total No. of Analyses** | | 30 | --- | 27 | 27 | --- | --- | --- | 27 |
| **INDOOR AIR MONITORING** | | | | | | | | | |
| No. of Samples | Air/Vapor | 11 | --- | --- | --- | --- | --- | --- | --- |
| Field Duplicate | | 1 | --- | --- | --- | --- | --- | --- | --- |
| Trip Blank/Rinse Blank | | --- | --- | --- | --- | --- | --- | --- | --- |
| Matrix Spike/Matrix Spike Duplicate | | --- | --- | --- | --- | --- | --- | --- | --- |
| **Total No. of Analyses** | | 12 | --- | --- | --- | --- | --- | --- | --- |

# TABLE 2 SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES

| Parameter | Matrix | Container Type/Size | Sample Volume | Preservation | Maximum Holding Time from Verifiable Time of Sample Receipt |
|---|---|---|---|---|---|
| Volatile organic compounds | Soil | One 125-mL wide-mouth glass vial with Teflon-lined cap | 125 mL | Minimize headspace, cool 4°C | 7 days |
| | Aqueous | Two 40-mL glass vials with Teflon-lined Septa | 80 mL | No headspace, cool 4°C HCl | 7 days |
| TO-15 | Air/Vapor | One 6-L Summa® canister | 6 L | None | 30 days |
| Alkalinity | Aqueous | Glass | 500 mL | None | 14 days |
| Methane/Ethane/Ethene | Aqueous | Two 40-mL glass vials with Teflon-lined Septa | 80 mL | No headspace, cool 4°C HCl | 7 days – unpreserved<br>14 day – preserved |
| Nitrate | Aqueous | Polyethylene | 500 mL | None | 48 hours |
| Sulfate | Aqueous | Polyethylene | 1 L | None | 28 days |
| Target Analyte List Metals | Aqueous | One 250 mL plastic bottle | 250 mL | HNO3 Cool 4°C | 6 months from collection |
| Grain Size Analysis | Soil | Dependent upon size, or 8 oz. | | Minimize headspace | None |
| Total Organic Carbon | Aqueous | Glass | 1 L | $H_2SO_4$ | 28 days |

# Attachment A

# Laboratory Reporting Limits

# Appendix J

# Historical Soil Vapor Intrusion Forms

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| EA Engineering and Its Affiliate<br>EA Science & Technology<br>6712 Brooklawn Parkway, Suite 104<br>Syracuse, NY 13211 | | Project #: | 14368.47 |
| | | Project Name: | NYSDEC Clinton West Plaza |
| | | Location: | Ithaca NY |
| | | Project Manager: | Scott Fonte/Dave Chiusano |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 | | | Sampler(s): | David Crandall/Jim Peterson |
| PID Meter Used: (Model, Serial #) | ppb RAE | | | Building I.D. No.: | STRUCTURE 01 |

BA-DUP 01

**SUMMA Canister Record:**

| ~~INDOOR AIR - FIRST FLOOR~~ | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | BC1016 | Flow Regulator No.: | BC1606 | Flow Regulator No.: | BC1014 | Flow Regulator No.: | |
| Canister Serial No.: | BC3345 | Canister Serial No.: | BC3414 | Canister Serial No.: | BC3415 | Canister Serial No.: | |
| Start Date/Time: | 2/9/11 934 | Start Date/Time: | 2/9/11 934 | Start Date/Time: | 2/9/11 933 | Start Date/Time: | |
| Start Pressure: (inches Hg) | -29 | Start Pressure: (inches Hg) | -30+ | Start Pressure: (inches Hg) | -29 | Start Pressure: (inches Hg) | |
| Stop Date/Time: | 2/10/11 934 | Stop Date/Time: | 2/10/11 934 | Stop Date/Time: | 2/10/11 933 | Stop Date/Time: | |
| Stop Pressure: (inches Hg) | -12 | Stop Pressure: (inches Hg) | -11 | Stop Pressure: (inches Hg) | -11 | Stop Pressure: (inches Hg) | |
| Sample ID: ~~755~~ 755015-BA-DUP01 | | Sample ID: 755015-BA-01 | | Sample ID: 755015-SS-01 | | Sample ID: | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | BSMT | Basement or Crawl Space? | BSMT | Direction from Building | |
| Room | | Room | STORAGE utility | Floor Slab Thickness (inches) *[if present]* | 4'' | Distance from Building | |
| Indoor Air Temp (°F) | | Indoor Air Temp | 60F | Potential Vapor Entry Points Observed? | open sump pit ≈ 5ft off | Intake Height Above Ground Level (ft.) | |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 4ft. | If slab, intake Depth If Crawl Space, intake height | 4.5'' | Distance to nearest Roadway | |
| Noticeable Odor? | | Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | |
| PID Reading (ppb) | | PID Reading (ppb) | 0ppb | PID Reading (ppb) | 3146 ppb | PID Reading (ppb) | |
| Duplicate Sample? | | Duplicate Sample? | BA-DUP01 | Duplicate Sample? | | Duplicate Sample? | |

**Comments:**

Helium leak test — 100% He in Dome 0ppm Purge.
ppb RAE 3146 ppb.

Sampler Signature: [signature]

STRUCTURE 01

**NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH**

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID CRANDALL Date/Time Prepared 2/9/11

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation ____

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ____ First Name: ____

Address: ____

County: ____

Home Phone: ____ Office Phone: ____

Number of Occupants/persons at this location ____ Age of Occupants ____

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ____ First Name: ____

Address: ____

County: ____

Home Phone: ____ Office Phone: ____

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

| | | |
|---|---|---|
| Residential | School | Commercial/Multi-use |
| Industrial | Church | Other: ______________ |

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:____________ |

**If multiple units, how many?**
_______ **If the property is commercial, type?**

Business Type(s) ________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**

Number of floors______ Building age______

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**

**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

## 5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ________ |
| **c. Basement floor:** | concrete | dirt | stone | other ________ |
| **d. Basement floor:** | uncovered | covered | covered with ______________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with ______________ | |
| **f. Foundation walls:** | poured | block | stone | other ________ |
| **g. Foundation walls:** | unsealed | sealed | sealed with ______________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ________(feet)
**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

## 6. HEATING, VENTING and AIR CONDITIONING

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters -
Stream radiation - Radiant floor - Electric baseboard - Wood stove -
Outdoor wood boiler - Other ___________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ____________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other___________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

## 7. OCCUPANCY

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ______________________________________________

1st Floor ______________________________________________

2nd Floor ______________________________________________

3rd Floor ______________________________________________

4th Floor ______________________________________________

**8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY**

**a. Is there an attached garage?** Y / N

**b. Does the garage have a separate heating unit?** Y / N / NA

**c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) Y / N / NA
Please specify_______________

**d. Has the building ever had a fire?** Y / N When?_______________

**e. Is a kerosene or unvented gas space heater present?** Y / N Where? _______________

**f. Is there a workshop or hobby/craft area?** Y / N Where & Type? _______________

**g. Is there smoking in the building?** Y / N How frequently? _______________

**h. Have cleaning products been used recently?** Y / N When & Type? _______________

**i. Have cosmetic products been used recently?** Y / N When & Type? _______________

**j. Has painting/staining been done in the last 6 months?** Y / N When & Type? _______________

**k. Is there new carpet, drapes or other textiles?** Y / N Where & When? _______________

**l. Have air fresheners been used recently?** Y / N When & Type? _______________

**m. Is there a kitchen exhaust fan?** Y / N If yes, where vented? _______________

**n. Is there a bathroom exhaust fan?** Y / N If yes, where vented? _______________

**o. Is there a clothes dryer?** Y / N If yes, is it vented outside? Y / N

**p. Has there been a pesticide application?** Y / N When &Type? _______________

**Are there odors in the building?** Y / N
If yes, please describe:

_______________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? _______________
If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

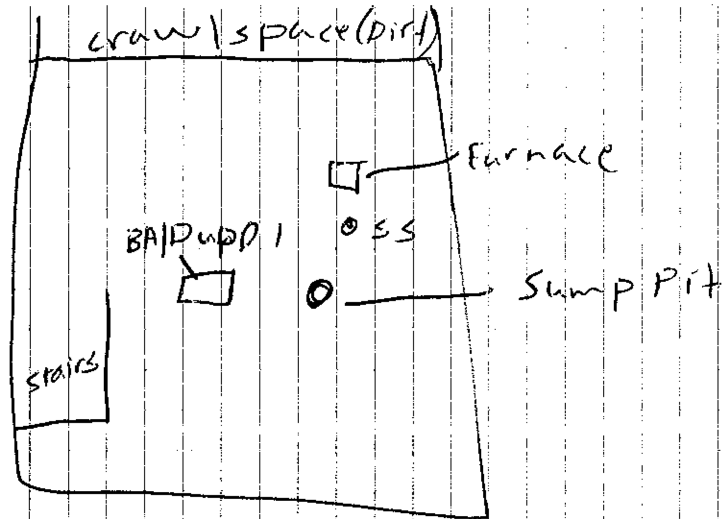
**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: _______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: _______

**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ______________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

## 11. FLOOR PLANS

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

**Basement:**




**First Floor:**

## 12. OUTDOOR PLOT

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**

## 13. PRODUCT INVENTORY FORM

**Make & Model of field instrument used: ______________________________**

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
| | Glidden spred house latex Paint | 1qt. | U | Titanium Oxide, 1,2 Etanediol 1,2 propanediol propanoic acid | 0 | Y |
| | Spencer Kelloggs Linseed Oil | 1qt. | U | — | 0 | Y |
| | Ferro Bondo enamel undercoat | 4oz | U | mineral spirits | 0 | Y |
| | Minwax Polyshade. | 1qt | U | 450 g/L VOC | 0 | Y |
| | Aqua velvet latex Paint. | 1gal | U/D | 69.1% volatiles | 0 | Y |
| | | | | | | |
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* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 01

Leak Testing for Sub-Slab Point SS-01


Structure 01 – BA-01 and Basement Air Duplicate


Structure 01 – Sub-Slab Sample SS-01


Observed Chemicals in Structure 01


Observed Paint in Structure 01

# TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 01 - 402 Center Street | | | | | |
|---|---|---|---|---|---|---|---|
| | Sample ID | 755015-SS-01 | | 755015-BA-01 | | 755015-BA-DUP-01 | |
| | Lab ID | 11B0284-02 | | 11B0284-01 | | 11B0284-08 | |
| | Sample Type | Sub-slab Vapor | | Basement Indoor Air | | QA\QC - Duplicate | |
| | Sample Date | 2/10/2011 | | 2/10/2011 | | 2/10/2011 | |
| Acetone | (µg/m³) | 42 | | 10 | | 11 | |
| Benzene | (µg/m³) | 0.68 | | 0.76 | | 0.75 | |
| 2-Butanone | (µg/m³) | 6.6 | | 1.3 | | 1.5 | |
| Carbon Disulfide | (µg/m³) | 0.52 | | (<0.11) | U | (<0.11) | U |
| Dichlorodifluoromethane | (µg/m³) | 2.5 | | 3 | | 3.1 | |
| Ethanol | (µg/m³) | 7.5 | | 9.6 | | 8.2 | |
| Ethylbenzene | (µg/m³) | 0.45 | | 0.22 | | 0.18 | |
| Heptane | (µg/m³) | 0.43 | | 0.5 | | 0.22 | |
| Hexane | (µg/m³) | 3.1 | | 4.4 | | 4.2 | |
| 2-Hexanone | (µg/m³) | 0.48 | | 0.16 | | 0.17 | |
| Isopropanol | (µg/m³) | 3.1 | | 1.4 | | 1.4 | |
| Methylene Chloride | (µg/m³) | 1.7 | | 2.3 | | 2 | |
| Tetrachloroethylene | (µg/m³) | 2.2 | | 0.25 | | (<0.24) | U |
| Toluene | (µg/m³) | 3 | | 1 | | 0.99 | |
| Trichlorofluoromethane | (µg/m³) | 1.4 | J | 1.8 | J | 1.7 | J |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m³) | <0.77 | U | 0.75 | | 0.67 | |
| 1,2,4-Trimethylbenzene | (µg/m³) | 1.6 | | 0.28 | | 0.24 | |
| m&p-Xylene | (µg/m³) | 1.8 | | 0.64 | | 0.55 | |
| o-Xylene | (µg/m³) | 0.63 | | 0.27 | | 0.2 | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
U = The analyte was analyzed for, but was not detected above the sample reporting limit.
µg/m3 = micrograms per cubic meter

# TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 01, 02, 04, Clinton West Laundry | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-04 | | | |
| | Lab ID | 11B0284-09 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 2/10/2011 | | | |
| Acetone | (µg/m3) | 4.7 | | | |
| Benzene | (µg/m3) | 0.73 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.56 | | | |
| Chloromethane | (µg/m3) | 1.1 | | | |
| Dichlorodifluoromethane | (µg/m3) | 3.1 | | | |
| Ethanol | (µg/m3) | 4.1 | | | |
| Ethylbenzene | (µg/m3) | 0.16 | | | |
| Heptane | (µg/m3) | 0.18 | | | |
| Hexane | (µg/m3) | 1.7 | | | |
| Isopropanol | (µg/m3) | 0.45 | | | |
| Methylene Chloride | (µg/m3) | 0.81 | | | |
| Toluene | (µg/m3) | 0.85 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.8 | J | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.69 | | | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 0.19 | | | |
| m&p-Xylene | (µg/m3) | 0.46 | | | |
| o-Xylene | (µg/m3) | 0.17 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 01

Leak Testing for Sub-Slab Point SS-01


Structure 01 – BA-01 and Basement Air Duplicate


Structure 01 – Sub-Slab Sample SS-01


Observed Chemicals in Structure 01


Observed Paint in Structure 01

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| ® | EA Engineering and Its Affiliate<br>EA Science & Technology<br><br>6712 Brooklawn Parkway, Suite 104<br><br>Syracuse, NY 13211 | Project #:<br>Project Name:<br>Location:<br>Project Manager: | 14368.47<br>NYSDEC Clinton West Plaza<br>Ithaca NY<br>Scott Fonte/Dave Chiusano |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 | | | Sampler(s): | David Crandall/Jim Peterson |
| PID Meter Used: (Model, Serial #) | ppb RAE | | | Building I.D. No.: | STRUCTURE 02 |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | | Flow Regulator No.: | BC1853 | Flow Regulator No.: | BC1650 | Flow Regulator No.: | |
| Canister Serial No.: | | Canister Serial No.: | BC3411 | Canister Serial No.: | BC3303 | Canister Serial No.: | |
| Start Date/Time: | | Start Date/Time: | 2/9/11 1030 | Start Date/Time: | 2/9/11 1030 | Start Date/Time: | |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | -29 | Start Pressure: (inches Hg) | -30 | Start Pressure: (inches Hg) | |
| Stop Date/Time: | | Stop Date/Time: | 945 | Stop Date/Time: | 1030 | Stop Date/Time: | |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -2 | Stop Pressure: (inches Hg) | -11 | Stop Pressure: (inches Hg) | |
| Sample ID: | | Sample ID: 755015-BA-02 | | Sample ID: 755015-SS-02 | | Sample ID: | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | BSMT | Basement or Crawl Space? | BSMT | Direction from Building | |
| Room | | Room | Storage | Floor Slab Thickness (inches) *[if present]* | 6 in. | Distance from Building | |
| Indoor Air Temp (°F) | | Indoor Air Temp | 60 f. | Potential Vapor Entry Points Observed? | NO | Intake Height Above Ground Level (ft.) | |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 3.5 ft | If slab, intake Depth If Crawl Space, intake height | 6.5'' | Distance to nearest Roadway | |
| Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | — | Noticeable Odor? | |
| PID Reading (ppb) | | PID Reading (ppb) | 0 | PID Reading (ppb) | 259 ppb | PID Reading (ppb) | |
| Duplicate Sample? | | Duplicate Sample? | — | Duplicate Sample? | — | Duplicate Sample? | |

**Comments:**

Helium Leaktest 100% Dome, Purge. 0 ppm

Sampler Signature:

STRUCTURE 02

# NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID CRANDALL Date/Time Prepared 2/9/11

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation ____________

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

Number of Occupants/persons at this location ______ Age of Occupants ____________

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

| | | |
|---|---|---|
| Residential | School | Commercial/Multi-use |
| Industrial | Church | Other: ______________ |

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:______________ |

**If multiple units, how many?**
________ **If the property is**
**commercial, type?**
Business Type(s) ______________________________________
Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**
Number of floors______ Building age______
Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**
**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

**5. BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ________ |
| **c. Basement floor:** | concrete | dirt | stone | other ________ |
| **d. Basement floor:** | uncovered | covered | covered with ______________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with ________________ | |
| **f. Foundation walls:** | poured | block | stone | other ________ |
| **g. Foundation walls:** | unsealed | sealed | sealed with ________________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ________(feet)
**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

**6. HEATING, VENTING and AIR CONDITIONING**

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters -
Stream radiation - Radiant floor - Electric baseboard - Wood stove -
Outdoor wood boiler - Other ___________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ____________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other___________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

**7. OCCUPANCY**

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ____________________________________________________
1st Floor ____________________________________________________
2nd Floor ____________________________________________________
3rd Floor ____________________________________________________
4th Floor ____________________________________________________

**8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY**

| | | |
|---|---|---|
| **a. Is there an attached garage?** | Y / N | |
| **b. Does the garage have a separate heating unit?** | Y / N / NA | |
| **c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) | Y / N / NA | Please specify______________ |
| **d. Has the building ever had a fire?** | Y / N | When?______________ |
| **e. Is a kerosene or unvented gas space heater present?** | Y / N | Where? ______________ |
| **f. Is there a workshop or hobby/craft area?** | Y / N | Where & Type? ______________ |
| **g. Is there smoking in the building?** | Y / N | How frequently? ______________ |
| **h. Have cleaning products been used recently?** | Y / N | When & Type? ______________ |
| **i. Have cosmetic products been used recently?** | Y / N | When & Type? ______________ |
| **j. Has painting/staining been done in the last 6 months?** | Y / N | When & Type? ______________ |
| **k. Is there new carpet, drapes or other textiles?** | Y / N | Where & When? ______________ |
| **l. Have air fresheners been used recently?** | Y / N | When & Type? ______________ |
| **m. Is there a kitchen exhaust fan?** | Y / N | If yes, where vented? ______________ |
| **n. Is there a bathroom exhaust fan?** | Y / N | If yes, where vented? ______________ |
| **o. Is there a clothes dryer?** | Y / N | If yes, is it vented outside? Y / N |
| **p. Has there been a pesticide application?** | Y / N | When &Type? ______________ |

**Are there odors in the building?** Y / N

If yes, please describe:

______________________________________________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? ______________________________

If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No

Yes, use dry-cleaning infrequently (monthly or less) Unknown

Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

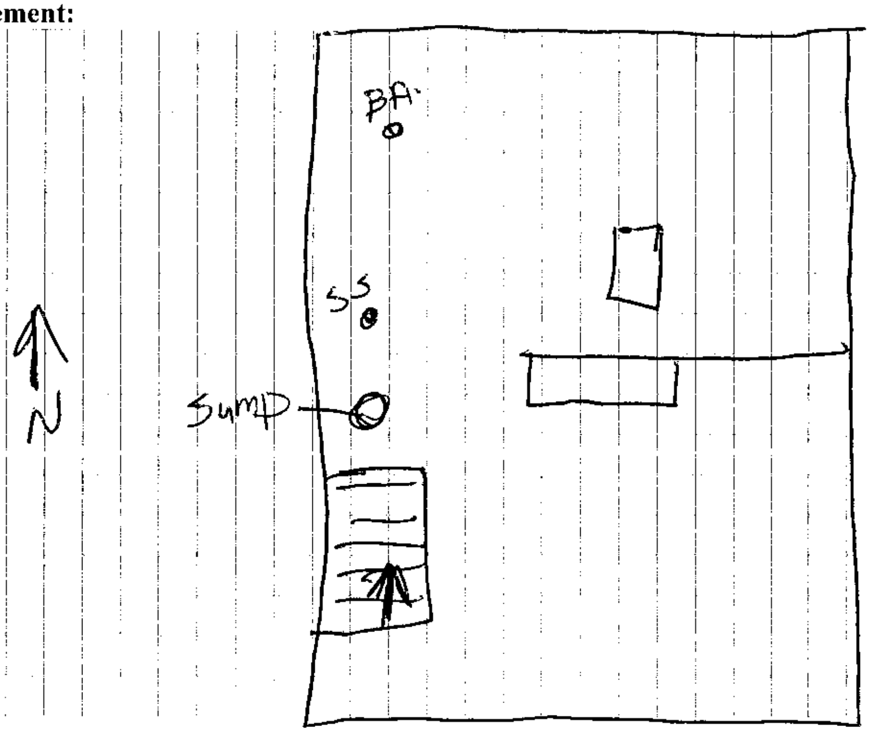
**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: ______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: ______

**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ____________________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

## 11. FLOOR PLANS

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

**Basement:**




**First Floor:**

## 12. OUTDOOR PLOT

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**

**13. PRODUCT INVENTORY FORM**

**Make & Model of field instrument used:** ______________________________

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
| BSMT | Valspar ultra Latex Paint | (2) qt. | U | Crystaline silica | 0 | |
| | Ever Coat Durabond | (1) qt | U | 512 g/L VOC | 22.8 ppm | |
| | Rustoleum enamel | 8 fl. oz | U | petroleum distillates | 0 | |
| | mineral spirits. | 1 qt | U | Petroleum distillates | 0 | |
| | CRC Sensor Cleaner | 11 oz | U. | Hexane + Carbon Dioxide | 0 | |
| | Omni, Au Topcoat Hardener | 1/2 pint | UO | 1,2,4 Trimethylbenzene. | 0 | |
| | Color horizons Metal lock. | 1/2 pint | U | Xylene, butanol | 0 | |
| | Shop Line JR 506 reducer | 1 qt | U. | MEK, xylene, toluene, 1,2,4 trimethylbenzene | 0 | |
| | Brakleen | 14 oz | UO | 50 state Formula No PCE | 0 | |
| | Liquid wrench. | 11 oz | U | Petroleum Distillates | 0 | |
| | Permatex Disc Brake Quiet | 9 oz | U | Acetone, Hexane, P.D. | 0 | |
| | NAPA white Lithium | 10 oz | U | Mineral oil, Hexane, Butane. | 0 | |
| | STP Throttle cleaner | 10 oz | U | Acetone, xylene, Isopropanol | 0 | |
| | Duplicolor Paint. | 5 oz | U | Ketones, Toluene. | 0 | |
| | Stoner invisible Glass. | 14 oz | U | — | 0 | |
| | Deltron Auto Paint | (2) Qt | U | Xylene/Ketones. | 0 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 02

Structure 02 – SS-02 Sub-Slab Sample


Structure 02 – BA-02 Basement Air Sample

Structure 02 – Sub-Slab Sample SS-02

Observed Chemicals in Structure 02


Observed Chemicals in Structure 02


Observed Chemicals in Structure 02


Observed Chemicals in Structure 02
Note – Brakleen was 50 state formula – no PCE


Observed Chemicals in Structure 02

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 02 - 410 Center Street | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-SS-02 | | 755015-BA-04 | |
| | Lab ID | 11B0284-04 | | 11B0284-05 | |
| | Sample Type | Sub-slab Vapor | | Basement Indoor Air | |
| | Sample Date | 2/10/2011 | | 2/10/2011 | |
| Acetone | (µg/m³) | 13 | | 18 | |
| Benzene | (µg/m³) | 0.77 | | 0.91 | |
| 2-Butanone | (µg/m³) | 1.5 | | 3.1 | |
| Carbon Disulfide | (µg/m³) | 6.3 | | (<0.11) | U |
| Carbon Tetrachloride | (µg/m³) | <0.63 | | 0.6 | |
| Chlorobenzene | (µg/m³) | <0.46 | | <0.16 | |
| Chloroform | (µg/m³) | 4.9 | | (<0.17) | U |
| Chloromethane | (µg/m³) | (<0.21) | U | 1 | |
| Cyclohexane | (µg/m³) | <0.34 | | 0.36 | |
| Dichlorodifluoromethane | (µg/m³) | 2.6 | | 3 | |
| 1,1-Dichloroethane | (µg/m³) | 1.2 | | (<0.14) | U |
| cis-1,2-Dichloroethylene | (µg/m³) | 16 | | (<0.14) | U |
| Ethanol | (µg/m³) | 5 | | 160 | |
| Ethyl Acetate | (µg/m³) | (<0.36) | U | 0.99 | |
| Ethylbenzene | (µg/m³) | (<0.43) | U | 0.57 | |
| 4-Ethyltoluene | (µg/m³) | (<0.49) | U | 0.18 | |
| Heptane | (µg/m³) | 0.55 | | 0.9 | |
| Hexane | (µg/m³) | 3.7 | | 2.4 | |
| Isopropanol | (µg/m³) | 1.1 | | 10 | |
| Methylene Chloride | (µg/m³) | 1.3 | | 0.34 | |
| Propene | (µg/m³) | 5.5 | | (<0.60) | U |
| Tetrachloroethylene | (µg/m³) | 4.8 | | (<0.24) | U |
| Toluene | (µg/m³) | 2 | | 9.7 | |
| 1,1,1-Trichloroethane | (µg/m³) | 2.2 | | (<0.19) | U |
| Trichloroethylene | (µg/m³) | 2.8 | | (<0.19) | U |
| Trichlorofluoromethane | (µg/m³) | 1.6 | J | 1.8 | J |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m³) | (<0.77) | U | 0.7 | |
| 1,2,4-Trimethylbenzene | (µg/m³) | 1.3 | | 0.55 | |
| m&p-Xylene | (µg/m³) | 1.7 | | 1.8 | |
| o-Xylene | (µg/m³) | 0.49 | | 0.51 | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
U = The analyte was analyzed for, but was not detected above the sample reporting limit.
µg/m3 = micrograms per cubic meter

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 01, 02, 04, Clinton West Laundry | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-04 | | | |
| | Lab ID | 11B0284-09 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 2/10/2011 | | | |
| Acetone | (µg/m3) | 4.7 | | | |
| Benzene | (µg/m3) | 0.73 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.56 | | | |
| Chloromethane | (µg/m3) | 1.1 | | | |
| Dichlorodifluoromethane | (µg/m3) | 3.1 | | | |
| Ethanol | (µg/m3) | 4.1 | | | |
| Ethylbenzene | (µg/m3) | 0.16 | | | |
| Heptane | (µg/m3) | 0.18 | | | |
| Hexane | (µg/m3) | 1.7 | | | |
| Isopropanol | (µg/m3) | 0.45 | | | |
| Methylene Chloride | (µg/m3) | 0.81 | | | |
| Toluene | (µg/m3) | 0.85 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.8 | J | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.69 | | | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 0.19 | | | |
| m&p-Xylene | (µg/m3) | 0.46 | | | |
| o-Xylene | (µg/m3) | 0.17 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
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USEPA = United States Environmental Protection Agency
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# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
# Structure 02

Structure 02 – SS-02 Sub-Slab Sample


Structure 02 – BA-02 Basement Air Sample

Structure 02 – Sub-Slab Sample SS-02

Observed Chemicals in Structure 02


Observed Chemicals in Structure 02


Observed Chemicals in Structure 02


Observed Chemicals in Structure 02
Note – Brakleen was 50 state formula – no PCE


Observed Chemicals in Structure 02

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| EA Engineering and Its Affiliate<br>EA Science & Technology<br>6712 Brooklawn Parkway, Suite 104<br>Syracuse, NY 13211 | Project #: 14368.47<br>Project Name: Clinton West Plaza<br>Location: Ithaca, NY<br>Project Manager: Scott Forte / Dave Chiusano | | |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 ~~130110~~ | | | Sampler(s): | DC |
| PID Meter Used: (Model, Serial #) | ppbRAE | | | Building I.D. No.: | STRUCTURE 03 |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | | Flow Regulator No.: | BC3414 | Flow Regulator No.: | BC3345 | Flow Regulator No.: | BC3413 |
| Canister Serial No.: | | Canister Serial No.: | BC1021 | Canister Serial No.: | BC1300 | Canister Serial No.: | BC1807 |
| Start Date/Time: | | Start Date/Time: | 4/19/11 1103 | Start Date/Time: | 4/19/11 1101 | Start Date/Time: | 4/19/11 1113 |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | -30+ | Start Pressure: (inches Hg) | -29 | Start Pressure: (inches Hg) | -29 |
| Stop Date/Time: | | Stop Date/Time: | 4/20/11 1103 | Stop Date/Time: | 4/20/11 1101 | Stop Date/Time: | 4/20/11 1113 |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -10 | Stop Pressure: (inches Hg) | -10 | Stop Pressure: (inches Hg) | -14.5 |
| Sample ID: | | Sample ID: 755015-BA-03 | | Sample ID: 755015-SS-03 | | Sample ID: 755015-OA-03 | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | Bsmt | Basement or Crawl Space? | BSMT | Direction from Building | N |
| Room | | Room | Bsmt | Floor Slab Thickness (inches) *(if present)* | 5" | Distance from Building | 30 ft |
| Indoor Air Temp (°F) | | Indoor Air Temp | 60F | Potential Vapor Entry Points Observed? | NA | Intake Height Above Ground Level (ft.) | 4 ft |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | N |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 4.5 ft | If slab, intake Depth If Crawl Space, intake height | 2" * | Distance to nearest Roadway | 80 ft |
| Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | — | Noticeable Odor? | — |
| PID Reading (ppb) | | PID Reading (ppb) | - | PID Reading (ppb) | — | PID Reading (ppb) | — |
| Duplicate Sample? | | Duplicate Sample? | — | Duplicate Sample? | — | Duplicate Sample? | — |

**Comments:**

Purge & Leak Test Previously Completed & not measured for final Attempt to collect samples.

SS tubing set within concrete to ensure No water would enter during sampling.

Sampler Signature: [signature]

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| EA® | EA Engineering and Its Affiliate<br>EA Science & Technology<br>6712 Brooklawn Parkway, Suite 104<br>Syracuse, NY 13211 | Project #: | 14368.47 |
| | | Project Name: | NYSDEC Clinton West Plaza |
| | | Location: | Ithaca NY |
| | | Project Manager: | Scott Fonte/Dave Chiusano |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 | | | Sampler(s): | David Crandall/Jim Peterson |
| PID Meter Used: (Model, Serial #) | ppbRAE | | | Building I.D. No.: | STRUCTURE 03 |

**SUMMA Canister Record:**

SS-DUP 01

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | ~~OUTDOOR AIR~~ | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | | Flow Regulator No.: | BC3433 | Flow Regulator No.: | BC3056 | Flow Regulator No.: | BC1828 |
| Canister Serial No.: | | Canister Serial No.: | BC1096 | Canister Serial No.: | BC1318 | Canister Serial No.: | BC3253 |
| Start Date/Time: | | Start Date/Time: | 2/9/11 1120 | Start Date/Time: | 2/9/11 1123 | Start Date/Time: | 2/9/11 1123 |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | -28 | Start Pressure: (inches Hg) | -30+ | Start Pressure: (inches Hg) | -30+ |
| Stop Date/Time: | | Stop Date/Time: | 2/10/11 1120. | Stop Date/Time: | | Stop Date/Time: | |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -10 | Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | |
| Sample ID: | | Sample ID: 755015-BA-03 | | Sample ID: 755015-SS-03 | | Sample ID: 755015-SS-DUP01 | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | BSMT | Basement or Crawl Space? | BSMT | Direction from Building | |
| Room | | Room | Bsmt/Laundry | Floor Slab Thickness (inches) *[if present]* | 4 | Distance from Building | |
| Indoor Air Temp (°F) | | Indoor Air Temp | 60°F | Potential Vapor Entry Points Observed? | — | Intake Height Above Ground Level (ft.) | |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 4.5ft | If slab, intake Depth If Crawl Space, intake height | 4.5 | Distance to nearest Roadway | |
| Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | — | Noticeable Odor? | |
| PID Reading (ppb) | | PID Reading (ppb) | 0ppb | PID Reading (ppb) | 539ppb | PID Reading (ppb) | |
| Duplicate Sample? | | Duplicate Sample? | — | Duplicate Sample? | — | Duplicate Sample? | |

**Comments:**

Helium Leak Test ~ 100% Dome 0ppm Purge

Water Observed in Tubing of SS/SS-Dup 01 upon checking @ 1030AM. Collected BA sample + sealed SS point. Per RC/SF will hold extra canisters for POTENTIAL Resampling.

Sampler Signature:

STRUCTURE 03

**NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH**

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID CRANDALL Date/Time Prepared 2/9/11

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation ______

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

Number of Occupants/persons at this location ______ Age of Occupants ______

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

- Note -
Questionnaire Previously
Completed -
Updated sketch & inventory only.

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

Residential School Commercial/Multi-use

Industrial Church Other: ________________

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:______________ |

**If multiple units, how many?**
________ **If the property is**
**commercial, type?**
Business Type(s) ______________________________________
Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**
Number of floors______ Building age______
Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**
**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

## 5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other _______ |
| **c. Basement floor:** | concrete | dirt | stone | other _______ |
| **d. Basement floor:** | uncovered | covered | covered with _____________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with _____________ | |
| **f. Foundation walls:** | poured | block | stone | other _______ |
| **g. Foundation walls:** | unsealed | sealed | sealed with _____________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** _______(feet)

**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

## 6. HEATING, VENTING and AIR CONDITIONING

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters -
Stream radiation - Radiant floor - Electric baseboard - Wood stove -
Outdoor wood boiler - Other __________

**The primary type of fuel used is:**

Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** _________________________

**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other__________

**Air conditioning:** Central Air - Window units - Open Windows - None

**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

## 7. OCCUPANCY

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ________________________________________
1st Floor ________________________________________
2nd Floor ________________________________________
3rd Floor ________________________________________
4th Floor ________________________________________

**8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY**

**a. Is there an attached garage?** Y / N

**b. Does the garage have a separate heating unit?** Y / N / NA

**c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) Y / N / NA
Please specify_______________

**d. Has the building ever had a fire?** Y / N When?_______________

**e. Is a kerosene or unvented gas space heater present?** Y / N Where? _______________

**f. Is there a workshop or hobby/craft area?** Y / N Where & Type? _______________

**g. Is there smoking in the building?** Y / N How frequently? _______________

**h. Have cleaning products been used recently?** Y / N When & Type? _______________

**i. Have cosmetic products been used recently?** Y / N When & Type? _______________

**j. Has painting/staining been done in the last 6 months?** Y / N When & Type? _______________

**k. Is there new carpet, drapes or other textiles?** Y / N Where & When? _______________

**l. Have air fresheners been used recently?** Y / N When & Type? _______________

**m. Is there a kitchen exhaust fan?** Y / N If yes, where vented? _______________

**n. Is there a bathroom exhaust fan?** Y / N If yes, where vented? _______________

**o. Is there a clothes dryer?** Y / N If yes, is it vented outside? Y / N

**p. Has there been a pesticide application?** Y / N When &Type? _______________

**Are there odors in the building?** Y / N
If yes, please describe:
_______________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? _______________
If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

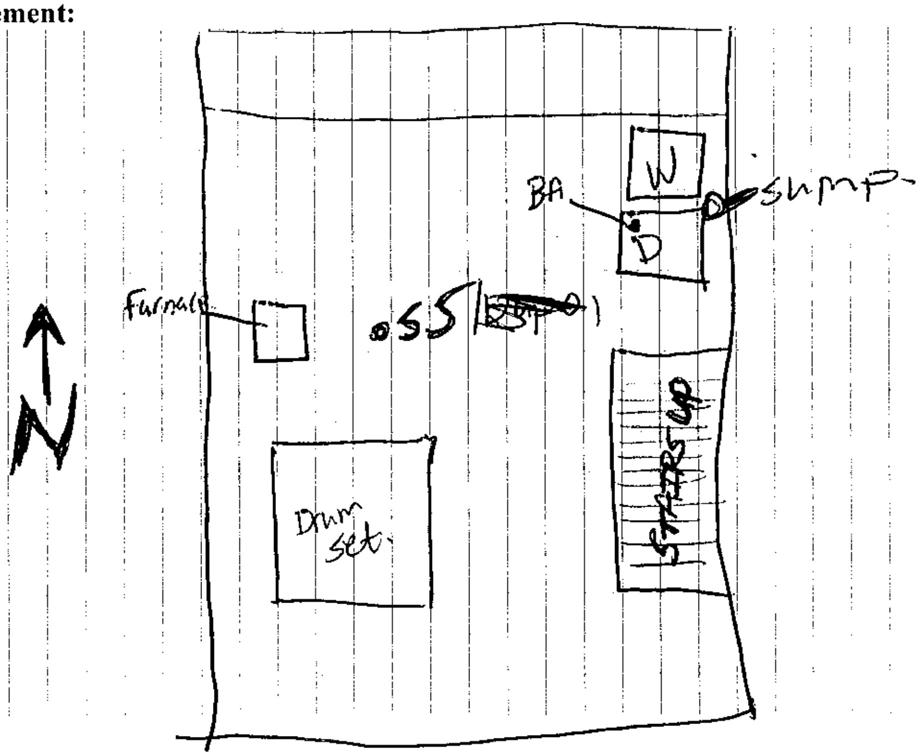
**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: ______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: ______

**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ______________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

**11. FLOOR PLANS**

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

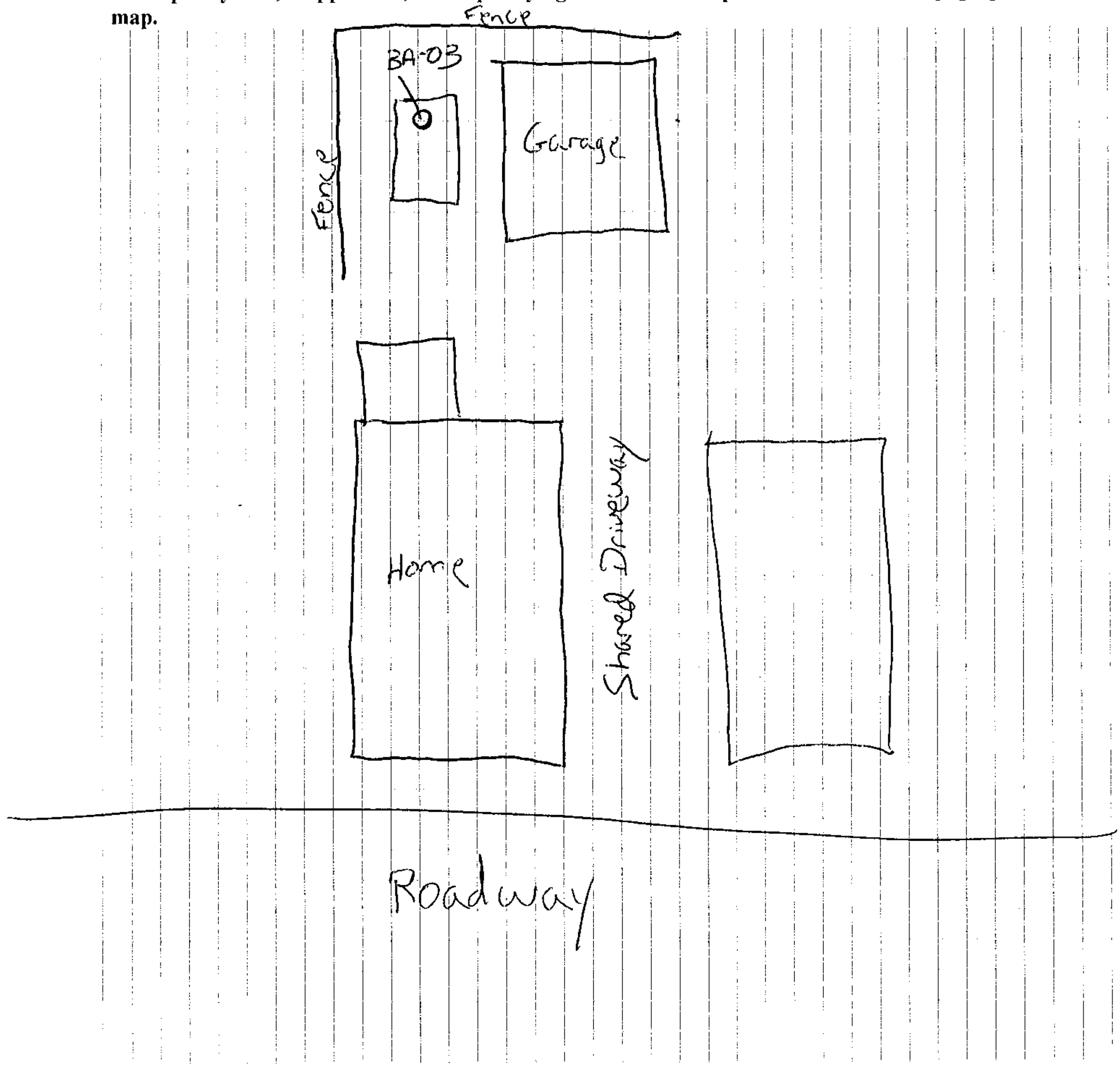
**Basement:**




**First Floor:**

## 12. OUTDOOR PLOT

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.
Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**



**13. PRODUCT INVENTORY FORM**

**Make & Model of field instrument used:** ppb RAE.

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
| | Glidden paint | 1gal | U | — | 0 | Y |
| | Valspar Primer. | 1gal. | U | — | 0 | Y |
| | Quikrete Concrete stain | 1gal | U | = | 0 | Y |
| | Earth friendly toilet Cleaner. | 24oz. | U | Cedar Oil/Citric Acid. | 0 | Y |
| | Oatey PVC Cement. | 8oz. | U | M.E.K., Acetone, Tetrahydrofuran, Cyclohexane. | 62ppm | Y |
| | Spic + Span. | 22oz. | U | Ammonium Chloride. | 0 | Y |
| | LA's Laundry detergent. | (3) 42oz | U/UO | — | 0 | Y |
| | Henry concrete patch. | 1gal. | U | = | 0 | Y |
| | | | | | | |
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| | | | | | | |

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February-April 2011
## Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Sub-Slab Sample SS-03 (February – Took in water, suitable sample not collected)

Water at Sub-Slab Sample (February 28, 2011)


Sub-slab sample SS-03 collected 4/19/11


Basement Air Sample collected 4/19/11


Outdoor Air Sample sample collected 4/19/11

# TABLE VAPOR INTRUSION ANALYTICAL DATA

| | Property ID | Structure 03 - 412 Center Street | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-SS-03 | | 755015-BA-03 | |
| | Lab ID | 11D0685-01 | | 1012126AR1-05A/05B | |
| | Sample Type | Sub-slab Vapor | | Basement Indoor Air | |
| Parameter List USEPA Method TO-15 | Sample Date | 4/21/2011 | | 4/21/2011 | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | (µg/m3) | (<0.15) | U | 0.47 | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 0.73 | | 0.37 | |
| 1,4-Dichlorobenzene | (µg/m3) | 0.81 | | (<0.046) | U |
| 2-Hexanone | (µg/m3) | 0.92 | | 0.6 | |
| Acetone | (µg/m3) | 52 | | 37 | |
| Benzene | (µg/m3) | 0.82 | | 0.79 | |
| Carbon Disulfide | (µg/m3) | 1.3 | | (<0.022) | U |
| Carbon Tetrachloride | (µg/m3) | (<0.088) | U | 0.5 | |
| Chloroform | (µg/m3) | 1.4 | | (<0.031) | U |
| Chloromethane | (µg/m3) | (<0.029) | U | 0.81 | |
| cis-1,2-Dichloroethylene | (µg/m3) | 140 | | 0.37 | |
| Dichlorodifluoromethane | (µg/m3) | 1.8 | | 1.3 | |
| Ethanol | (µg/m3) | 5.6 | | 110 | |
| Ethyl Acetate | (µg/m3) | (<0.13) | U | 0.28 | |
| Ethylbenzene | (µg/m3) | (<0.069) | U | 0.28 | |
| Isopropanol | (µg/m3) | 2.2 | | 6.6 | |
| m&p-Xylene | (µg/m3) | 1.6 | | 0.66 | |
| Methyl Ethyl Ketone | (µg/m3) | 4 | | 13 | |
| Methyl Isobutyl Ketone | (µg/m3) | (<0.074) | U | 0.2 | |
| Methylene Chloride | (µg/m3) | 2.3 | | 1.9 | |
| N-Heptane | (µg/m3) | 1 | | 0.38 | |
| N-Hexane | (µg/m3) | 1.5 | | 0.73 | |
| O-Xylene | (µg/m3) | 0.58 | | 0.26 | |
| Tetrachloroethylene | (µg/m3) | 15 | | 0.24 | |
| Tetrahydrofuran | (µg/m3) | (<0.071) | U | 42 | |
| Toluene | (µg/m3) | 1.7 | | 2 | |
| Trans-1,2-Dichloroethene | (µg/m3) | 0.83 | | (<0.019) | U |
| Trichloroethylene | (µg/m3) | 26 | | (<0.041) | U |
| Trichlorofluoromethane | (µg/m3) | 0.87 | | 1 | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation to be completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
U = The analyte was analyzed for, but was not detected above the sample reporting limit.
µg/m3 = micrograms per cubic meter

# TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 03 | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-03 | | | |
| | Lab ID | 11D0685-03 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 4/21/2011 | | | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | (µg/m3) | 0.62 | | | |
| 1,2,4-TRIMETHYLBENZENE | (µg/m3) | 0.41 | | | |
| 2-Hexanone | (µg/m3) | 1.1 | | | |
| Acetone | (µg/m3) | 23 | | | |
| Benzene | (µg/m3) | 0.77 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.49 | | | |
| Chloromethane | (µg/m3) | 0.94 | | | |
| Dichlorodifluoromethane | (µg/m3) | 1.5 | | | |
| Ethanol | (µg/m3) | 6.7 | | | |
| Ethylbenzene | (µg/m3) | 0.22 | | | |
| Isopropanol | (µg/m3) | 2.1 | | | |
| m&p-Xylene | (µg/m3) | 0.6 | | | |
| Methyl Ethyl Ketone | (µg/m3) | 3.8 | | | |
| Methyl Isobutyl Ketone | (µg/m3) | 0.31 | | | |
| Methylene Chloride | (µg/m3) | 3 | | | |
| N-Heptane | (µg/m3) | 0.34 | | | |
| N-Hexane | (µg/m3) | 0.77 | | | |
| O-Xylene | (µg/m3) | 0.24 | | | |
| Tetrachloroethylene | (µg/m3) | 0.38 | J | | |
| Toluene | (µg/m3) | 1.2 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.1 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation to be completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

## Indoor Air Sampling Photolog – Clinton West Plaza Site – February-April 2011
## Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Observed Chemicals in Structure 03

Sub-Slab Sample SS-03 (February – Took in water, suitable sample not collected)

Water at Sub-Slab Sample (February 28, 2011)


Sub-slab sample SS-03 collected 4/19/11


Basement Air Sample collected 4/19/11


Outdoor Air Sample sample collected 4/19/11

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| EA Engineering and Its Affiliate<br>EA Science & Technology<br>6712 Brooklawn Parkway, Suite 104<br>Syracuse, NY 13211 | | Project #: | 14368.47 |
| | | Project Name: | NYSDEC Clinton West Plaza |
| | | Location: | Ithaca NY |
| | | Project Manager: | Scott Fonte/Dave Chiusano |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 | | | Sampler(s): | David Crandall/Jim Peterson |
| PID Meter Used: (Model, Serial #) | ppbRAE | | | Building I.D. No.: | STRUCTURE 04 |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | | Flow Regulator No.: | BC3403 | Flow Regulator No.: | BC3352 | Flow Regulator No.: | BC3083 |
| Canister Serial No.: | | Canister Serial No.: | BC1172 | Canister Serial No.: | BC1664 | Canister Serial No.: | BC1671 |
| Start Date/Time: | | Start Date/Time: | 2/9/11 1238 | Start Date/Time: | 2/9/11 1234 | Start Date/Time: | 2/9/11 1248 |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | -30 | Start Pressure: (inches Hg) | -28 | Start Pressure: (inches Hg) | -29 |
| Stop Date/Time: | | Stop Date/Time: | 2/10/11 1238 | Stop Date/Time: | 2/10/11 1234 | Stop Date/Time: | 2/10/11 1248 |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -10 | Stop Pressure: (inches Hg) | -8 | Stop Pressure: (inches Hg) | -9 |
| Sample ID: | | Sample ID: 755015-BA-04 | | Sample ID: 755015-SS-04 | | Sample ID: 755015-OA-04 | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | Bsmt | Basement or Crawl Space? | BSMT | Direction from Building | NW |
| Room | | Room | storage Rm 1 | Floor Slab Thickness (inches) *[if present]* | 5" | Distance from Building | 8ft NW |
| Indoor Air Temp (°F) | | Indoor Air Temp | 55°F | Potential Vapor Entry Points Observed? | - | Intake Height Above Ground Level (ft.) | 4.5ft |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | = |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 4ft. | If slab, intake Depth If Crawl Space, intake height | 5.5" | Distance to nearest Roadway | 50ft TO SW |
| Noticeable Odor? | | Noticeable Odor? | | Noticeable Odor? | | Noticeable Odor? | |
| PID Reading (ppb) | | PID Reading (ppb) | 0ppb | PID Reading (ppb) | 0ppb | PID Reading (ppb) | 0ppb |
| Duplicate Sample? | | Duplicate Sample? | - | Duplicate Sample? | - | Duplicate Sample? | |

**Comments:**

Helium Leak Test - 100% Purge 6,900ppm.

Same Hole used as previous sampling.

Sampler Signature:

STRUCTURE 04

**NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH**

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID CRANDALL Date/Time Prepared 2/9/11

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation ____________

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

Number of Occupants/persons at this location ______ Age of Occupants ____________

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

| | | |
|---|---|---|
| Residential | School | Commercial/Multi-use |
| Industrial | Church | Other: ________________ |

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:______________ |

**If multiple units, how many?**
________ **If the property is**
**commercial, type?**

Business Type(s) _____________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**

Number of floors______ Building age______

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**
**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

## 5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ________ |
| **c. Basement floor:** | concrete | dirt | stone | other ________ |
| **d. Basement floor:** | uncovered | covered | covered with ______________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with ______________ | |
| **f. Foundation walls:** | poured | block | stone | other ________ |
| **g. Foundation walls:** | unsealed | sealed | sealed with ______________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ________(feet)
**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

## 6. HEATING, VENTING and AIR CONDITIONING

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters - Stream radiation - Radiant floor - Electric baseboard - Wood stove - Outdoor wood boiler - Other ___________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ____________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other___________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

**7. OCCUPANCY**

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ____________________________________________

1st Floor ____________________________________________

2nd Floor ____________________________________________

3rd Floor ____________________________________________

4th Floor ____________________________________________

## 8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

| | | |
|---|---|---|
| **a. Is there an attached garage?** | Y / N | |
| **b. Does the garage have a separate heating unit?** | Y / N / NA | |
| **c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) | Y / N / NA | Please specify________________________ |
| **d. Has the building ever had a fire?** | Y / N | When?____________________ |
| **e. Is a kerosene or unvented gas space heater present?** | Y / N | Where? ____________________ |
| **f. Is there a workshop or hobby/craft area?** | Y / N | Where & Type? ______________ |
| **g. Is there smoking in the building?** | Y / N | How frequently? ______________ |
| **h. Have cleaning products been used recently?** | Y / N | When & Type? ______________ |
| **i. Have cosmetic products been used recently?** | Y / N | When & Type? ______________ |
| **j. Has painting/staining been done in the last 6 months?** | Y / N | When & Type? ______________ |
| **k. Is there new carpet, drapes or other textiles?** | Y / N | Where & When? ______________ |
| **l. Have air fresheners been used recently?** | Y / N | When & Type? ____________ |
| **m. Is there a kitchen exhaust fan?** | Y / N | If yes, where vented? ________________________ |
| **n. Is there a bathroom exhaust fan?** | Y / N | If yes, where vented? ________________________ |
| **o. Is there a clothes dryer?** | Y / N | If yes, is it vented outside? Y / N |
| **p. Has there been a pesticide application?** | Y / N | When &Type? ______________ |

**Are there odors in the building?** Y / N
If yes, please describe:

________________________________________________________________________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? ____________________________________________
If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

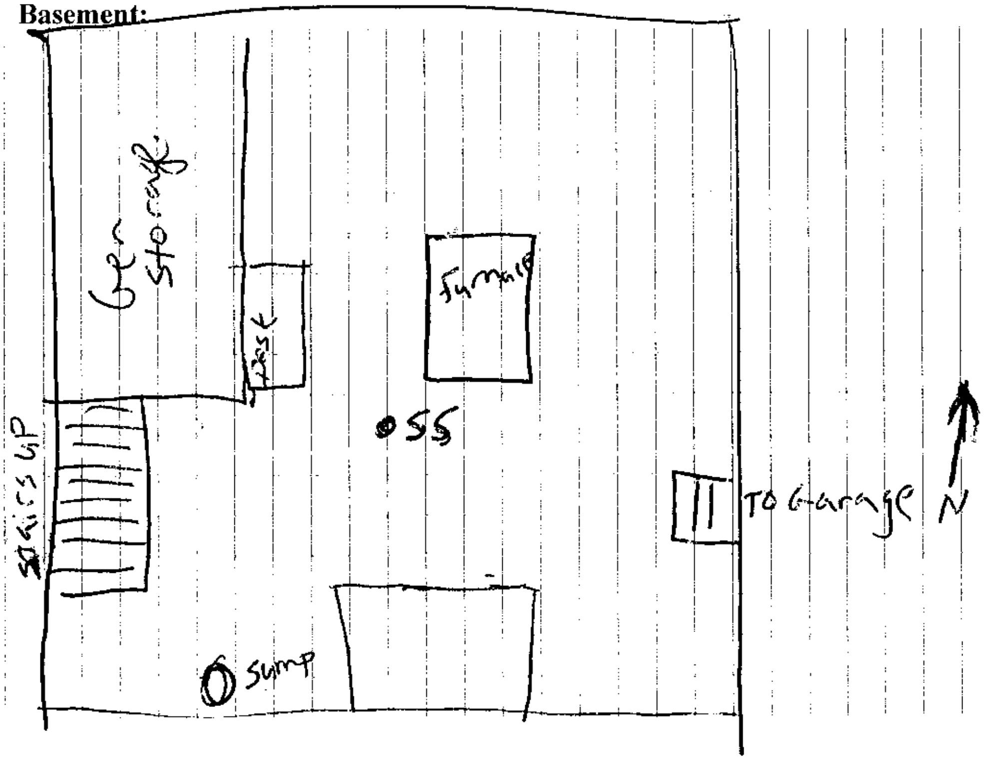
**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: _______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: _______

**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ________________________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

## 11. FLOOR PLANS

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

**Basement:**




**First Floor:**

## 12. OUTDOOR PLOT

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**

## 13. PRODUCT INVENTORY FORM

**Make & Model of field instrument used: ______________________________**

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
| | open Air freshener | | U | — | 0 | Y |
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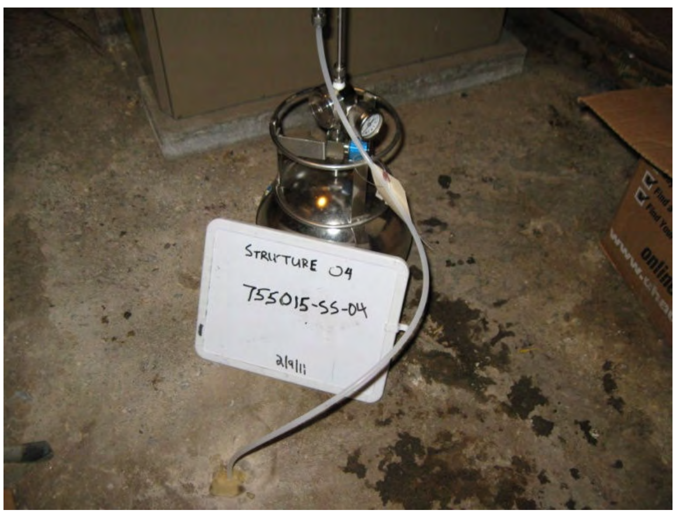
* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 04

Observed Chemicals in Structure 04


Helium Leak Testing in Structure 04



Sub-Slab Sample SS-04

Basement Air Sample BA-04


Outdoor Air Sample OA-03

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 04 - 514 North Titus Ave. | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-SS-04 | | 755015-BA-04 | |
| | Lab ID | 11B0284-06 | | 11B0284-05 | |
| | Sample Type | Sub-slab Vapor | | Basement Indoor Air | |
| | Sample Date | 2/10/2011 | | 2/10/2011 | |
| Acetone | (µg/m3) | 26 | | 9.3 | |
| Benzene | (µg/m3) | 2 | | 1.7 | |
| 2-Butanone | (µg/m3) | 3.9 | | 1.7 | |
| Carbon Tetrachloride | (µg/m3) | (<0.63) | U | 0.58 | |
| Chloroform | (µg/m3) | 0.56 | | (<0.17) | U |
| Chloromethane | (µg/m3) | 0.33 | | 1 | |
| Cyclohexane | (µg/m3) | 1.8 | | 0.7 | |
| Dichlorodifluoromethane | (µg/m3) | 2.6 | | 3 | |
| 1,2-Dichloroethane | (µg/m3) | (<0.40) | U | 0.28 | |
| Ethanol | (µg/m3) | 4.2 | | 28 | |
| Ethylbenzene | (µg/m3) | 1.2 | | 1.1 | |
| 4-Ethyltoluene | (µg/m3) | 0.57 | | 0.47 | |
| Heptane | (µg/m3) | 4.5 | | 1.4 | |
| Hexane | (µg/m3) | 8.4 | | 5.3 | |
| 2-Hexanone | (µg/m3) | 1 | | (<0.14) | U |
| Isopropanol | (µg/m3) | 1.3 | | 1 | |
| Methylene Chloride | (µg/m3) | 1 | | 1.1 | |
| Styrene | (µg/m3) | 0.73 | | (<0.15) | U |
| Tetrachloroethylene | (µg/m3) | 6.3 | | (<0.24) | U |
| Toluene | (µg/m3) | 4.5 | | 5 | |
| Trichloroethylene | (µg/m3) | 3.9 | | <0.19 | |
| Trichlorofluoromethane | (µg/m3) | 1.4 | J | 1.8 | J |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | (<0.77) | U | 0.72 | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 1.8 | | 1.7 | |
| 1,3,5-Trimethylbenzene | (µg/m3) | (<0.49) | U | 0.45 | |
| m&p-Xylene | (µg/m3) | 3.6 | | 3.8 | |
| o-Xylene | (µg/m3) | 1.6 | | 1.5 | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
U = The analyte was analyzed for, but was not detected above the sample reporting limit.
µg/m3 = micrograms per cubic meter

TABLE VAPOR INTRUSION ANALYTICAL DATA

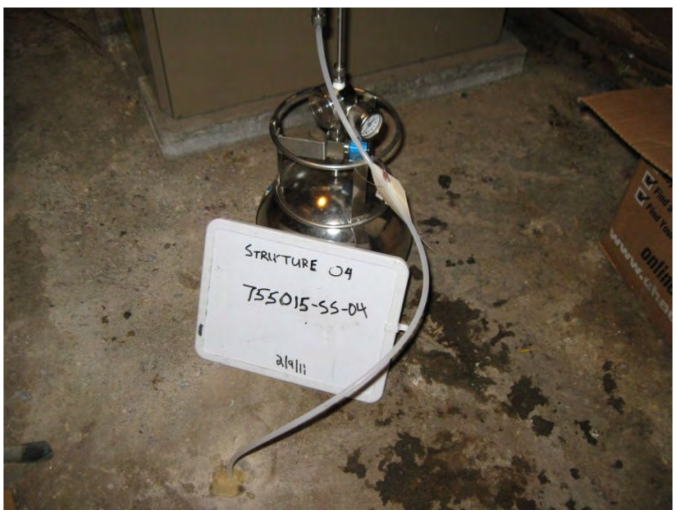
| Parameter List USEPA Method TO-15 | Property ID | Structure 01, 02, 04, Clinton West Laundry | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-04 | | | |
| | Lab ID | 11B0284-09 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 2/10/2011 | | | |
| Acetone | (µg/m3) | 4.7 | | | |
| Benzene | (µg/m3) | 0.73 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.56 | | | |
| Chloromethane | (µg/m3) | 1.1 | | | |
| Dichlorodifluoromethane | (µg/m3) | 3.1 | | | |
| Ethanol | (µg/m3) | 4.1 | | | |
| Ethylbenzene | (µg/m3) | 0.16 | | | |
| Heptane | (µg/m3) | 0.18 | | | |
| Hexane | (µg/m3) | 1.7 | | | |
| Isopropanol | (µg/m3) | 0.45 | | | |
| Methylene Chloride | (µg/m3) | 0.81 | | | |
| Toluene | (µg/m3) | 0.85 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.8 | J | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.69 | | | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 0.19 | | | |
| m&p-Xylene | (µg/m3) | 0.46 | | | |
| o-Xylene | (µg/m3) | 0.17 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Structure 04

Observed Chemicals in Structure 04


Helium Leak Testing in Structure 04



Sub-Slab Sample SS-04

Basement Air Sample BA-04


Outdoor Air Sample OA-03

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| EA Engineering and Its Affiliate<br>EA Science & Technology<br>6712 Brooklawn Parkway, Suite 104<br>Syracuse, NY 13211 | | Project #: | 14368.~~0~~ 47. |
| | | Project Name: | NYSDEC ~~C75012A Offsite Axiohm~~ Clinton West Plaza. |
| | | Location: | Ithaca, NY |
| | | Project Manager: | ~~Bob Casey/Karen Cahill~~ Scott Forte/Dave Chiusano |

**Sample Location Information:**

| | | | |
|---|---|---|---|
| Site ID Number: | 755015 ~~C75012A~~ | Sampler(s): | DC SF |
| PID Meter Used: (Model, Serial #) | ppbRAE | Building I.D. No.: | 05 |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - BASEMENT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | | Flow Regulator No.: | BC1457 | Flow Regulator No.: | BC1481 | Flow Regulator No.: | BC1126 |
| Canister Serial No.: | | Canister Serial No.: | BC3303 | Canister Serial No.: | BC2254 | Canister Serial No.: | BC3411 |
| Start Date/Time: | | Start Date/Time: | 2/28/11 1120 | Start Date/Time: | 2/28/11 1126 | Start Date/Time: | 2/28/11 1204 |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | ~~3/1/11~~ -28 | Start Pressure: (inches Hg) | ~~3/1/11~~ -28 | Start Pressure: (inches Hg) | -29.5 |
| Stop Date/Time: | | Stop Date/Time: | 3/1/11 1126 | Stop Date/Time: | 3/1/11 1126 | Stop Date/Time: | 3/1/11 1204 |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -5.5 | Stop Pressure: (inches Hg) | -10 | Stop Pressure: (inches Hg) | -9.5 |
| Sample ID: | | Sample ID: | 755015-BA-05 | Sample ID: | 755015-SS-05 | Sample ID: | 755015-OA-05 |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | BSMT | Basement or Crawl Space? | BSMT | Direction from Building | N |
| Room | | Room | — | Floor Slab Thickness (inches) *[if present]* | 5" | Distance from Building | 30 ft. next to garage |
| Indoor Air Temp (°F) | | Indoor Air Temp | 62F | Potential Vapor Entry Points Observed? | Small cracks > 5 ft. away | Intake Height Above Ground Level (ft.) | 5 ft. |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | — | Intake Tubing Used? | — |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 5.5 ft. | If slab, intake Depth If Crawl Space, intake height | 4.5" | Distance to nearest Roadway | 90 ft. 10 ft from parking lot (E) |
| Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | — | Noticeable Odor? | — |
| PID Reading (ppb) | | PID Reading (ppb) | 21-24 ppm | PID Reading (ppb) | 21 ppm | PID Reading (ppb) | — |
| Duplicate Sample? | | Duplicate Sample? | — | Duplicate Sample? | — | Duplicate Sample? | — |

**Comments:**

Helium-Dome 99.7% Purge. 1.9% Pass

Subslab reading consistent w/ Ambient Readings in Basement.

Sampler Signature: [signature]

Structure 05

**NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH**

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID Crandall Date/Time Prepared ____________

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation: Ithaca Offsite Former Axiohm Facility C75012A

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

Number of Occupants/persons at this location ______ Age of Occupants ____________

**2. OWNER OR LANDLORD:** (Check if same as occupant ___ )

**Interviewed: Y / N**

Last Name: ____________ First Name: ____________

Address: ____________

County: ____________

Home Phone: ____________ Office Phone: ____________

* Questionnaire previously completed 2008.

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

| | | |
|---|---|---|
| Residential | School | Commercial/Multi-use |
| Industrial | Church | Other: ______________ |

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:_____________ |

**If multiple units, how many?**
_______ **If the property is commercial, type?**

Business Type(s) ________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? _____

**Other characteristics:**

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**

**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

**5. BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ________ |
| **c. Basement floor:** | concrete | dirt | stone | other ________ |
| **d. Basement floor:** | uncovered | covered | covered with _______________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with ________________ | |
| **f. Foundation walls:** | poured | block | stone | other ________ |
| **g. Foundation walls:** | unsealed | sealed | sealed with ________________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ________(feet)
**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

**6. HEATING, VENTING and AIR CONDITIONING**

**Type of heating system(s) used in this building: (circle all that apply –note primary)**

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters - Stream radiation - Radiant floor - Electric baseboard - Wood stove - Outdoor wood boiler - Other ___________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ____________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other___________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

## 7. OCCUPANCY

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**<u>Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)</u>**

Basement ______________________________________________

1st Floor ______________________________________________

2nd Floor ______________________________________________

3rd Floor ______________________________________________

4th Floor ______________________________________________

**8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY**

**a. Is there an attached garage?** Y / N

**b. Does the garage have a separate heating unit?** Y / N / NA

**c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) Y / N / NA Please specify______________________

**d. Has the building ever had a fire?** Y / N When?________________

**e. Is a kerosene or unvented gas space heater present?** Y / N Where? ________________

**f. Is there a workshop or hobby/craft area?** Y / N Where & Type? ____________

**g. Is there smoking in the building?** Y / N How frequently? ____________

**h. Have cleaning products been used recently?** Y / N When & Type? ____________

**i. Have cosmetic products been used recently?** Y / N When & Type? ____________

**j. Has painting/staining been done in the last 6 months?** Y / N When & Type? ____________

**k. Is there new carpet, drapes or other textiles?** Y / N Where & When? ____________

**l. Have air fresheners been used recently?** Y / N When & Type? ____________

**m. Is there a kitchen exhaust fan?** Y / N If yes, where vented? ________________

**n. Is there a bathroom exhaust fan?** Y / N If yes, where vented? ________________

**o. Is there a clothes dryer?** Y / N If yes, is it vented outside? Y / N

**p. Has there been a pesticide application?** Y / N When &Type? ____________

**Are there odors in the building?** Y / N
If yes, please describe:

______________________________________________________________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? ______________________________________
If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: _______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: _______

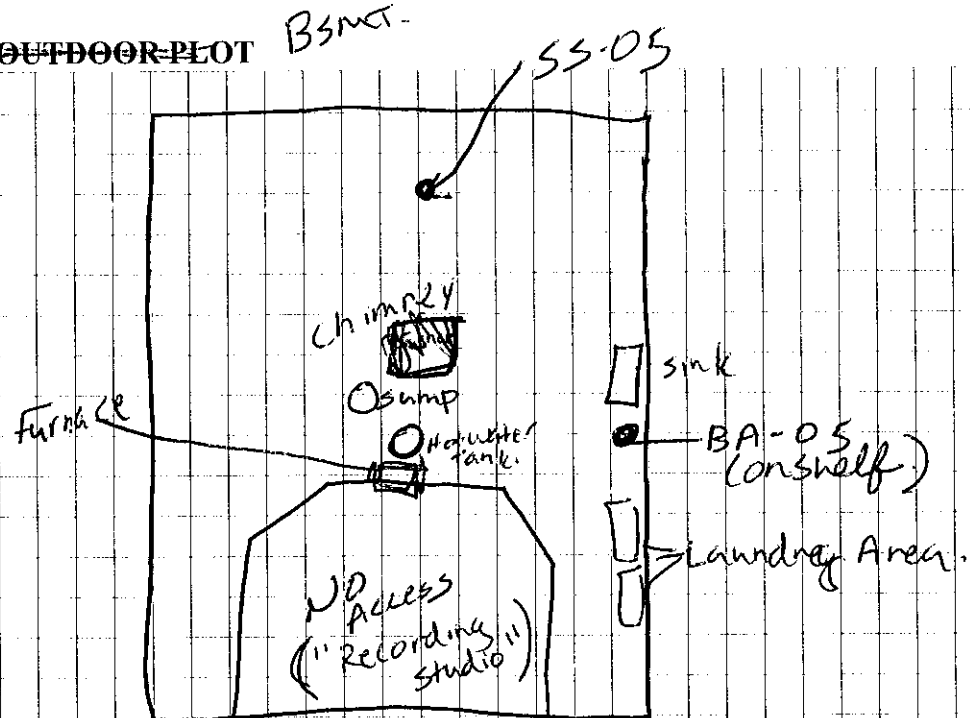
**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ______________________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

## 11. FLOOR PLANS

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

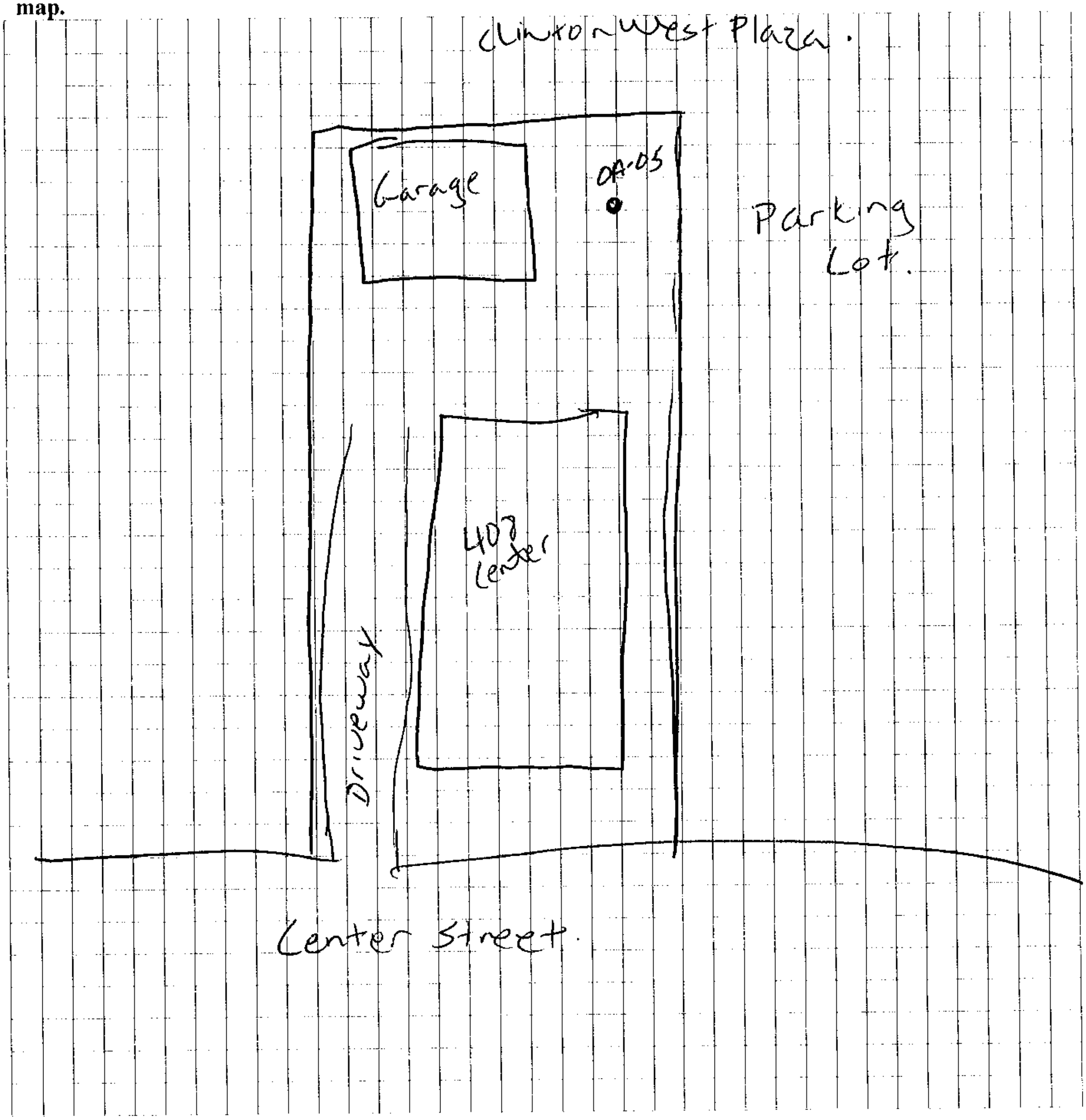
**Basement:**

**First Floor: 1~~2. OUTDOOR PL~~OT** BSMT.



Outdoor Plot.

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**



Ambient 21.00 – 22.00 ppm

**13. PRODUCT INVENTORY FORM**
**Make & Model of field instrument used:** ppbRAE 3000
**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
| | Duro spray Adhesive | | U | hexane, Propane, butane, Acetone | 139.5 ppm | Y |
| | Fabulous Blaster | | UO | Hydrocarbon, Petr. Distillates, Surfactant, $CO_2$. | 29.04 ppm | |
| | Fast orange | 7.5oz | U | – | 30.13 ppm | |
| | Raid Roach & Ant (4) | 12oz | U | Petr. distillates. | 26.71 ppm | |
| | Clorox green works. | 32oz | U | Surfactant, ethanol | 24.00 ppm | |
| | Armstrong floor polish | 32oz | U | — | 27.15 | |
| | Aqua Mix seal & Finish. | 32oz. | U | – | 21.64 | |
| | Blue Coral Dry Clean. | 22.8oz | U | — | 23.94 | |
| | Penske starting Fluid. | 11oz. | U | Heptane, Diethyl Ether. | 30.25 | |
| | Easy Off Oven Cleaner. | 16oz | U | – | 23.27 | |
| | Out! Repellant. | 14oz | U | Methyl nonyl ketone, | 25.68 | |
| | Valspar, Behr, Olympic, Sherwin Williams paints | 1qt to 1gal | 16 gal. 1 qt. | – | 32 ppm | |
| | Lawrence McFadden Polyurethane | 8oz (2) | U | Linseed oil, Hydrocarbons. | 31.54. | |
| | Minwax wood Finish. | 8oz (6) | U | Hydrocarbons. | 34.92 | |
| | Zinsser Primer | 13oz | U | Acetone | 43.97 | |
| | Rustoleum Primer | 12oz | U | Toluene, Xylene. | 36.71 | |
| | Tec Caulk. | 10.5oz (3) | UO | 21.7 g/L VOC | Ambient | |
| | White Lightning Caulk. | 10oz (10) | UO | – | Ambient | |
| | various laundry detergent/fab. softeners | vary | U | – | Ambient | |

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February-March 2011
## Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05


Observed Chemicals in Structure 05

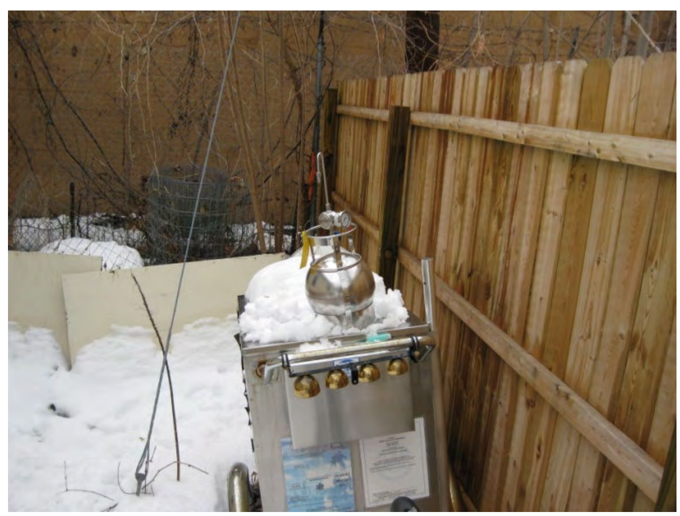

Observed Chemicals in Structure 05


Observed Chemicals in Structure 05


Observed Chemicals in Structure 05


Basement Air Sample BA--05 Structure 05


Sub-Slab Sample SS-05 Structure 05



Outdoor Air Sample OA-05 Structure 05

# TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 05 - 408 Center Street | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-SS-05 | | 755015-BA-05 | |
| | Lab ID | 11C0044-01 | | 11C0044-02 | |
| | Sample Type | Sub-slab Vapor | | Basement Indoor Air | |
| | Sample Date | 3/1/2011 | | 3/1/2011 | |
| Acetone | (µg/m3) | 3,300 | | 1,400 | |
| Benzene | (µg/m3) | 2.3 | | 1 | |
| 2-Butanone | (µg/m3) | 8.8 | | 3 | |
| Carbon Disulfide | (µg/m3) | 3.4 | | (<0.11) | U |
| Carbon Tetrachloride | (µg/m3) | (<0.63) | U | 0.43 | |
| Chloromethane | (µg/m3) | 2.4 | | 1.8 | |
| Cyclohexane | (µg/m3) | 6.3 | | 3.2 | |
| 1,4-Dichlorobenzene | (µg/m3) | 1.6 | | (<0.21) | U |
| Dichlorodifluoromethane | (µg/m3) | 3.7 | | 2.7 | |
| Ethanol | (µg/m3) | 15 | | 600 | |
| Ethylbenzene | (µg/m3) | 1.7 | | 0.73 | |
| 4-Ethyltoluene | (µg/m3) | 0.65 | | 0.2 | |
| Heptane | (µg/m3) | 3.9 | | 0.75 | |
| Hexane | (µg/m3) | 2,400 | | 1,100 | |
| 2-Hexanone | (µg/m3) | 0.59 | J | 0.39 | J |
| Methylene Chloride | (µg/m3) | (<0.69) | U | 2.4 | |
| 4-Methyl-2-pentanone | (µg/m3) | (<0.41) | U | 0.57 | J |
| Styrene | (µg/m3) | (<0.43) | U | 0.22 | |
| Tetrachloroethylene | (µg/m3) | 2.4 | | 1.1 | |
| Tetrahydrofuran | (µg/m3) | 1.8 | | 0.75 | |
| Toluene | (µg/m3) | 6.2 | | 2 | |
| Trichlorofluoromethane | (µg/m3) | 2 | | 1.6 | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.86 | | 0.64 | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 3.5 | | 0.45 | |
| 1,3,5-Trimethylbenzene | (µg/m3) | 1.4 | | (<0.17) | U |
| m&p-Xylene | (µg/m3) | 8 | | 2.4 | |
| o-Xylene | (µg/m3) | 2.2 | | 0.61 | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
U = The analyte was analyzed for, but was not detected above the sample reporting limit.
µg/m3 = micrograms per cubic meter

# TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Structure 05 | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-05 | | | |
| | Lab ID | 11C0044-03 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 3/1/2011 | | | |
| Acetone | (µg/m3) | 23 | | | |
| Benzene | (µg/m3) | 0.52 | | | |
| 2-Butanone | (µg/m3) | 1.5 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.42 | | | |
| Chloromethane | (µg/m3) | 0.94 | | | |
| Dichlorodifluoromethane | (µg/m3) | 2.5 | | | |
| Ethanol | (µg/m3) | 3.3 | | | |
| Heptane | (µg/m3) | 0.17 | | | |
| Hexane | (µg/m3) | 20 | | | |
| 2-Hexanone | (µg/m3) | 0.21 | J | | |
| Isopropanol | (µg/m3) | 0.34 | | | |
| Methylene Chloride | (µg/m3) | 2.3 | | | |
| Tetrachloroethylene | (µg/m3) | 0.25 | | | |
| Toluene | (µg/m3) | 0.6 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.3 | | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.63 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February-March 2011
## Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

Observed Chemicals in Structure 05

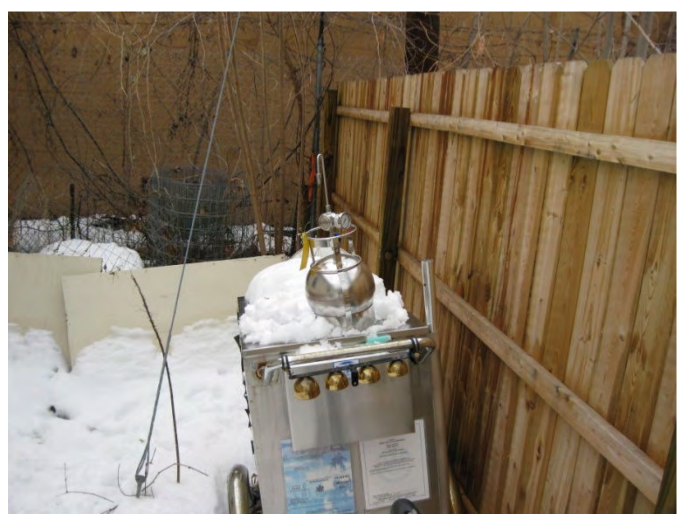
Observed Chemicals in Structure 05


Observed Chemicals in Structure 05


Observed Chemicals in Structure 05


Basement Air Sample BA--05 Structure 05


Sub-Slab Sample SS-05 Structure 05



Outdoor Air Sample OA-05 Structure 05

# FIELD AIR SAMPLING FORM

| | | | |
|---|---|---|---|
| EA ® | EA Engineering and Its Affiliate<br>EA Science & Technology<br><br>6712 Brooklawn Parkway, Suite 104<br><br>Syracuse, NY 13211 | Project #: | 14368.47 |
| | | Project Name: | NYSDEC Clinton West Plaza |
| | | Location: | Ithaca NY |
| | | Project Manager: | Scott Fonte/Dave Chiusano |

**Sample Location Information:**

| | | | | | |
|---|---|---|---|---|---|
| Site ID Number: | 755015 | | | Sampler(s): | David Crandall/Jim Peterson |
| PID Meter Used: (Model, Serial #) | ppbRAE | | | Building I.D. No.: | CWL |

**SUMMA Canister Record:**

| INDOOR AIR - FIRST FLOOR | | INDOOR AIR - ~~BASEMENT~~ LAUNDROMAT | | SUBSLAB SOIL GAS | | OUTDOOR AIR | |
|---|---|---|---|---|---|---|---|
| Flow Regulator No.: | ~~[illegible]~~ | Flow Regulator No.: | BC 3430 | Flow Regulator No.: | | Flow Regulator No.: | |
| Canister Serial No.: | | Canister Serial No.: | BC 1156 | Canister Serial No.: | | Canister Serial No.: | |
| Start Date/Time: | | Start Date/Time: | 2/9/11 1355 | Start Date/Time: | | Start Date/Time: | |
| Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | -30+ | Start Pressure: (inches Hg) | | Start Pressure: (inches Hg) | |
| Stop Date/Time: | | Stop Date/Time: | 2/10/11 1355 | Stop Date/Time: | | Stop Date/Time: | |
| Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | -11 | Stop Pressure: (inches Hg) | | Stop Pressure: (inches Hg) | |
| Sample ID: ~~755015-IA-CWL~~ | | Sample ID: 755015-IA-CWL | | Sample ID: | | Sample ID: | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Story/Level | | Story/Level | First Fl. | Basement or Crawl Space? | | Direction from Building | |
| Room | | Room | Laundromat | Floor Slab Thickness (inches) *[if present]* | | Distance from Building | |
| Indoor Air Temp (°F) | | Indoor Air Temp | 65°F | Potential Vapor Entry Points Observed? | | Intake Height Above Ground Level (ft.) | |
| Barometric Pressure? | | Barometric Pressure? | — | Ground Surface Condition (Crawl Space Only) | | Intake Tubing Used? | |
| Intake Height Above Floor Level (ft.) | | Intake Height Above Floor Level (ft.) | 5ft. | If slab, intake Depth If Crawl Space, intake height | | Distance to nearest Roadway | |
| Noticeable Odor? | | Noticeable Odor? | — | Noticeable Odor? | | Noticeable Odor? | |
| PID Reading (ppb) | | PID Reading (ppb) | 0 | PID Reading (ppb) | | PID Reading (ppb) | |
| Duplicate Sample? | | Duplicate Sample? | — | Duplicate Sample? | | Duplicate Sample? | |

**Comments:**

Used Tubing / set can ~~@~~ High (8ft) to Minimize chance for Disturbance

Sampler Signature: [signature]

Clinton West Laundry

**NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY CENTER FOR ENVIRONMENTAL HEALTH**

This form must be completed for each residence involved in indoor air testing.

Preparer's Name DAVID CRANDALL Date/Time Prepared 2/9/11

Preparer's Affiliation Independent Consultant – EA Engineering Phone No. 315-431-4610

Purpose of Investigation ______

**1. OCCUPANT: Interviewed: Y / N**

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

Number of Occupants/persons at this location ______ Age of Occupants ______

**2. OWNER OR LANDLORD:** (Check if same as occupant ___)

**Interviewed: Y / N**

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

Questionnaire not completed
(former Dry Cleaner)

**3. BUILDING CHARACTERISTICS Type of**

**Building:** (Circle appropriate response)

Residential School Commercial/Multi-use

Industrial Church Other: ______________

**If the property is residential, type?** (Circle appropriate response)

| | | |
|---|---|---|
| Ranch | 2-Family | 3-Family |
| Raised Ranch | Split Level | Colonial |
| Cape Cod | Contemporary | Mobile Home |
| Duplex | Apartment House | Townhouses/Condos |
| Modular | Log Home | Other:______________ |

**If multiple units, how many?**
________ **If the property is commercial, type?**

Business Type(s) ______________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

**Other characteristics:**

Number of floors______ Building age______

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

**4. AIRFLOW**

**Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:**

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

**5. BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

| | | | | |
|---|---|---|---|---|
| **a. Above grade construction:** | wood frame | concrete | stone | brick |
| **b. Basement type:** | full | crawlspace | slab | other ________ |
| **c. Basement floor:** | concrete | dirt | stone | other ________ |
| **d. Basement floor:** | uncovered | covered | covered with ______________ | |
| **e. Concrete floor:** | unsealed | sealed | sealed with ______________ | |
| **f. Foundation walls:** | poured | block | stone | other ________ |
| **g. Foundation walls:** | unsealed | sealed | sealed with ______________ | |
| **h. The basement is:** | wet | damp | dry | moldy |
| **i. The basement is:** | finished | unfinished | partially finished | |
| **j. Sump present?** | Y / N | | | |
| **k. Water in sump?** | Y / N / not applicable | | | |

**Basement/Lowest level depth below grade:** ________(feet)
**Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)**

**6. HEATING, VENTING and AIR CONDITIONING**

**Type of heating system(s) used in this building: (circle all that apply –note primary)**
Hot air circulation - Heat pump - Hot water baseboard - Space Heaters - Stream radiation - Radiant floor - Electric baseboard - Wood stove - Outdoor wood boiler - Other ___________

**The primary type of fuel used is:**
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

**Domestic hot water tank fueled by:** ____________________________
**Boiler/furnace located in:** Basement - Outdoors - Main Floor - Other___________
**Air conditioning:** Central Air - Window units - Open Windows - None
**Are there air distribution ducts present?** Y / N

**Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.**

**7. OCCUPANCY**

**Is basement/lowest level occupied?** Full-time - Occasionally - Seldom - Almost Never

**Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**

Basement ________________________________________
1st Floor ________________________________________
2nd Floor ________________________________________
3rd Floor ________________________________________
4th Floor ________________________________________

**8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY**

| | | |
|---|---|---|
| **a. Is there an attached garage?** | Y / N | |
| **b. Does the garage have a separate heating unit?** | Y / N / NA | |
| **c. Are petroleum-powered machines or vehicles stored in the garage** (e.g., lawnmower, atv, car) | Y / N / NA | Please specify________________________ |
| **d. Has the building ever had a fire?** | Y / N | When?________________ |
| **e. Is a kerosene or unvented gas space heater present?** | Y / N | Where? ________________ |
| **f. Is there a workshop or hobby/craft area?** | Y / N | Where & Type? ____________ |
| **g. Is there smoking in the building?** | Y / N | How frequently? ____________ |
| **h. Have cleaning products been used recently?** | Y / N | When & Type? ____________ |
| **i. Have cosmetic products been used recently?** | Y / N | When & Type? ____________ |
| **j. Has painting/staining been done in the last 6 months?** | Y / N | When & Type? ____________ |
| **k. Is there new carpet, drapes or other textiles?** | Y / N | Where & When? ____________ |
| **l. Have air fresheners been used recently?** | Y / N | When & Type? ____________ |
| **m. Is there a kitchen exhaust fan?** | Y / N | If yes, where vented? ____________ |
| **n. Is there a bathroom exhaust fan?** | Y / N | If yes, where vented? ____________ |
| **o. Is there a clothes dryer?** | Y / N | If yes, is it vented outside? Y / N |
| **p. Has there been a pesticide application?** | Y / N | When &Type? ____________ |

**Are there odors in the building?** Y / N

If yes, please describe:

______________________________________________________________________

**Do any of the building occupants use solvents at work?** Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? ________________________________________

If yes, are their clothes washed at work? Y / N

**Do any of the building occupants regularly use or work at a dry-cleaning service?** (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No

Yes, use dry-cleaning infrequently (monthly or less) Unknown

Yes, work at a dry-cleaning service

**Is there a radon mitigation system for the building/structure?** Y / N Date of Installation:
**Is the system active or passive?** Active/Passive

**9. WATER AND SEWAGE**
**Water Supply:** Public Water Drilled Well Driven Well Dug Well Other: _______
**Sewage Disposal:** Public Sewer Septic Tank Leach Field Dry Well Other: _______

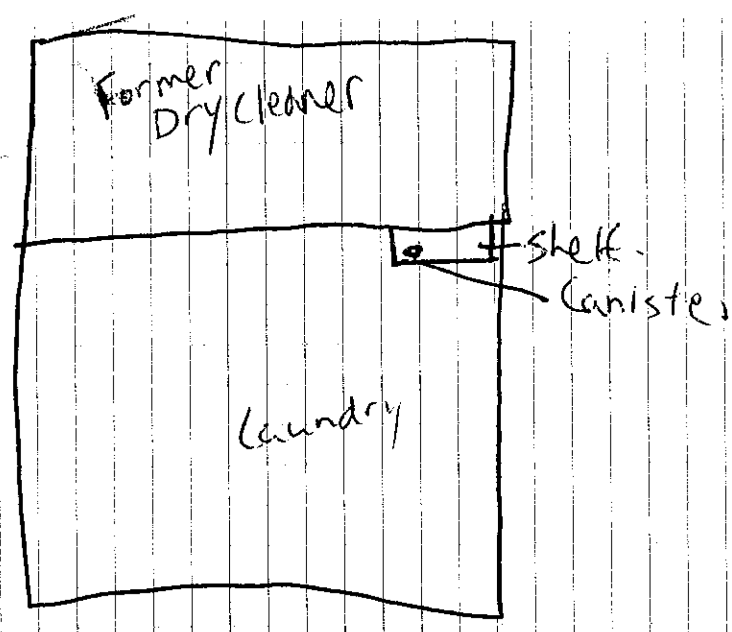
**.10. RELOCATION INFORMATION (for oil spill residential emergency)**
**.a. Provide reasons why relocation is recommended:** ________________________________
**.b. Residents choose to:** remain in home relocate to friends/family relocate to hotel/motel
**.c. Responsibility for costs associated with reimbursement explained?** Y / N
**.d. Relocation package provided and explained to residents?** Y / N

## 11. FLOOR PLANS

**Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.**

**Basement:**

**First Floor:**



## 12. OUTDOOR PLOT

**Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.**
**Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.**

## 13. PRODUCT INVENTORY FORM

**Make & Model of field instrument used: ________________________________________**

**List specific products found in the residences that have the potential to affect indoor air quality.**

| Location | Product Description | Size (units) | Condition* | Chemical Ingredients | Field Instrument Reading (units) | Photo ** Y / N |
|---|---|---|---|---|---|---|
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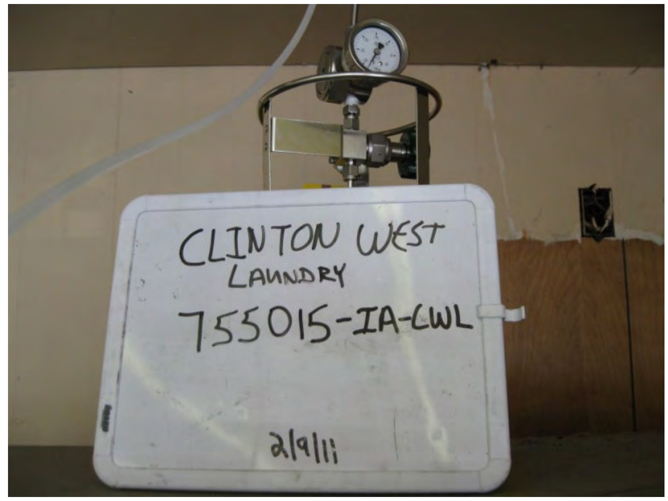
| | | | | | | |

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

## Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Clinton West Laundromat

Indoor Air Sample IA-CWL in Clinton West Laundromat



Indoor Air Sample IA-CWL in Clinton West Laundromat

TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List USEPA Method TO-15 | Property ID | Clinton West Laundry | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-IA-CWL | | | |
| | Lab ID | 1012126A-08A | | | |
| | Sample Type | First Floor Indoor Air | | | |
| | Sample Date | 2/10/2011 | | | |
| Acetone | (µg/m3) | 21 | | | |
| Benzene | (µg/m3) | 1.2 | | | |
| Bromodichloromethane | (µg/m3) | 1.6 | | | |
| 2-Butanone | (µg/m3) | 5.4 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.62 | | | |
| Chloroform | (µg/m3) | 6.7 | | | |
| Dibromochloromethane | (µg/m3) | 0.47 | | | |
| Dichlorodifluoromethane | (µg/m3) | 3.2 | | | |
| Ethanol | (µg/m3) | 36 | | | |
| Ethylbenzene | (µg/m3) | 0.46 | | | |
| 4-Ethyltoluene | (µg/m3) | 0.66 | | | |
| Heptane | (µg/m3) | 0.97 | | | |
| Hexane | (µg/m3) | 4.5 | | | |
| 2-Hexanone | (µg/m3) | 0.24 | | | |
| Isopropanol | (µg/m3) | 4 | | | |
| Methylene Chloride | (µg/m3) | 1.7 | | | |
| 4-Methyl-2-pentanone | (µg/m3) | 0.16 | | | |
| Tetrachloroethylene | (µg/m3) | 12 | | | |
| Tetrahydrofuran | (µg/m3) | 5.8 | | | |
| Toluene | (µg/m3) | 8.3 | | | |
| 1,1,1-Trichloroethane | (µg/m3) | 0.95 | | | |
| Trichlorofluoromethane | (µg/m3) | 2.3 | J | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.87 | | | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 2 | | | |
| 1,3,5-Trimethylbenzene | (µg/m3) | 0.6 | | | |
| m&p-Xylene | (µg/m3) | 1.9 | | | |
| o-Xylene | (µg/m3) | 0.57 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

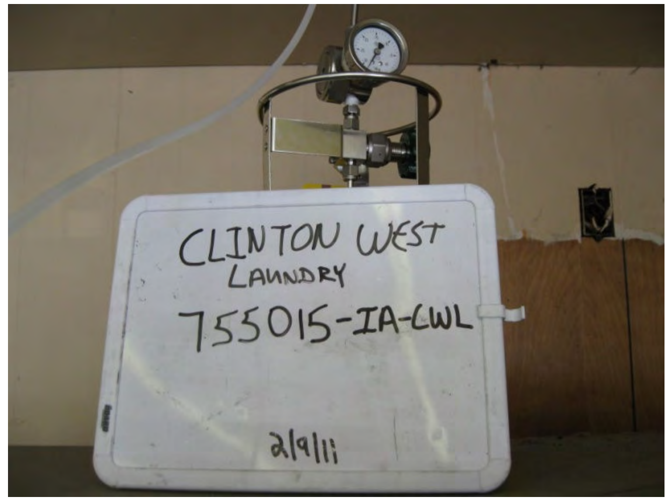
TABLE VAPOR INTRUSION ANALYTICAL DATA

| Parameter List<br>USEPA Method TO-15 | Property ID | Structure 01, 02, 04, Clinton West Laundry | | | |
|---|---|---|---|---|---|
| | Sample ID | 755015-OA-04 | | | |
| | Lab ID | 11B0284-09 | | | |
| | Sample Type | Outdoor Air | | | |
| | Sample Date | 2/10/2011 | | | |
| Acetone | (µg/m3) | 4.7 | | | |
| Benzene | (µg/m3) | 0.73 | | | |
| Carbon Tetrachloride | (µg/m3) | 0.56 | | | |
| Chloromethane | (µg/m3) | 1.1 | | | |
| Dichlorodifluoromethane | (µg/m3) | 3.1 | | | |
| Ethanol | (µg/m3) | 4.1 | | | |
| Ethylbenzene | (µg/m3) | 0.16 | | | |
| Heptane | (µg/m3) | 0.18 | | | |
| Hexane | (µg/m3) | 1.7 | | | |
| Isopropanol | (µg/m3) | 0.45 | | | |
| Methylene Chloride | (µg/m3) | 0.81 | | | |
| Toluene | (µg/m3) | 0.85 | | | |
| Trichlorofluoromethane | (µg/m3) | 1.8 | J | | |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | (µg/m3) | 0.69 | | | |
| 1,2,4-Trimethylbenzene | (µg/m3) | 0.19 | | | |
| m&p-Xylene | (µg/m3) | 0.46 | | | |
| o-Xylene | (µg/m3) | 0.17 | | | |

**Notes:** The analytical data results provided by Con-Test Analytical Laboratory.
Data validation was completed by Environmental Data Services, Inc.
USEPA = United States Environmental Protection Agency
J = Reported value is an estimate.
µg/m3 = micrograms per cubic meter

# Indoor Air Sampling Photolog – Clinton West Plaza Site – February 2011
## Clinton West Laundromat


Indoor Air Sample IA-CWL in Clinton West Laundromat




Indoor Air Sample IA-CWL in Clinton West Laundromat

# Appendix B

# Daily Field Reports

**DAILY FIELD REPORT** **Day:_____Tuesday___ Date:______1.28.14_**

NYSDEC

Temperature: (F) 5 (am) 10 (pm)

Wind Direction: W (am) W (pm)

**Project Name**

Weather: (am) Sun, light wind
(pm) Sun, light wind

**NYSDEC Site #755015**

**Contract #D007624-25**

**Ithaca, New York**

Arrive at site 750 (am)
Leave site: 1730 (pm)

**HEALTH & SAFETY:**

Are there any changes to the Health & Safety Plan? Yes ( ) No ( )
(If yes, list the deviation under items for concern)

| Are monitoring results at acceptable levels? | | | | |
|---|---|---|---|---|
| | Soil | Yes ( ) | n/a (x ) | * No ( ) |
| | Waters | Yes ( x) | n/a ( ) | * No ( ) |
| | Air | Yes ( ) | n/a ( x ) | * No ( ) |

- *If No, provide comments*

**OTHER ITEMS:**

Site Sketch Attached: Yes ( ) No ( x )
Photos Taken: Yes ( ) No ( )

**DESCRIPTION OF DAILY WORK PERFORMED:**

EA (HW & EC) onsite at 750 to gauge 11 wells and sample for VOC analysis. Gauged 9 wells and could not find TPMW-04 and could not open MMW-03 due to a broken well cover. Purged TPM-03 (missing well head cover), TPM-02, TPMW-06 dry using a peristaltic pump. Purged MMW-04 with the peristaltic pump and sampled a bailer for VOCs. Left site at 1730.

**SAMPLING (Soil/Water/Air)**

| **Sample ID:** | **Sample Date / Time:** | **Description of analysis:** |
|---|---|---|
| 755015-MMW-04 (MS/MSD) | 1.28.14 / 1635 | VOCs only |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**DAILY FIELD REPORT** **Day:_____Tuesday___ Date:______1.28.14_**

**CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:**

*(Name of contractor) personnel:* Hillary Williams / Emily Cummings

*(Name of Subcontractor) personnel:* none

*(Name of contractor) equipment:* none

***(*Indicates active equipment)***

*Other Subcontractors:* none

**VISITORS TO SITE:**

1. none

**PROJECT SCHEDULE ISSUES:**

**PROJECT BUDGET ISSUES:**

None.

**ITEMS OF CONCERN:**

Could not find TPMW-04, searched through snow and ice and debris for approximately 2 hours. Was not able to find. Also, the well cover for MMW-03 was broken. TPM-03 the well cover was broken and removed from the parking lot, exposing the pvc casing.

**COMMENTS:**

**ATTACHMENT(S) TO THIS REPORT:**

**SITE REPRESENTATIVE:**

Name: (*Hilary Williams*)
cc:

## DAILY PHOTOLOG

Picture of buried TMPW-4, TPMW-3 in the foreground for scale.

Well head missing from TPM-03.

**DAILY FIELD REPORT** **Day:_____Wednesday___ Date:______1.29.14_**

NYSDEC

Temperature: (F) 5 (am) 15 (pm)

Wind Direction: WSW (am) WSW (pm)

Weather: (am) Sun, light wind
(pm) Sun, light wind

**Project Name**

**NYSDEC Site #755015**

**Contract #D007624-25**

**Ithaca, New York**

Arrive at site 820 (am)

Leave site: 1600 (pm)

**HEALTH & SAFETY:**

Are there any changes to the Health & Safety Plan? Yes ( ) No ( )
(If yes, list the deviation under items for concern)

| Are monitoring results at acceptable levels? | | | | |
|---|---|---|---|---|
| | Soil | Yes ( ) | n/a (x ) | * No ( ) |
| | Waters | Yes ( x) | n/a ( ) | * No ( ) |
| | Air | Yes ( ) | n/a ( x) | * No ( ) |

- *If No, provide comments*

**OTHER ITEMS:**

Site Sketch Attached: Yes ( ) No ( x )
Photos Taken: Yes ( ) No ( )

**DESCRIPTION OF DAILY WORK PERFORMED:**

EA (HW & EC) onsite at 820 to sample wells for VOC analysis. Purged MW-14, MMW-02, TPMW-3, MMW-01 using peristaltic pump. Sampled wells using a bailer. Used Hach kit to collect iron readings at each monitoring well location. Packed and shipped samples via UPS. Left site at 1600.

**SAMPLING (Soil/Water/Air)**

| **Sample ID:** | **Sample Date / Time:** | **Description of analysis:** |
|---|---|---|
| 755015-TPM-01 | 1.29.14 / 1435 | VOCs only |
| 755015-TPM-02 | 1.29.14 / 1510 | VOCs only |
| 755015-TPM-03 | 1.29.14 / 1500 | VOCs only |
| 755015-TPMW-3 | 1.29.14 / 1225 | VOCs only |
| 755015-FD-012914 (TPMW-3) | 1.29.14 | VOCs only |
| 755015-TPMW-6 | 1.29.14 / 1520 | VOCs only |
| 755015-MMW-01 | 1.29.14 / 1420 | VOCs only |
| 755015-MMW-02 | 1.29.14 / 1110 | VOCs only |
| 755015-MW-14 | 1.29.14 / 925 | VOCs only |
| | | |

**DAILY FIELD REPORT** **Day:_____Wednesday___ Date:______1.29.14_**

**CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:**

*(Name of contractor) personnel:* Hillary Williams / Emily Cummings

*(Name of Subcontractor) personnel:* none

*(Name of contractor) equipment:* none

***(*Indicates active equipment)***

*Other Subcontractors:* none

**VISITORS TO SITE:**

1. none

**PROJECT SCHEDULE ISSUES:**

**PROJECT BUDGET ISSUES:**

None.

**ITEMS OF CONCERN:**

Could not find TPMW-04 again, searched through snow and ice and debris for approximately 1 hour.

**COMMENTS:**

**ATTACHMENT(S) TO THIS REPORT:**

**SITE REPRESENTATIVE:**

Name: (*Hilary Williams*)
cc:

**DAILY OBSERVATION REPORT** | **Day: Wednesday** | **Date: 12 February 2014**

NYSDEC

| | | | | |
|---|---|---|---|---|
| Temperature: (F) | 0 | (am) | 22 | (pm) |
| Wind Direction: | SE | (am) | SE | (pm) |
| Weather: | (am) cold / sun | | | |
| | (pm) cold / sun | | | |
| Arrive at site | 07:05 | (am) | | |
| Leave site: | 17:00 | (pm) | | |

**Project Name: Clinton West Plaza**

**NYSDEC Site # 755015**

**Contract # D007624-25**

**Ithaca, New York**

**<u>HEALTH & SAFETY:</u>**

Are there any changes to the Health & Safety Plan? Yes ( ) No ( x )
(If yes, list the deviation under items for concern)

| Are monitoring results at acceptable levels? | | | | |
|---|---|---|---|---|
| | Soil | Yes ( ) | n/a ( x ) | * No ( ) |
| | Waters | Yes ( ) | n/a ( x ) | * No ( ) |
| | Air | Yes ( ) | n/a ( x ) | * No ( ) |

- *If No, provide comments*

**<u>OTHER ITEMS:</u>**

| | | |
|---|---|---|
| Site Sketch Attached: | Yes ( ) | No ( x ) |
| Photos Taken: | Yes ( ) | No ( x ) |

**<u>DESCRIPTION OF DAILY WORK PERFORMED:</u>**
Amanda Kohn onsite with Geologic to find and abandon monitoring wells. Four of six locations were found and abandon.

**<u>PROJECT TOTALS:</u>**

**<u>SAMPLING (Soil/Water/Air)</u>**

| Contractor Sample ID: | Date / Time: | Description: |
|---|---|---|
| | | |
| | | |

**<u>CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:</u>**

*(Name of contractor) personnel:* Amanda Kohn

*(Name of Subcontractor) personnel:* Geologic

*(Name of contractor) equipment:*

***(*Indicates active equipment)***

*Other Subcontractors:* None

**<u>VISITORS TO SITE:</u>**
None.

**<u>PROJECT SCHEDULE ISSUES:</u>**

None

**<u>PROJECT BUDGET ISSUES:</u>**

None

**ITEMS OF CONCERN:**

Could not find 1 location, and the other location was under a box truck. .

**COMMENTS:**

None.

**ATTACHMENT(S) TO THIS REPORT:**

None

**SITE REPRESENTATIVE:**

Name: Amanda Kohn
cc:

**DAILY OBSERVATION REPORT** **Day: Thursday** **Date: 13 February 2014**

NYSDEC

Temperature: (F) 17 (am) 23 (pm)

Wind Direction: NW (am) NW (pm)

Weather: (am) light snow

(pm) cold / light snow

**Project Name: Clinton West Plaza**

**NYSDEC Site # 755015**

**Contract # D007624-25**

**Ithaca, New York**

Arrive at site 08:00 (am)

Leave site: 15:00 (pm)

**HEALTH & SAFETY:**

Are there any changes to the Health & Safety Plan? Yes ( ) No ( x )
(If yes, list the deviation under items for concern)

| Are monitoring results at acceptable levels? | | | | |
|---|---|---|---|---|
| | Soil | Yes ( ) | n/a ( x ) | * No ( ) |
| | Waters | Yes ( ) | n/a ( x ) | * No ( ) |
| | Air | Yes ( ) | n/a ( x ) | * No ( ) |

- *If No, provide comments*

**OTHER ITEMS:**

Site Sketch Attached: Yes ( ) No ( x )
Photos Taken: Yes ( ) No ( x )

**DESCRIPTION OF DAILY WORK PERFORMED:**
Amanda Kohn onsite with Geologic to find and abandon monitoring wells. Fixed 2 broken wells and finished monitoring wells.

**PROJECT TOTALS:**

**SAMPLING (Soil/Water/Air)**

| Contractor Sample ID: | Date / Time: | Description: |
|---|---|---|
| | | |
| | | |

**CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:**
*(Name of contractor) personnel:* Amanda Kohn
*(Name of Subcontractor) personnel:* Geologic
*(Name of contractor) equipment:*
***(*Indicates active equipment)***
*Other Subcontractors:* None

**VISITORS TO SITE:**
None.

**PROJECT SCHEDULE ISSUES:**
None

**PROJECT BUDGET ISSUES:**
None

**ITEMS OF CONCERN:**

Could not find 1 location, and the other location was under a box truck.  .

**COMMENTS:**

None.

**ATTACHMENT(S) TO THIS REPORT:**

None

**SITE REPRESENTATIVE:**

Name: Amanda Kohn
cc:

**DAILY OBSERVATION REPORT** **Day: Tuesday** **Date: 4 February 2014**

NYSDEC

Temperature: (F) 20 F (am) na (pm)

Wind Direction: W (am) na (pm)

Weather: (am) Overcast/ cold

(pm) na

**Project Name: Clinton West Plaza**

**NYSDEC Site # 755015**

**Contract # D007624-25**

**Ithaca, New York**

Arrive at site 07:05 (am)

Leave site: 10:15 (pm)

**HEALTH & SAFETY:**

Are there any changes to the Health & Safety Plan? Yes ( ) No ( x )
(If yes, list the deviation under items for concern)

| Are monitoring results at acceptable levels? | | | | |
|---|---|---|---|---|
| | Soil | Yes ( ) | n/a ( x ) | * No ( ) |
| | Waters | Yes ( ) | n/a ( x ) | * No ( ) |
| | Air | Yes ( ) | n/a ( x ) | * No ( ) |

- *If No, provide comments*

**OTHER ITEMS:**

Site Sketch Attached: Yes ( ) No ( x )
Photos Taken: Yes ( ) No ( x )

**DESCRIPTION OF DAILY WORK PERFORMED:**

Charles Yarrington arrived on-site at 0705 to begin gauging wells prior to sampling. Chris Schroer arrived on-site at 0755 to assist Charles in finding a buried well, TPMW-4. Successfully found all wells and gauged all but MW-11 (covered by truck). Collected samples from MMW-03 and TPMW-4 for 8260B.

**PROJECT TOTALS:**

**SAMPLING (Soil/Water/Air)**

| Contractor Sample ID: | Date / Time: | Description: |
|---|---|---|
| 755015-MMW-03 | 2.4.14 0905 | 8260B VOC |
| 755015-TPMW-4 | 2.4.14 0950 | 8260B VOC |

**CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:**

*(Name of contractor) personnel:* Charles Yarrington, Chris Schroer (EA Engineering)

*(Name of Subcontractor) personnel:* None

*(Name of contractor) equipment:*

***(*Indicates active equipment)***

*Other Subcontractors:* None

**VISITORS TO SITE:**

None.

**PROJECT SCHEDULE ISSUES:**

None

**PROJECT BUDGET ISSUES:**

None

**ITEMS OF CONCERN:**

None.

**COMMENTS:**

None.

**ATTACHMENT(S) TO THIS REPORT:**

None

**SITE REPRESENTATIVE:**

Name: Charles Yarrington
cc:

**DAILY OBSERVATION REPORT** **Day: Tuesday** **Date: 8 July 2014**

NYSDEC

Temperature: (F) 75 F (am) 84 F (pm)

Wind Direction: na (am) na (pm)

**Project Name: Clinton West Plaza**

Weather: (am) Sunny

(pm) na

**NYSDEC Site # 755015**

**Contract # D007624-25**

**Ithaca, New York**

Arrive at site 07:20 (am)

Leave site: 01:39 (pm)

**HEALTH & SAFETY:**

Are there any changes to the Health & Safety Plan? Yes ( ) No ( x )
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

| | | | |
|---|---|---|---|
| Soil | Yes ( ) | n/a ( x ) | * No ( ) |
| Waters | Yes ( ) | n/a ( x ) | * No ( ) |
| Air | Yes ( ) | n/a ( x ) | * No ( ) |

- *If No, provide comments*

**OTHER ITEMS:**

Site Sketch Attached: Yes ( ) No ( x )
Photos Taken: Yes ( x ) No ( )

**DESCRIPTION OF DAILY WORK PERFORMED:**

Charles Yarrington and Emily Cummings arrived on-site at 0720 to begin gauging wells prior to sampling. Driller from GeoLogic, David Lyons, arrived onsite at 0800 to meet with E.Cummings and C. Yarrington, and decommission wells MW-11 and MW-10. Both wells were grouted and covered. Well decommissioning completed at 0900. Bob Casey arrived onsite at 0830. Purged wells that historically go dry: TPM-01, TPM-02, TPM-03, and TMPW-06. Collected samples from MMW-01, MW-14, MMW-02, MMW-03, TPMW-4, andTPMW-3 for 8260B. MMW-04 went dry just before samples could be collected.

**PROJECT TOTALS:**

**SAMPLING (Soil/Water/Air)**

| Contractor Sample ID: | Date / Time: | Description: |
|---|---|---|
| 755015-MMW-01 | 7.8.14 0842 | 8260B VOC |
| 755015-MW-14 | 7.8.14 1015 | 8260B VOC |
| 755015-MMW-02 | 7.8.14 1100 | 8260B VOC |
| 755015-MMW-03 | 7.8.14 1120 | 8260B VOC |
| 755015-TPMW-04 | 7.8.14 1255 | 8260B VOC |
| 755015-TPMW-03 | 7.8.14 1245 | 8260B VOC |

**CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:**

*(Name of contractor) personnel:* Charles Yarrington, Emily Cummings, Bob Casey (EA Engineering)

*(Name of Subcontractor) personnel:* David Lyons (GeoLogic)

*(Name of contractor) equipment:*

***(*Indicates active equipment)***

*Other Subcontractors:* None

**VISITORS TO SITE:**
None.

**PROJECT SCHEDULE ISSUES:**

None

**PROJECT BUDGET ISSUES:**

None

**ITEMS OF CONCERN:**

None.

**COMMENTS:**

None.

**ATTACHMENT(S) TO THIS REPORT:**

Photos of decommissioned wells.

**SITE REPRESENTATIVE:**

Name: Emily Cummings
cc:

# Photo Log

# (7/8/14)

By: Emily Cummings


Decommissioned well MW-10
covered with top soil and seeded


Decommissioned well MW-10


Decommissioned well MW-11
covered with asphalt patch


Decommissioned well MW-11

**DAILY OBSERVATION REPORT** **Day: Wednesday** **Date: 9 July 2014**

NYSDEC

Temperature: (F) 75 F (am) na (pm)

Wind Direction: na (am) na (pm)

Weather: (am) Sunny

(pm) na

**Project Name: Clinton West Plaza**

**NYSDEC Site # 755015**

**Contract # D007624-25**

**Ithaca, New York**

Arrive at site 09:35 (am)

Leave site: 10:15 (pm)

**HEALTH & SAFETY:**

Are there any changes to the Health & Safety Plan? Yes ( ) No ( x )
(If yes, list the deviation under items for concern)

| Are monitoring results at acceptable levels? | | | | |
|---|---|---|---|---|
| | Soil | Yes ( ) | n/a ( x ) | * No ( ) |
| | Waters | Yes ( ) | n/a ( x ) | * No ( ) |
| | Air | Yes ( ) | n/a ( x ) | * No ( ) |

- *If No, provide comments*

**OTHER ITEMS:**

Site Sketch Attached: Yes ( ) No ( x )
Photos Taken: Yes ( ) No ( x )

**DESCRIPTION OF DAILY WORK PERFORMED:**

Charles Yarrington and Emily Cummings arrived on-site at 0935 to sample remaining wells. Sampled TPM-01, TPM-02, TPM-03, TPMW-6, and MMW-04

**PROJECT TOTALS:**

**SAMPLING (Soil/Water/Air)**

| Contractor Sample ID: | Date / Time: | Description: |
|---|---|---|
| 755015-TPM-01 | 7.9.14 0937 | 8260B VOC |
| 755015-TPM-02 | 7.9.14 0943 | 8260B VOC |
| 755015-TPM-03 | 7.9.14 0948 | 8260B VOC |
| 755015-TPMW-6 | 7.9.14 0957 | 8260B VOC |
| 755015-MMW-04 | 7.9.14 1006 | 8260B VOC |

**CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:**

*(Name of contractor) personnel:* Charles Yarrington, Emily Cummings (EA Engineering)

*(Name of Subcontractor) personnel:*

*(Name of contractor) equipment:*

***(*Indicates active equipment)***

*Other Subcontractors:* None

**VISITORS TO SITE:**

None.

**PROJECT SCHEDULE ISSUES:**

None

**PROJECT BUDGET ISSUES:**

None

**ITEMS OF CONCERN:**

None.

**COMMENTS:**

None.

**ATTACHMENT(S) TO THIS REPORT:**

**SITE REPRESENTATIVE:**

Name: Emily Cummings
cc:

# Appendix C

# Monitoring Well Purging/Sampling Logs

EA Engineering PC and its Affliate,
EA Science and Technology

# GROUNDWATER SAMPLING
# PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** TPM-01 | **EA Personnel:** E Cummings / H Williams | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** | **Weather:** overcast, little/no wind, 10F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 1.28.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** Down 0.4 ft | **Gauge Time:** 1039 | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** 1.28.14 | **Purge Time:** 1337 |
| **Purge Method:** Low Flow | **Field Technician:** E Cummings / H Williams |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 24.52 | **D. Well Volume (ft):** 0.041 | **Depth/Height of Top of PVC:** Down 0.4 ft |
| **B. Depth to Water (ft):** 3.02 initial: | **E. Well Volume (gal) C*D):** 0.88 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 21.5 | **F. Three Well Volumes (gal) (E3):** 2.64 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^{o}C$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1340 | 5.69 | | 0.25 | 6.34 | -31 | 7.32 | 1.25 | 4.22 | 375 |
| 1343 | 9.20 | | 0.25 | 6.11 | -49 | 8.17 | 1.21 | 1.04 | 519 |
| 1346 | 10.81 | | 0.25 | 6.10 | -59 | 8.10 | 1.15 | 0 | 423 |
| 1349 | 12.38 | | 0.25 | 6.17 | -67 | 8.13 | 1.12 | 0 | 354 |
| 1352 | 13.92 | | 0.25 | 6.16 | -70 | 8.22 | 1.10 | 0 | 463 |
| 1355 | 15.67 | | 0.25 | 6.18 | -73 | 8.91 | 1.09 | 0 | 477 |
| 1400 | 18.29 | | 0.25 | 6.25 | -61 | 8.64 | 1.06 | 0 | 521 |
| 1403 | 20.30 | | 0.25 | 6.17 | -66 | 9.12 | 1.06 | 0 | 550 |
| 1406 | 21.28 | | 0.25 | 6.14 | -71 | 9.25 | 1.06 | 0 | 630 |
| 1409 | 21.70 | | 0.25 | 6.12 | -80 | 9.29 | 1.07 | 0 | 498 |
| 1412 | | | 0.25 | 6.10 | -87 | 9.26 | 1.13 | 0 | 628 |
| | | | | | | | | | |
| | | | | | | | | | |

**Total Quantity of Water Removed (gal):**
**Samplers:** EC/HW
**Sampling Date:** 1.29.14

**Sampling Time:** 1435
**Split Sample With:** none
**Sample Type:** grab w/bailer

**COMMENTS AND OBSERVATIONS:** Re-gauged well on 1.29.14 @ 1435 DTW 3.92 bgs

EA Engineering PC and its Affliate,
EA Science and Technology

# GROUNDWATER SAMPLING
# PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** TPM-02 | **EA Personnel:** E Cummings / H Williams | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** | **Weather:** sunny, little/no wind, 10F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** E Cummings / H Williams | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** Up 2.5 ft | **Gauge Time:** | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** 1.28.14 | **Purge Time:** 1249 |
| **Purge Method:** Low Flow | **Field Technician:** E Cummings / H Williams |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 28.25 | **D. Well Volume (ft):** 0.041 | **Depth/Height of Top of PVC:** Up 2.5 ft |
| **B. Depth to Water (ft):** 8.32 initial | **E. Well Volume (gal) C*D):** 0.82 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 19.93 | **F. Three Well Volumes (gal) (E3):** 2.45 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1252 | 12.64 | | 0.3 | 6.52 | -50 | 13.08 | 1.12 | 0.02 | 495 |
| 1255 | 16.82 | | 0.3 | 6.33 | -40 | 12.74 | 1.14 | 0 | 356 |
| 1301 | 22.03 | | 0.3 | 6.12 | 1 | 9.01 | 1.23 | 1.07 | 216 |
| 1304 | 24.08 | | 0.3 | 5.97 | 9 | 8.56 | 1.25 | 0 | 249 |
| 1307 | 26.70 | | 0.3 | 5.87 | 13 | 8.18 | 1.25 | 0 | 282 |
| 1310 | 27.90 | | 0.3 | 5.83 | 14 | 7.99 | 1.25 | 0 | 290 |
| 1312 | 28.25 | | 0.3 | 5.79 | 13 | 7.49 | 1.26 | 0 | 346 |
| **Well purged dry** | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total Quantity of Water Removed (gal):**
**Samplers:** EC/HW
**Sampling Date:** 1.29.14
**Sampling Time:** 1510
**Split Sample With:** none
**Sample Type:** grab w/ bailer

**COMMENTS AND OBSERVATIONS:** Re-gauged well on 1.29.14 @ 1505 DTW 9.05 bgs

EA Engineering PC and its Affliate,
EA Science and Technology

# GROUNDWATER SAMPLING PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:**<br>TPM-03 | **EA Personnel:**<br>E Cummings / H Williams | **Client:**<br>NYSDEC |
| **Location:**<br>Clinton West Plaza | **Well Condition:**<br>poor - missing well cover | **Weather:**<br>sunny, little/no wind, 10F |
| **Sounding Method:**<br>Heron Skinny Dipper WLI | **Gauge Date:**<br>E Cummings / H Williams | **Measurement Ref:**<br>TOC |
| **Stick Up/Down (ft):**<br>down 0.5 ft | **Gauge Time:**<br>952 | **Well Diameter (in):**<br>1" |

| | |
|---|---|
| **Purge Date:**<br>1.28.14 | **Purge Time:**<br>1217 |
| **Purge Method:**<br>Low Flow | **Field Technician:**<br>E Cummings / H Williams |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):**<br>21.52 | **D. Well Volume (ft):**<br>0.041 | **Depth/Height of Top of PVC:**<br>Down 0.5 ft |
| **B. Depth to Water (ft):**<br>4.06 initial: | **E. Well Volume (gal) C*D):**<br>0.72 | **Pump Type:**<br>Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):**<br>17.46 | **F. Three Well Volumes (gal) (E3):**<br>2.15 | **Pump Designation:**<br>Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1225 | 12.7 | | 0.3 | 7.88 | -141 | 12.41 | 1.03 | 2.09 | 753 |
| 1228 | 14.3 | | 0.3 | 7.14 | -111 | 13.39 | 1.07 | 0.72 | 573 |
| 1231 | | | 0.3 | 6.69 | -85 | 12.67 | 1.09 | 0 | 509 |
| 1234 | | | 0.3 | 6.42 | -75 | 12.39 | 1.09 | 0 | 382 |
| 1237 | 21.4 | | 0.3 | 6.28 | -71 | 12.24 | 1.09 | 0 | 331 |
| 1238 | 21.5 | | | 6.19 | -70 | 11.88 | 1.11 | 0 | 390 |
| **Well purged dry** | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total Quantity of Water Removed (gal):** 

**Samplers:** EC/HW

**Sampling Date:** 1.29.14

**Sampling Time:** 1500

**Split Sample With:** none

**Sample Type:** grab w/ bailer

**COMMENTS AND OBSERVATIONS:** Re-gauged well on 1.29.14 @ 1443 DTW 5.36 bgs

EA Engineering PC and its Affliate,
EA Science and Technology

# GROUNDWATER SAMPLING
# PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** MMW-01 | **EA Personnel:** E Cummings / H Williams | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** sunny, little/no wind 1 F |
| **Sounding Method:** Heron Skinny Dipper | **Gauge Date:** 1.28.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** Down 0.4' | **Gauge Time:** 1018 | **Well Diameter (in):** 1.5" |

| | |
|---|---|
| **Purge Date:** 1.29.14 | **Purge Time:** 1338 |
| **Purge Method:** Low Flow | **Field Technician:** E Cummings / H Williams |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 19.77 | **D. Well Volume (ft):** 0.092 | **Depth/Height of Top of PVC:** Down 0.4' |
| **B. Depth to Water (ft):** 3.89 initial: | **E. Well Volume (gal) C*D):** 1.46 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 15.88 | **F. Three Well Volumes (gal) (E3):** 4.38 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1338 | 3.86 | | 0.3 | 5.96 | 4 | 7.32 | 1.000 | 19.82 | 213 |
| 1341 | 3.82 | | 0.3 | 6.04 | -2 | 8.10 | 0.900 | 3.50 | 108 |
| 1344 | 3.82 | | 0.3 | 3.2 | -18 | 8.01 | 0.824 | 0 | 47.4 |
| 1347 | 3.82 | | 0.3 | 6.23 | -27 | 8.12 | 0.782 | 0 | 29.9 |
| 1350 | 3.84 | | 0.3 | 6.25 | -34 | 8.16 | 0.756 | 0 | 34.8 |
| 1353 | 3.84 | | 0.3 | 6.28 | -38 | 8.11 | 0.746 | 0 | 17.0 |
| 1356 | 3.89 | | 0.3 | 6.28 | -42 | 8.05 | 0.739 | 0 | 15.6 |
| 1359 | 3.89 | | 0.3 | 6.28 | -44 | 8.07 | 0.735 | 0 | 14.1 |
| 1402 | 3.89 | | 0.3 | 6.27 | -46 | 7.97 | 0.732 | 0 | 13.1 |
| 1405 | 3.89 | | 0.3 | 6.26 | -47 | 7.80 | 0.729 | 0 | 12.0 |
| 1408 | 3.89 | | 0.3 | 6.24 | -48 | 7.52 | 0.726 | 0 | 11.3 |
| 1411 | 3.90 | | 0.3 | 6.23 | -48 | 7.49 | 0.726 | 0 | 10.7 |
| 1414 | | | 0.3 | 6.22 | -49 | 7.39 | 0.727 | 0 | 9.7 |
| | | | | | | | | | |

**Total Quantity of Water Removed (gal):**
**Samplers:** EC/HW
**Sampling Date:** 1.29.14
**Sampling Time:** 1420
**Split Sample With:** none
**Sample Type:** grab w/bailer

**COMMENTS AND OBSERVATIONS:**

EA Engineering PC and its Affliate,
EA Science and Technology

# GROUNDWATER SAMPLING
# PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** MMW-02 | **EA Personnel:** E Cummings / H Williams | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** sunny, little/no wind 3 F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 1.28.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** down 0.3 ft | **Gauge Time:** 1100 | **Well Diameter (in):** 1.5" |

| | |
|---|---|
| **Purge Date:** 1.29.14 | **Purge Time:** 1004 |
| **Purge Method:** Low Flow | **Field Technician:** E Cummings / H Williams |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 19.34 | **D. Well Volume (ft):** 0.092 | **Depth/Height of Top of PVC:** Down 0.3' |
| **B. Depth to Water (ft):** 4.11 initial: | **E. Well Volume (gal) C*D):** 1.40 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 15.23 | **F. Three Well Volumes (gal) (E3):** 4.20 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1009 | 5.47 | | 0.3 | 6.23 | -36 | 5.63 | 0.878 | 0 | 48.7 |
| 1012 | 5.71 | | 0.3 | 6.22 | -42 | 5.48 | 0.897 | 0 | 43.6 |
| 1015 | 5.98 | | 0.3 | 6.20 | -46 | 5.83 | 0.896 | 0 | 39.6 |
| 1018 | 6.13 | | 0.3 | 6.17 | -50 | 5.89 | 0.902 | 0 | 43.1 |
| 1022 | 6.31 | | 0.3 | 6.14 | -56 | 6.07 | 0.927 | 0 | 35.6 |
| 1025 | 6.33 | | 0.3 | 6.12 | -60 | 6.07 | 0.978 | 0 | 37.8 |
| 1028 | | | 0.3 | 6.12 | -63 | 6.08 | 0.981 | 0 | 37.0 |
| 1032 | 6.49 | | 0.3 | 6.11 | -67 | 6.48 | 0.975 | 0 | 42.7 |
| 1035 | 6.53 | | 0.3 | 6.10 | -70 | 6.29 | 1.00 | 0 | 34.1 |
| 1039 | 6.57 | | 0.3 | 6.09 | -74 | 6.21 | 1.01 | 0 | 37.1 |
| 1043 | 6.64 | | 0.3 | 6.09 | -76 | 6.25 | 1.04 | 0 | 33.8 |
| 1046 | 6.71 | | 0.3 | 6.06 | -78 | 6.37 | 1.04 | 0 | 32.9 |
| 1049 | 6.80 | | 0.3 | 6.08 | -79 | 6.23 | 1.06 | 0 | 32.5 |
| 4052 | 6.88 | | 0.3 | 6.08 | -81 | 6.72 | 1.05 | 0 | 30.7 |
| 1055 | 6.88 | | 0.3 | 6.08 | -83 | 6.59 | 1.07 | 0 | 32.6 |
| 1058 | 6.88 | | 0.3 | 6.08 | -84 | 6.24 | 1.08 | 0 | 31.9 |
| 1101 | 6.89 | | 0.3 | 6.08 | -85 | 6.69 | 1.08 | 0 | 30.5 |
| 1104 | 6.90 | | 0.3 | 6.08 | -86 | 6.81 | 1.09 | 0 | 31.2 |
| | | | | | | | | | |
| | | | | | | | | | |

| | | | |
|---|---|---|---|
| **Total Quantity of Water Removed (gal):** | | **Sampling Time:** | 1110 |
| **Samplers:** | EC/HW | **Split Sample With:** | none |
| **Sampling Date:** | 1.29.14 | **Sample Type:** | Grab w/bailer |

**COMMENTS AND OBSERVATIONS:** Hach Readin 1.98

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EA Science and Technology

# GROUNDWATER SAMPLING
# PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** MMW-04 | **EA Personnel:** E Cummings / H Williams | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** overcast, little/no wind, 10F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 1.28.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** down 0.4 ft | **Gauge Time:** | **Well Diameter (in):** 1.5" |

| | |
|---|---|
| **Purge Date:** 1.28.14 | **Purge Time:** 15.34 |
| **Purge Method:** Low Flow | **Field Technician:** E Cummings / H Williams |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 29.35 | **D. Well Volume (ft):** 0.092 | **Depth/Height of Top of PVC:** Down 0.4' |
| **B. Depth to Water (ft):** 5.38 initial: | **E. Well Volume (gal) C*D):** 2.21 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 23.97 | **F. Three Well Volumes (gal) (E3):** 6.62 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1538 | 7.8 | | 0.3 | 6.13 | -24 | 9.87 | 1.28 | 1.33 | 24.5 |
| 1541 | 9.77 | | 0.3 | 6.09 | -35 | 10.20 | 1.27 | 0 | 21.4 |
| 1544 | 9.46 | | 0.3 | 6.10 | -41 | 9.78 | 1.27 | 0 | 19.3 |
| 1547 | 10.49 | | 0.3 | 6.10 | -45 | 8.78 | 1.27 | 0 | 18.9 |
| 1550 | 11.58 | | 0.3 | 6.10 | -47 | 8.44 | 1.27 | 0 | 20.3 |
| 1553 | 12.30 | | 0.3 | 6.10 | -49 | 8.66 | 1.27 | 0 | 25.9 |
| 1558 | | | 0.3 | 6.20 | -59 | 8.71 | 1.27 | 0 | 39.1 |
| 1601 | 15.02 | | 0.3 | 6.12 | -50 | 8.90 | 1.28 | 0 | 48.4 |
| 1606 | 16.27 | | 0.3 | 6.10 | -49 | 8.36 | 1.28 | 0 | 58.4 |
| 1609 | 16.78 | | 0.3 | 6.10 | -50 | 8.00 | 1.28 | 0 | 66.0 |
| 1612 | 17.35 | | 0.3 | 6.10 | -50 | 7.83 | 1.28 | 0 | 66.3 |
| 1615 | 18.00 | | 0.3 | 6.13 | -50 | 7.72 | 1.28 | 0 | 94.8 |
| 1618 | 18.48 | | 0.3 | 6.10 | -50 | 7.73 | 1.28 | 0 | |
| 1621 | 18.89 | | 0.3 | 6.10 | -50 | 7.40 | 1.28 | 0 | |
| 1624 | 19.34 | | 0.3 | 6.09 | -50 | 7.15 | 1.28 | 0 | 69.7 |
| 1629 | 20.11 | | 0.3 | 6.09 | -51 | 7.45 | 1.27 | 0 | 69.0 |
| | | | | | | | | | |

| | | | |
|---|---|---|---|
| **Total Quantity of Water Removed (gal):** | | **Sampling Time:** | 1635 |
| **Samplers:** | EC/HW | **Split Sample With:** | MS/MSD |
| **Sampling Date:** | 1.29.14 | **Sample Type:** | Grab w/ bailer |

**COMMENTS AND OBSERVATIONS:** Hach reading for Fe = 1.26 mg/L

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# GROUNDWATER SAMPLING PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** TPMW-4 | **EA Personnel:** | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** | **Weather:** |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** Down 0.3' | **Gauge Time:** | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** | **Purge Time:** |
| **Purge Method:** Low Flow | **Field Technician:** |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** | **D. Well Volume (ft):** 0.041 | **Depth/Height of Top of PVC:** Down 0.3' |
| **B. Depth to Water (ft):** initial: | **E. Well Volume (gal) C*D):** 0.00 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 0.00 | **F. Three Well Volumes (gal) (E3):** 0.00 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
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**Total Quantity of Water Removed (gal):** ______
**Samplers:** ______
**Sampling Date:** ______

**Sampling Time:** ______
**Split Sample With:** ______
**Sample Type:** ______

**COMMENTS AND OBSERVATIONS:** ______

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# GROUNDWATER SAMPLING
# PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** TPMW-6 | **EA Personnel:** E Cummings / H Williams | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** overcast, little/no wind, 10F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 1.28.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** Down 0.4' | **Gauge Time:** 809 | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** 1.28.14 | **Purge Time:** 1430 |
| **Purge Method:** Low Flow | **Field Technician:** E Cummings / H Williams |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 15.65 | **D. Well Volume (ft):** 0.041 | **Depth/Height of Top of PVC:** Down 0.4' |
| **B. Depth to Water (ft):** 4.38 initial: | **E. Well Volume (gal) C*D):** 0.46 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 11.27 | **F. Three Well Volumes (gal) (E3):** 1.39 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1431 | 7.7 | | 0.3 | 6.61 | -40 | 8.71 | 0.856 | 5.09 | >1000 |
| 1434 | 8.65 | | 0.3 | 6.53 | -38 | 9.05 | 0.86 | 6.01 | >1000 |
| 1437 | 9.24 | | 0.3 | 6.48 | -50 | 9.30 | 0.868 | 8.43 | >1000 |
| 1440 | 9.9 | | 0.3 | 6.45 | -58 | 9.53 | 0.891 | 0.45 | >1000 |
| 1443 | | | 0.3 | 6.42 | -67 | 9.51 | 0.901 | 0.00 | 800 |
| 1446 | 11.31 | | 0.3 | 6.41 | -74 | 9.68 | 0.905 | 0.00 | 750 |
| 1449 | 12.36 | | 0.3 | 6.38 | -84 | 9.80 | 0.910 | 0.00 | 460 |
| 1450 | 12.77 | | 0.3 | 6.38 | -88 | 9.77 | 0.908 | 0.00 | 421 |
| 1455 | 13.4 | | 0.3 | 6.27 | -88 | 9.66 | 0.910 | 1.05 | 198 |
| 1458 | 13.81 | | 0.3 | 6.36 | -87 | 9.72 | 0.915 | 1.35 | 131 |
| 1501 | 14.25 | | 0.3 | 6.35 | -86 | 9.64 | 0.919 | 1.78 | 192 |
| 1504 | 15.21 | | 0.3 | 6.35 | -85 | 9.90 | 0.923 | 2.42 | 66.3 |
| 1507 | Dry | | 0.3 | 6.35 | -84 | 9.82 | 0.930 | 3.46 | 59.8 |
| **Purged well dry** | | | | | | | | | |

| | | | |
|---|---|---|---|
| **Total Quantity of Water Removed (gal):** | | **Sampling Time:** | 1520 |
| **Samplers:** | EC/HW | **Split Sample With:** | none |
| **Sampling Date:** | 1.29.14 | **Sample Type:** | Grab w/bailer |

**COMMENTS AND OBSERVATIONS:** Re-gauged well on 1.29.14 @ 1518 DTW 4.33 bgs

EA Engineering PC and its Affliate,
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# GROUNDWATER SAMPLING PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** MW-14 | **EA Personnel:** E Cummings / H Williams | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** sun, 0 F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 1.28.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** down 0.5 ft | **Gauge Time:** 1000 | **Well Diameter (in):** 0.75" |

| | |
|---|---|
| **Purge Date:** 1.29.14 | **Purge Time:** 830 |
| **Purge Method:** Low Flow | **Field Technician:** E Cummings / H Williams |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 15.44 | **D. Well Volume (ft):** 0.023 | **Depth/Height of Top of PVC:** Down 0.3' |
| **B. Depth to Water (ft):** 4.62 intial: | **E. Well Volume (gal) C*D):** 0.25 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 10.82 | **F. Three Well Volumes (gal) (E3):** 0.75 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. (°C) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 837 | 5.10 | | 0.25 | 7.32 | 115 | 4.46 | 0.656 | 3.23 | 800 |
| 840 | 5.10 | | 0.25 | 7.26 | 87 | 4.32 | 0.662 | 1.34 | 619 |
| 843 | 5.10 | | 0.3 | 7.17 | 54 | 4.38 | 0.674 | 0.23 | 408 |
| 846 | 5.10 | | 0.3 | 7.11 | 43 | 4.07 | 0.678 | 0.00 | 325 |
| 849 | 5.14 | | 0.3 | 7.05 | 35 | 3.76 | 0.684 | 0.00 | 248 |
| 852 | 5.14 | | 0.3 | 7.02 | 34 | 3.60 | 0.688 | 0.00 | 219 |
| 855 | 5.10 | | 0.3 | 6.98 | 36 | 3.17 | 0.697 | 0.00 | 175 |
| 858 | 5.10 | | 0.3 | 6.91 | 39 | 2.73 | 0.706 | 0.00 | 144 |
| 901 | 5.10 | | 0.3 | 6.86 | 41 | 2.27 | 0.719 | 0.00 | 126 |
| 904 | 5.10 | | 0.3 | 6.82 | 42 | 2.19 | 0.725 | 0.00 | 102 |
| 907 | 5.10 | | 0.3 | 6.72 | 44 | 4.05 | 0.687 | 0.00 | 19.0 |
| 910 | 5.10 | | 0.3 | 6.69 | 40 | 4.83 | 0.671 | 0.00 | 13.0 |
| 913 | 5.10 | | 0.3 | 6.69 | 38 | 4.52 | 0.672 | 0.00 | 11.1 |
| 916 | 5.10 | | 0.3 | 6.68 | 38 | 4.51 | 0.671 | 0.00 | 9.5 |
| 919 | 5.10 | | 0.3 | 6.66 | 38 | 4.71 | 0.67 | 0.00 | 7.9 |
| | | | | | | | | | |

| | | | |
|---|---|---|---|
| **Total Quantity of Water Removed (gal):** | | **Sampling Time:** | 925 |
| **Samplers:** | EC/HW | **Split Sample With:** | none |
| **Sampling Date:** | 1.29.14 | **Sample Type:** | grab w/bailer |

**COMMENTS AND OBSERVATIONS:** Hach Reading for Fe = 0.92

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# GROUNDWATER SAMPLING
# PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** TPM-01 | **EA Personnel:** CY/EC | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** sunny, 80F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 7.8.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** Down 0.4 ft | **Gauge Time:** 745 | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** 7.8.14 | **Purge Time:** 810 |
| **Purge Method:** Low Flow | **Field Technician:** Charles Yarrington / Emily Cummings |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 24.52 | **D. Well Volume (ft):** 0.041 | **Depth/Height of Top of PVC:** Down 0.4 ft |
| **B. Depth to Water (ft):** 3.26 initial: | **E. Well Volume (gal) C*D):** 0.87 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 21.26 | **F. Three Well Volumes (gal) (E3):** 2.61 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 812 | 6.1 | | 0.3 | 7.05 | -161 | 16.51 | 1.21 | 1.61 | 60.8 |
| 817 | 13.2 | 1.5 | 0.3 | 6.37 | -135 | 15.31 | 1.13 | 0 | 49.8 |
| 820 | 14.91 | | 0.3 | 6.29 | -131 | 14.95 | 1.07 | 0 | 47.2 |
| 823 | 14.92 | | 0.3 | 6.14 | -126 | 15.94 | 1.06 | 0 | 44.9 |
| 826 | 15.2 | | 0.3 | 6.26 | -134 | 16.31 | 1.14 | 0 | 45.3 |
| 835 | | | 0.3 | 6.52 | -89 | 17.73 | 1.26 | 0 | >1000 |
| 837 | | | 0.3 | 6.23 | -111 | 14.58 | 1.29 | 0 | >1000 |
| 840 | 21.4 | | 0.3 | 6.22 | -112 | 14.61 | 1.29 | 0 | >1000 |
| 842 | | | 0.3 | 6.25 | -117 | 14.87 | 1.28 | 0 | 690 |
| **Purged well dry at 844** | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total Quantity of Water Removed (gal):**
**Samplers:** EC/CY
**Sampling Date:** 7.9.14

**Sampling Time:** 937
**Split Sample With:** none
**Sample Type:** grab w/ bailer

**COMMENTS AND OBSERVATIONS:** pump kept pulling air - tubing slightly short so had to extend, restarted @ 833, well went dry at 844.

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# GROUNDWATER SAMPLING PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:**<br>TPM-02 | **EA Personnel:**<br>CY/EC | **Client:**<br>NYSDEC |
| **Location:**<br>Clinton West Plaza | **Well Condition:**<br>good | **Weather:**<br>sunny, 80F |
| **Sounding Method:**<br>Heron Skinny Dipper WLI | **Gauge Date:**<br>7.8.14 | **Measurement Ref:**<br>TOC |
| **Stick Up/Down (ft):**<br>Up 2.5 ft | **Gauge Time:**<br>729 | **Well Diameter (in):**<br>1" |

| | |
|---|---|
| **Purge Date:**<br>7.8.14 | **Purge Time:**<br>900 |
| **Purge Method:**<br>Low Flow | **Field Technician:**<br>Charles Yarrington / Emily Cummings |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):**<br>28.24 | **D. Well Volume (ft):**<br>0.041 | **Depth/Height of Top of PVC:**<br>Up 2.5 ft |
| **B. Depth to Water (ft):**<br>6.92 initial | **E. Well Volume (gal) C*D):**<br>0.87 | **Pump Type:**<br>Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):**<br>21.32 | **F. Three Well Volumes (gal) (E3):**<br>2.62 | **Pump Designation:**<br>Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^{o}C$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 902 | 8.7 | | 0.3 | 6.60 | -68 | 18.03 | 1.45 | 0 | 267 |
| 905 | 14.07 | | 0.3 | 6.26 | -99 | 17.00 | 1.47 | 0 | 123 |
| 908 | 16.31 | | 0.3 | 6.27 | -103 | 16.94 | 1.46 | 0 | 107 |
| 911 | 20.05 | | 0.3 | 6.27 | -106 | 16.79 | 1.45 | 0 | 144 |
| 914 | 22.99 | | 0.3 | 6.29 | -112 | 16.95 | 1.44 | 0 | 220 |
| 917 | 25.72 | | 0.3 | 6.28 | -115 | 17.44 | 1.44 | 0 | 258 |
| **Purged well dry at 920** | | | | | | | | | |
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**Total Quantity of Water Removed (gal):** 
**Samplers:** EC/CY
**Sampling Date:** 7.9.14
**Sampling Time:** 943
**Split Sample With:** none
**Sample Type:** grab w/ bailer

**COMMENTS AND OBSERVATIONS:** Hach Fe = 1.98

EA Engineering PC and its Affliate,
EA Science and Technology

# GROUNDWATER SAMPLING
# PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** TPM-03 | **EA Personnel:** CY/EC | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** sunny, 80F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 7.8.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** down 0.5 ft | **Gauge Time:** 734 | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** 7.8.14 | **Purge Time:** 902 |
| **Purge Method:** Low Flow | **Field Technician:** Charles Yarrington / Emily Cummings |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 21.32 | **D. Well Volume (ft):** 0.041 | **Depth/Height of Top of PVC:** Down 0.5 ft |
| **B. Depth to Water (ft):** 9.51 initial: | **E. Well Volume (gal) C*D):** 0.48 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 11.81 | **F. Three Well Volumes (gal) (E3):** 1.45 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 902 | 11.33 | | | 6.23 | -129 | 18.3 | 1.41 | 6.64 | 297 |
| 905 | 14.35 | | | 6.17 | -134 | 17.92 | 1.40 | 5.7 | 261 |
| 908 | 18.12 | | | 6.17 | -139 | 17.57 | 1.40 | 5.27 | 247 |
| 911 | 20.50 | | | 6.17 | -142 | 17.5 | 1.41 | 5 | 243 |
| **Purged well dry @ 913** | | | | | | | | | |
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**Total Quantity of Water Removed (gal):**
**Samplers:** EC/CY
**Sampling Date:** 7.9.14
**Sampling Time:** 948
**Split Sample With:** none
**Sample Type:** grab w/ bailer

**COMMENTS AND OBSERVATIONS:**

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# GROUNDWATER SAMPLING PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** MMW-01 | **EA Personnel:** CY/EC | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** sunny, 80F |
| **Sounding Method:** Heron Skinny Dipper | **Gauge Date:** 7.8.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** Down 0.4' | **Gauge Time:** 815 | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** 7.8.14 | **Purge Time:** 825 |
| **Purge Method:** Low Flow | **Field Technician:** Charles Yarrington / Emily Cummings |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 19.3 | **D. Well Volume (ft):** 0.092 | **Depth/Height of Top of PVC:** Down 0.4' |
| **B. Depth to Water (ft):** 3.4 initial: | **E. Well Volume (gal) C*D):** 1.46 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 15.9 | **F. Three Well Volumes (gal) (E3):** 4.39 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 825 | 3.67 | | 0.3 | 6.99 | -98 | 17.63 | 0.927 | 3.02 | 15.2 |
| 828 | 3.65 | 0.9 | 0.3 | 6.43 | -101 | 15.71 | 0.948 | 2.53 | 3.3 |
| 831 | 3.67 | 1.8 | 0.3 | 6.28 | -103 | 15.79 | 0.973 | 1.89 | 2 |
| 834 | 3.67 | 2.2 | 0.3 | 6.19 | -105 | 15.20 | 0.999 | 1.90 | 0.2 |
| 837 | 3.71 | 3.6 | 0.3 | 6.15 | -108 | 15.01 | 1.03 | 1.97 | 3.4 |
| 840 | 3.73 | 4.5 | 0.3 | 6.14 | -107 | 15.00 | 1.04 | 1.95 | 2.9 |
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**Total Quantity of Water Removed (gal):** 
**Samplers:** EC/CY
**Sampling Date:** 7.9.14

**Sampling Time:** 842
**Split Sample With:** none
**Sample Type:** grab w/bailer

**COMMENTS AND OBSERVATIONS:** Fe = 1.98

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## GROUNDWATER SAMPLING PURGE FORM

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|---|---|---|
| **Well I.D.:** MMW-02 | **EA Personnel:** CY/EC | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** partly cloudy, 80F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 7.8.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** down 0.3 ft | **Gauge Time:** 731 | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** 7.8.14 | **Purge Time:** 1038 |
| **Purge Method:** Low Flow | **Field Technician:** Charles Yarrington / Emily Cummings |

### Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 19.41 | **D. Well Volume (ft):** 0.092 | **Depth/Height of Top of PVC:** Down 0.3' |
| **B. Depth to Water (ft):** 3.9 initial: | **E. Well Volume (gal) C*D):** 1.43 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 15.51 | **F. Three Well Volumes (gal) (E3):** 4.28 | **Pump Designation:** Pine Environmental |

### Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1038 | 4.90 | | 0.3 | 6.50 | -103 | 17.43 | 1.00 | 0.44 | 383 |
| 1041 | 5.40 | 0.9 | 0.3 | 6.35 | -110 | 17.09 | 1.04 | 0 | 222 |
| 1044 | 5.70 | 1.8 | 0.3 | 6.33 | -111 | 17.05 | 1.05 | 0 | 200 |
| 1047 | 6.34 | 2.7 | 0.3 | 6.33 | -117 | 16.36 | 1.05 | 1.43 | 94 |
| 1050 | 6.62 | 3.6 | 0.3 | 6.32 | -120 | 16.77 | 1.06 | 1.48 | 51.4 |
| 1053 | 6.85 | 4.5 | 0.3 | 6.33 | -122 | 16.71 | 1.07 | 1.44 | 35.2 |
| 1056 | 7.11 | 5.4 | 0.3 | 6.34 | -121 | 16.79 | 1.08 | 1.41 | 27.1 |
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**Total Quantity of Water Removed (gal):**
**Samplers:** EC/CY
**Sampling Date:** 7.9.14

**Sampling Time:** 1100
**Split Sample With:** none
**Sample Type:** grab w/bailer

**COMMENTS AND OBSERVATIONS:** Fe = 1.98

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# GROUNDWATER SAMPLING
# PURGE FORM

| **Well I.D.:** MMW-03 | **EA Personnel:** CY/EC | **Client:** NYSDEC |
|---|---|---|
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** partly cloudy, 80F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 7.8.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** down 0.4 ft | **Gauge Time:** 738 | **Well Diameter (in):** 1" |

| **Purge Date:** 7.8.14 | **Purge Time:** 1040 |
|---|---|
| **Purge Method:** Low Flow | **Field Technician:** Charles Yarrington / Emily Cummings |

## Well Volume

| **A. Well Depth (ft):** 19.4 | **D. Well Volume (ft):** 0.092 | **Depth/Height of Top of PVC:** Down 0.4' |
|---|---|---|
| **B. Depth to Water (ft):** 3.84 initial: | **E. Well Volume (gal) C*D):** 1.43 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 15.56 | **F. Three Well Volumes (gal) (E3):** 4.29 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1053 | 3.91 | | 0.3 | 6.30 | | 19.93 | 1.31 | 6.85 | 164 |
| 1056 | 8.61 | | 0.3 | 6.17 | -140 | 19.23 | 1.30 | 6.29 | 37.4 |
| 1089 | | | 0.3 | 6.16 | -147 | 19.24 | 1.25 | 5.20 | 11.2 |
| 1102 | 11.98 | | 0.3 | 6.15 | -153 | 19.15 | 1.24 | 3.57 | 0 |
| 1105 | 13.81 | | 0.3 | 6.08 | -153 | 18.85 | 1.24 | 3.38 | 0 |
| 1108 | 14.89 | | 0.3 | 6.05 | -151 | 19.78 | 1.24 | 3.20 | 0 |
| 1111 | 16.20 | | 0.3 | 6.04 | -147 | 19.77 | 1.23 | 3.17 | 0 |
| 1114 | 17.61 | | 0.3 | 6.02 | -142 | 20.05 | 1.22 | 3.19 | 0 |
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**Total Quantity of Water Removed (gal):** 
**Samplers:** EC/CY
**Sampling Date:** 7.9.14

**Sampling Time:** 1120
**Split Sample With:** none
**Sample Type:** grab w/bailer

**COMMENTS AND OBSERVATIONS:** Fe - 1.98

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# GROUNDWATER SAMPLING
# PURGE FORM

| Well I.D.: | EA Personnel: | Client: |
|---|---|---|
| MMW-04 | CY/EC | NYSDEC |
| **Location:** | **Well Condition:** | **Weather:** |
| Clinton West Plaza | good | overcast, 85F |
| **Sounding Method:** | **Gauge Date:** | **Measurement Ref:** |
| Heron Skinny Dipper WLI | 7.8.14 | TOC |
| **Stick Up/Down (ft):** | **Gauge Time:** | **Well Diameter (in):** |
| down 0.4 ft | | 1" |

| Purge Date: | Purge Time: |
|---|---|
| 7.8.14 | 1309 |
| **Purge Method:** | **Field Technician:** |
| Low Flow | Charles Yarrington / Emily Cummings |

## Well Volume

| A. Well Depth (ft): | D. Well Volume (ft): | Depth/Height of Top of PVC: |
|---|---|---|
| 29.48 | 0.092 | Down 0.4' |
| **B. Depth to Water (ft):** | **E. Well Volume (gal) C*D):** | **Pump Type:** |
| 6.56 initial: | 2.11 | Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** | **F. Three Well Volumes (gal) (E3):** | **Pump Designation:** |
| 22.92 | 6.33 | Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1310 | 6.56 | | 0.3 | 6.17 | -107 | 18.85 | 1..9 | 4.56 | 116 |
| 1313 | 8.21 | | 0.3 | 6.15 | -117 | 18.67 | 1.39 | 1.97 | 62.5 |
| 1316 | 10.09 | | 0.3 | 6.13 | -124 | 18.87 | 1.41 | 1.68 | 58.6 |
| 1319 | 11.08 | | 0.3 | 6.12 | -126 | 19.19 | 1.41 | 1.57 | 30.0 |
| 1322 | 12.51 | | 0.3 | 6.12 | -128 | 19.85 | 1.42 | 1.45 | 34.1 |
| 1325 | 13.22 | | 0.3 | 6.14 | -129 | 20.15 | 1.41 | 1.40 | 41.8 |
| 1328 | 14.42 | | 0.3 | 6.14 | -128 | 20.39 | 1.39 | 1.32 | 37.5 |
| 1331 | | | 0.3 | 6.21 | -129 | 19.88 | 1.42 | 1.59 | 56.6 |
| **Purged well dry at 1331** | | | | | | | | | |
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**Total Quantity of Water Removed (gal):**
**Samplers:** EC/CY
**Sampling Date:** 7.9.14

**Sampling Time:** 1006
**Split Sample With:** none
**Sample Type:** grab w / bailer

**COMMENTS AND OBSERVATIONS:** Iron - 1.98

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# GROUNDWATER SAMPLING
# PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:**<br>TPMW-3 | **EA Personnel:**<br>CY/EC | **Client:**<br>NYSDEC |
| **Location:**<br>Clinton West Plaza | **Well Condition:**<br>loose cover | **Weather:**<br>sunny, 85F |
| **Sounding Method:**<br>Heron Skinny Dipper WLI | **Gauge Date:**<br>7.8.14 | **Measurement Ref:**<br>TOC |
| **Stick Up/Down (ft):**<br>Down 0.3' | **Gauge Time:**<br>723 | **Well Diameter (in):**<br>1" |

| | |
|---|---|
| **Purge Date:**<br>7.8.14 | **Purge Time:**<br>1225 |
| **Purge Method:**<br>Low Flow | **Field Technician:**<br>Charles Yarrington / Emily Cummings |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):**<br>13.40 | **D. Well Volume (ft):**<br>0.041 | **Depth/Height of Top of PVC:**<br>Down 0.3' |
| **B. Depth to Water (ft):**<br>3.4 initial: | **E. Well Volume (gal) C*D):**<br>0.41 | **Pump Type:**<br>Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):**<br>10 | **F. Three Well Volumes (gal) (E3):**<br>1.23 | **Pump Designation:**<br>Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^{o}$C) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1227 | 5.30 | | 0.3 | 6.62 | -153 | 20.07 | 1.58 | 0 | 573 |
| 1230 | 5.00 | 0.9 | 0.3 | 6.53 | -158 | 19.54 | 1.14 | 0 | 385 |
| 1233 | 5.00 | 1.8 | 0.3 | 6.55 | -163 | 19.02 | 0.987 | 0 | 90.9 |
| 1230 | 5.00 | 2.7 | 0.3 | 6.56 | -166 | 18.79 | 0.929 | 0 | 31.0 |
| 1239 | 5.00 | 3.6 | 0.3 | 6.59 | -170 | 18.71 | 0.885 | 0 | 8.0 |
| 1242 | 5.00 | 4.5 | 0.3 | 6.6 | -171 | 18.70 | 0.884 | 0 | 7.7 |
| 1245 | 5.00 | 5.4 | 0.3 | 6.62 | -173 | 18.70 | 0.881 | 0 | 4.2 |
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**Total Quantity of Water Removed (gal):** ______
**Samplers:** EC/CY
**Sampling Date:** 7.9.14

**Sampling Time:** 1245
**Split Sample With:** none
**Sample Type:** grab w / bailer

**COMMENTS AND OBSERVATIONS:** iron - 1.98

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# GROUNDWATER SAMPLING
# PURGE FORM

| Well I.D.: | EA Personnel: | Client: |
|---|---|---|
| TPMW-4 | CY/EC | NYSDEC |
| **Location:** | **Well Condition:** | **Weather:** |
| Clinton West Plaza | good | sunny, 80F |
| **Sounding Method:** | **Gauge Date:** | **Measurement Ref:** |
| Heron Skinny Dipper WLI | 7.8.14 | TOC |
| **Stick Up/Down (ft):** | **Gauge Time:** | **Well Diameter (in):** |
| Down 0.3' | 723 | 1" |

| Purge Date: | Purge Time: |
|---|---|
| 7.8.14 | 1220 |
| **Purge Method:** | **Field Technician:** |
| Low Flow | Charles Yarrington / Emily Cummings |

## Well Volume

| A. Well Depth (ft): | D. Well Volume (ft): | Depth/Height of Top of PVC: |
|---|---|---|
| 14.50 | 0.041 | Down 0.3' |
| **B. Depth to Water (ft):** | **E. Well Volume (gal) C*D):** | **Pump Type:** |
| 3.92 initial: | 0.43 | Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** | **F. Three Well Volumes (gal) (E3):** | **Pump Designation:** |
| 10.58 | 1.30 | Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 1221 | 3.92 | | 0.3 | 6.47 | -126 | 22.75 | 1.49 | 5.86 | >1000 |
| 1224 | 4.35 | | 0.3 | 6.24 | -131 | 19.32 | 1.35 | 4.79 | >1000 |
| 1227 | 4.42 | | 0.3 | 6.29 | -153 | 17.94 | 1.16 | 2.41 | 248 |
| 1230 | 4.42 | | 0.3 | 6.29 | -161 | 17.45 | 1.13 | 2.06 | 136 |
| 1233 | 4.40 | | 0.3 | 6.27 | -168 | 17.22 | 1.12 | 1.93 | 40.2 |
| 1236 | 4.40 | | 0.3 | 6.23 | -170 | 16.93 | 1.11 | 1.85 | 8.7 |
| 1239 | 4.41 | | 0.3 | 6.21 | -171 | 16.88 | 1.11 | 1.71 | 5.7 |
| 1242 | 4.40 | | 0.3 | 6.23 | -171 | 16.80 | 1.11 | 1.69 | 3.3 |
| 1245 | 4.37 | | 0.3 | 6.27 | -175 | 16.91 | 1.10 | 1.68 | 0.6 |
| | | | | | | | | | |
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| | | | | | | | | | |

**Total Quantity of Water Removed (gal):** ______
**Samplers:** EC/CY
**Sampling Date:** 7.9.14

**Sampling Time:** 1255
**Split Sample With:** duplicate
**Sample Type:** grab w/bailer

**COMMENTS AND OBSERVATIONS:** iron - 1.98

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# GROUNDWATER SAMPLING
# PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** TPMW-6 | **EA Personnel:** CY/EC | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** sunny, 80F |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 7.8.14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** Down 0.4' | **Gauge Time:** 750 | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** 7.8.14 | **Purge Time:** 951 |
| **Purge Method:** Low Flow | **Field Technician:** Charles Yarrington / Emily Cummings |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 15.64 | **D. Well Volume (ft):** 0.041 | **Depth/Height of Top of PVC:** Down 0.4' |
| **B. Depth to Water (ft):** 3.95 initial: | **E. Well Volume (gal) C*D):** 0.48 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 11.69 | **F. Three Well Volumes (gal) (E3):** 1.44 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^{o}$C) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 954 | 7.15 | | 0.3 | 6.4 | -132 | 20.35 | 1.12 | 6.69 | 783 |
| 957 | 10.95 | 0.9 | 0.3 | 6.57 | -145 | 19.27 | 1.07 | 6.52 | 694 |
| 1000 | 13.66 | 1.8 | 0.3 | 6.38 | -148 | 19.32 | 0.935 | 10.22 | 798 |
| 1003 | | 2.7 | 0.3 | 6.32 | -130 | 18.05 | 0.995 | 8.27 | 430 |
| **Purged well dry at 1004** | | | | | | | | | |
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**Total Quantity of Water Removed (gal):** 
**Samplers:** EC/CY
**Sampling Date:** 7.9.14
**Sampling Time:** 957
**Split Sample With:** none
**Sample Type:** grab w/ bailer

**COMMENTS AND OBSERVATIONS:** Iron - 1.98

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# GROUNDWATER SAMPLING PURGE FORM

| **Well I.D.:** | **EA Personnel:** | **Client:** |
|---|---|---|
| MW-14 | CY/EC | NYSDEC |
| **Location:** | **Well Condition:** | **Weather:** |
| Clinton West Plaza | good | sunny, 80F |
| **Sounding Method:** | **Gauge Date:** | **Measurement Ref:** |
| Heron Skinny Dipper WLI | 7.8.14 | TOC |
| **Stick Up/Down (ft):** | **Gauge Time:** | **Well Diameter (in):** |
| down 0.5 ft | | 1" |

| **Purge Date:** | **Purge Time:** |
|---|---|
| 7.8.14 | 940 |
| **Purge Method:** | **Field Technician:** |
| Low Flow | Charles Yarrington / Emily Cummings |

## Well Volume

| **A. Well Depth (ft):** | **D. Well Volume (ft):** | **Depth/Height of Top of PVC:** |
|---|---|---|
| 14.57 | 0.023 | Down 0.3' |
| **B. Depth to Water (ft):** | **E. Well Volume (gal) C*D):** | **Pump Type:** |
| 4.66 intial: | 0.23 | Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** | **F. Three Well Volumes (gal) (E3):** | **Pump Designation:** |
| 9.91 | 0.68 | Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 942 | 4.66 | | 0.25 | 6.78 | -13 | 17.95 | 0.674 | 0.22 | 231 |
| 945 | | 0.75 | 0.25 | 6.79 | -12 | 18.07 | 0.650 | 0.4 | 44.9 |
| 948 | | 1.5 | 0.25 | 6.79 | -12 | 18.13 | 0.642 | 0.44 | 9.1 |
| 951 | | 2.25 | 0.25 | 6.79 | -11 | 18.15 | 0.640 | 0.34 | 0.6 |
| 954 | | 3 | 0.25 | 6.79 | -10 | 18.13 | 0.639 | 0.40 | 0 |
| 957 | | 3.75 | 0.25 | 6.79 | -8 | 18.07 | 0.638 | 0.36 | 0 |
| 1000 | | 4.5 | 0.25 | 6.81 | -6 | 18.07 | 0.637 | 0.38 | 0 |
| 1003 | | 5.25 | 0.25 | 6.82 | -4 | 18.09 | 0.637 | 0.37 | 1.3 |
| 1006 | | 6 | 0.25 | 6.83 | -3 | 18.08 | 0.636 | 0.38 | 0 |
| 1009 | | 6.75 | 0.25 | 6.84 | -1 | 18.01 | 0.635 | 0.38 | 0 |
| 1012 | | 7.5 | 0.25 | 6.84 | -1 | 18.06 | 0.635 | 0.38 | 0 |
| | | | | | | | | | |

**Total Quantity of Water Removed (gal):** 
**Samplers:** EC/CY
**Sampling Date:** 7.9.14

**Sampling Time:** 1015
**Split Sample With:** ms/msd
**Sample Type:** grab w/bailer

**COMMENTS AND OBSERVATIONS:** Iron = 1.98

EA Engineering PC and its Affliate,
EA Science and Technology

# GROUNDWATER SAMPLING PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** MMW-03 | **EA Personnel:** C. Yarrington | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** 25 overcast |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 4-Feb-14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** Down 0.3' | **Gauge Time:** 705 | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** 4-Feb-14 | **Purge Time:** 830 |
| **Purge Method:** Low Flow | **Field Technician:** |

## Well Volume

| | | |
|---|---|---|
| **A. Well Depth (ft):** 19.35 | **D. Well Volume (ft):** 0.041 | **Depth/Height of Top of PVC:** Down 0.3' |
| **B. Depth to Water (ft):** 3.7 initial: | **E. Well Volume (gal) C*D):** 0.64 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 15.65 | **F. Three Well Volumes (gal) (E3):** 1.92 | **Pump Designation:** Pine Environmental |

## Water Quality Parameters

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^{o}$C) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 835 | 6.5 | | 0.2 | 6.55 | -56 | 10.77 | 1.12 | 20.4 | 11.1 |
| 840 | 8.61 | | 0.2 | 6.21 | -75 | 10.20 | 1.12 | 2 | 12.2 |
| 845 | 10.83 | | 0.2 | 6.07 | -80 | 9.4 | 1.12 | 0 | 27.1 |
| 850 | 12.69 | | 0.2 | 5.95 | -80 | 9.27 | 1.110 | 0 | 28.1 |
| 855 | 13.88 | | 0.2 | 5.9 | -79 | 9.42 | 1.110 | 0 | 31 |
| 900 | 14.01 | | 0.2 | 5.89 | -79 | 9.44 | 1.110 | 0 | 31.1 |
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| | | | | | | | | | |

**Total Quantity of Water Removed (gal):** 1.50
**Samplers:** CY
**Sampling Date:** 2/4/2014
**Sampling Time:** 905
**Split Sample With:** none
**Sample Type:** Grab

**COMMENTS AND OBSERVATIONS:** Strong solventy odor. Iron: 1.98 mg/L (flashing)

EA Engineering PC and its Affliate,
EA Science and Technology

# GROUNDWATER SAMPLING PURGE FORM

| | | |
|---|---|---|
| **Well I.D.:** TPMW-4 | **EA Personnel:** C. Yarrington | **Client:** NYSDEC |
| **Location:** Clinton West Plaza | **Well Condition:** good | **Weather:** 25 overcast |
| **Sounding Method:** Heron Skinny Dipper WLI | **Gauge Date:** 4-Feb-14 | **Measurement Ref:** TOC |
| **Stick Up/Down (ft):** Down 0.3' | **Gauge Time:** 705 | **Well Diameter (in):** 1" |

| | |
|---|---|
| **Purge Date:** 4-Feb-14 | **Purge Time:** 915 |
| **Purge Method:** Low Flow | **Field Technician:** |

| Well Volume | | |
|---|---|---|
| **A. Well Depth (ft):** 14.52 | **D. Well Volume (ft):** 0.041 | **Depth/Height of Top of PVC:** Down 0.3' |
| **B. Depth to Water (ft):** 4.53 initial: | **E. Well Volume (gal) C*D):** 0.41 | **Pump Type:** Peristaltic Pump |
| **C. Liquid Depth (ft) (A-B):** 9.99 | **F. Three Well Volumes (gal) (E3):** 1.23 | **Pump Designation:** Pine Environmental |

**Water Quality Parameters**

| Time (hrs) | DTW (ft btoc) | Volume (liters) | Rate (Lpm) | pH (pH units) | ORP (mV) | Temp. ($^oC$) | Cond. (mS/cm) | DO (mg/L) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|---|---|
| 915 | 4.85 | | 0.2 | 6.07 | -29 | 8.4 | 1.37 | 0 | 356 |
| 920 | 4.85 | | 0.2 | 5.95 | -31 | 7.62 | 1.4 | 0 | 504 |
| 925 | 4.85 | | 0.2 | 5.97 | -69 | 7.69 | 1.34 | 0 | 404 |
| 930 | 4.85 | | 0.2 | 6 | -105 | 7.56 | 1.240 | 0 | 133 |
| 935 | 4.85 | | 0.2 | 5.95 | -118 | 7.54 | 1.210 | 0 | 38.8 |
| 940 | 4.85 | | 0.2 | 5.99 | -124 | 7.42 | 1.200 | 0 | 20.9 |
| 945 | 4.85 | | 0.2 | 5.99 | -125 | 7.43 | 1.200 | 0 | 20.1 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Total Quantity of Water Removed (gal):** 1.50
**Samplers:** CY
**Sampling Date:** 2/4/2014
**Sampling Time:** 950
**Split Sample With:** none
**Sample Type:** Grab

**COMMENTS AND OBSERVATIONS:** Strong solventy odor. Iron: 1.98 mg/L (flashing)

# Appendix D

# Data Usability Summary Reports

ENVIRONMENTAL
Data Services, Inc.

# DATA USABILITY SUMMARY REPORT
# CLINTON WEST PLAZA, ITHACA, NEW YORK

Client: EA Engineering, Science & Technology, Inc., Syracuse, New York
SDG: N0129
Laboratory: Spectrum Analytical, Inc., Warwick, Rhode Island
Site: Clinton West Plaza, Ithaca, New York
Date: July 23, 2014

| EDS ID | Client Sample ID | Laboratory Sample ID | Matrix |
|---|---|---|---|
| 1 | 755015-TPM-01 | N0129-01 | Water |
| 2 | 755015-TPM-02 | N0129-02 | Water |
| 3 | 755015-TPM-03 | N0129-03 | Water |
| 4 | 755015-TPMW-3 | N0129-04 | Water |
| 5 | 755015-FD-012914 | N0129-05 | Water |
| 6 | 755015-TPMW-6 | N0129-06 | Water |
| 7 | 755015-MMW-01 | N0129-07 | Water |
| 8 | 755015-MMW-04 | N0129-08 | Water |
| 8MS | 755015-MMW-04MS | N0129-08MS | Water |
| 8MSD | 755015-MMW-04MSD | N0129-08MSD | Water |
| 9 | 755015-MMW-02 | N0129-09 | Water |
| 10 | 755015-MW-14 | N0129-10 | Water |
| 11 | TRIP BLANK | N0129-11 | Water |

A Data Usability Summary Review was performed on the analytical data for ten aqueous samples and one aqueous trip blank sample collected by EA Engineering on January 28-29, 2014 at the Clinton West Plaza site in Ithaca, New York. The samples were analyzed under Environmental Protection Agency (USEPA) *"Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions"* and the *Standard Methods for the Examination of Water and Wastewater.*

Specific method references are as follows:

| *Analysis* | *Method References* |
|---|---|
| VOCs | USEPA SW-846 Method 8260C |

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods and the USEPA Region II Data Review Standard Operating Procedures (SOPs) as follows:

- SOP Number HW-24, Revision 2, August 2008: Validating Volatile Organic Compounds by SW-846 Method 8260B;
- and the reviewer's professional judgment.

The following items/criteria were reviewed for this report:

***Organics***

- Data Completeness
- Holding times and sample preservation
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries
- Method blank and field blank contamination
- Gas Chromatography (GC)/Mass Spectroscopy (MS) tuning
- Initial and continuing calibration summaries
- Compound Quantitation
- Internal standard area and retention time summary forms
- Field Duplicate sample precision
- Tentatively Identified Compounds (TICs)

**<u>Overall Usability Issues:</u>**

There were several rejections of data. This data cannot be used in the decision-making process for this project.

- Acetone and 2-butanone were rejected in all samples due low ICAL RRF values.

Overall the remaining data is acceptable for the intended purposes as qualified for the following deficiencies.

- Four compounds were qualified as estimated in all samples due to high initial calibration %RSD values.
- One compound was qualified as estimated in all samples due to high continuing calibration %D values.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedences of QC criteria.

**<u>Data Completeness</u>**

- The data is a complete Category B data package as defined under the requirements for the NYS Department of Environmental Conservation Analytical Services Protocol.

## Volatile Organics Compounds (VOCs)

### Holding Times

- All samples were analyzed within 14 days for preserved water samples.

### Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

### Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The MS/MSD samples exhibited acceptable %R and RPD values.

### Laboratory Control Samples

- The LCS samples exhibited acceptable %R values.

### Method Blank

- The method blanks were free of contamination.

### Field Blank

- Field QC results are summarized below.

| Blank ID | Compound | Conc. ug/L | Action Level ug/L | Qualifier | Affected Samples |
|---|---|---|---|---|---|
| TRIP BLANK | ND | - | - | - | - |

### GC/MS Tuning

- All criteria were met.

### Initial Calibration

- The following table presents compounds that exceeded 20 percent relative standard deviation (%RSD) and/or average RRF values <0.05 in the initial calibration (ICAL). A low RRF indicates poor indicates poor instrument sensitivity for these compounds. Positive results for these compounds in the affected samples are considered estimated and qualified

(J). Non-detect results for these compounds in the affected samples are rejected (R) and are unusable for project objectives. A high %RSD may indicate a potential high or low bias. All results for these compounds in affected samples are considered estimated and qualified (J/UJ).

| ICAL Date | Compound | %RSD/RRF | Qualifier | Affected Samples |
|---|---|---|---|---|
| 02/04/14 | Acetone | 28.4%/0.037 RRF | J/R | All Samples |
| | 2-Butanone | 20.4%/0.030 RRF | J/R | |
| | trans-1,3-Dichloropropene | 48.5% | J/UJ | |
| | Bromoform | 27.0% | J/UJ | |
| 02/04/14 (cont) | 1,2,3-Trichloropropane | 21.0% | J/UJ | All Samples |
| | 1,2-Dibromo-3-chloropropane | 34.6% | J/UJ | |

## Continuing Calibration

- The following table presents compounds that exceeded 20 percent deviation (%D) and/or RRF values <0.05 in the continuing calibration (CCAL). A low RRF indicates poor instrument sensitivity for these compounds. Positive results for these compounds in the affected samples are considered estimated and qualified (J). Non-detect results for these compounds in the affected samples are rejected (R) and are unusable for project objectives. A high %D may indicate a potential high or low bias. All results for these compounds in affected samples are considered estimated and qualified (J/UJ).

| CCAL Date | Compound | %D/RRF | Qualifier | Affected Samples |
|---|---|---|---|---|
| 02/04/14 | Acetone | 28.7%/0.026 RRF | None | See ICAL |
| | Carbon disulfide | 25.2% | J/UJ | All Samples |
| | 2-Butanone | 0.027 RRF | None | See ICAL |

## Compound Quantitation

- Several samples were analyzed at various dilutions due to high concentrations of target compounds. No action was required.

## Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

## Field Duplicate Sample Precision

- Field duplicate results are summarized below.

| VOC | | | | |
|---|---|---|---|---|
| Compound | 755015-TPMW-3 ug/L | 755015-FD-012914 ug/L | RPD | Qualifier |
| Vinyl chloride | 280 | 250 | 11% | None |
| cis-1,2-Dichloroethene | 270 | 250 | 8% | |

**Tentatively Identified Compounds (TICs)**

- TICs were not reported.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Very truly yours,
Environmental Data Services, Inc.

Nancy Weaver 7/24/14

Nancy Weaver Date
Senior Chemist

## Data Qualifiers

| | | |
|---|---|---|
| J | = | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. |
| UJ | = | The analyte was not detected above the sample reporting limit; and the reporting limit is approximate. |
| U | = | The analyte was analyzed for, but was not detected above the sample reporting limit. |
| R | = | The sample results is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified. |

1

# 1A - FORM I VOA-1
## VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.: 755015-TPM-01

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-01A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7699.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/05/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 1.0 | U | |
| 74-83-9 | Bromomethane | 1.0 | U | |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 1.0 | U | |
| 75-15-0 | Carbon disulfide | 1.0 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 1.0 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

755015-TPM-01

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-01A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7699.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/05/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | U | |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | U | |
| 91-20-3 | Naphthalene | 1.0 | U | |

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MW 7/23/14

SW846

2

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
755015-TPM-02

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-02A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7689.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 1.0 | U | |
| 74-83-9 | Bromomethane | 1.0 | U | |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 1.0 | U | |
| 75-15-0 | Carbon disulfide | 1.0 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 1.0 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |

2

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
755015-TPM-02

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-02A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7689.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | U | |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | U | |
| 91-20-3 | Naphthalene | 1.0 | U | |

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1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
755015-TPM-03

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-03A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7690.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 1.0 | U | |
| 74-83-9 | Bromomethane | 1.0 | U | |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 1.0 | U | |
| 75-15-0 | Carbon disulfide | 1.0 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 1.0 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |

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MW 7/23/14

SW846

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. 3

755015-TPM-03

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-03A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7690.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | U | |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | U | |
| 91-20-3 | Naphthalene | 1.0 | U | |

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

755015-TPMW-3

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-04A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7691.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 2.5

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 2.5 | U | |
| 74-87-3 | Chloromethane | 2.5 | U | |
| 75-01-4 | Vinyl chloride | 280 | | |
| 74-83-9 | Bromomethane | 2.5 | U | |
| 75-00-3 | Chloroethane | 2.5 | U | |
| 75-69-4 | Trichlorofluoromethane | 2.5 | U | |
| 75-35-4 | 1,1-Dichloroethene | 2.5 | U | |
| 67-64-1 | Acetone | 13 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 2.5 | U | |
| 75-15-0 | Carbon disulfide | 2.5 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 2.5 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 2.5 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 2.5 | U | |
| 75-34-3 | 1,1-Dichloroethane | 2.5 | U | |
| 108-05-4 | Vinyl acetate | 2.5 | U | |
| 78-93-3 | 2-Butanone | 13 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 270 | | |
| 594-20-7 | 2,2-Dichloropropane | 2.5 | U | |
| 74-97-5 | Bromochloromethane | 2.5 | U | |
| 67-66-3 | Chloroform | 2.5 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 2.5 | U | |
| 563-58-6 | 1,1-Dichloropropene | 2.5 | U | |
| 56-23-5 | Carbon tetrachloride | 2.5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 2.5 | U | |
| 71-43-2 | Benzene | 2.5 | U | |
| 79-01-6 | Trichloroethene | 2.5 | U | |
| 78-87-5 | 1,2-Dichloropropane | 2.5 | U | |
| 74-95-3 | Dibromomethane | 2.5 | U | |
| 75-27-4 | Bromodichloromethane | 2.5 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 2.5 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 13 | U | |
| 108-88-3 | Toluene | 2.5 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 2.5 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 2.5 | U | |
| 142-28-9 | 1,3-Dichloropropane | 2.5 | U | |

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

755015-TPMW-3

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-04A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7691.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 2.5

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 2.5 | U | |
| 591-78-6 | 2-Hexanone | 13 | U | |
| 124-48-1 | Dibromochloromethane | 2.5 | U | |
| 106-93-4 | 1,2-Dibromoethane | 2.5 | U | |
| 108-90-7 | Chlorobenzene | 2.5 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2.5 | U | |
| 100-41-4 | Ethylbenzene | 2.5 | U | |
| 179601-23-1 | m,p-Xylene | 2.5 | U | |
| 95-47-6 | o-Xylene | 2.5 | U | |
| 1330-20-7 | Xylene (Total) | 2.5 | U | |
| 100-42-5 | Styrene | 2.5 | U | |
| 75-25-2 | Bromoform | 2.5 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 2.5 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2.5 | U | |
| 108-86-1 | Bromobenzene | 2.5 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 2.5 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 2.5 | U | |
| 95-49-8 | 2-Chlorotoluene | 2.5 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2.5 | U | |
| 106-43-4 | 4-Chlorotoluene | 2.5 | U | |
| 98-06-6 | tert-Butylbenzene | 2.5 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2.5 | U | |
| 135-98-8 | sec-Butylbenzene | 2.5 | U | |
| 99-87-6 | 4-Isopropyltoluene | 2.5 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 2.5 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 2.5 | U | |
| 104-51-8 | n-Butylbenzene | 2.5 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 2.5 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2.5 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2.5 | U | |
| 87-68-3 | Hexachlorobutadiene | 2.5 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2.5 | U | |
| 91-20-3 | Naphthalene | 2.5 | U | |

MW 7/23/14

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

755015-FD-012914

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-05A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7692.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 2.5

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 2.5 | U | |
| 74-87-3 | Chloromethane | 2.5 | U | |
| 75-01-4 | Vinyl chloride | 250 | | |
| 74-83-9 | Bromomethane | 2.5 | U | |
| 75-00-3 | Chloroethane | 2.5 | U | |
| 75-69-4 | Trichlorofluoromethane | 2.5 | U | |
| 75-35-4 | 1,1-Dichloroethene | 2.5 | U | |
| 67-64-1 | Acetone | 13 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 2.5 | U | |
| 75-15-0 | Carbon disulfide | 2.5 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 2.5 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 2.5 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 2.5 | U | |
| 75-34-3 | 1,1-Dichloroethane | 2.5 | U | |
| 108-05-4 | Vinyl acetate | 2.5 | U | |
| 78-93-3 | 2-Butanone | 13 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 250 | | |
| 594-20-7 | 2,2-Dichloropropane | 2.5 | U | |
| 74-97-5 | Bromochloromethane | 2.5 | U | |
| 67-66-3 | Chloroform | 2.5 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 2.5 | U | |
| 563-58-6 | 1,1-Dichloropropene | 2.5 | U | |
| 56-23-5 | Carbon tetrachloride | 2.5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 2.5 | U | |
| 71-43-2 | Benzene | 2.5 | U | |
| 79-01-6 | Trichloroethene | 2.5 | U | |
| 78-87-5 | 1,2-Dichloropropane | 2.5 | U | |
| 74-95-3 | Dibromomethane | 2.5 | U | |
| 75-27-4 | Bromodichloromethane | 2.5 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 2.5 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 13 | U | |
| 108-88-3 | Toluene | 2.5 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 2.5 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 2.5 | U | |
| 142-28-9 | 1,3-Dichloropropane | 2.5 | U | |

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1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
755015-FD-012914

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-05A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7692.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 2.5

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 2.5 | U | |
| 591-78-6 | 2-Hexanone | 13 | U | |
| 124-48-1 | Dibromochloromethane | 2.5 | U | |
| 106-93-4 | 1,2-Dibromoethane | 2.5 | U | |
| 108-90-7 | Chlorobenzene | 2.5 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2.5 | U | |
| 100-41-4 | Ethylbenzene | 2.5 | U | |
| 179601-23-1 | m,p-Xylene | 2.5 | U | |
| 95-47-6 | o-Xylene | 2.5 | U | |
| 1330-20-7 | Xylene (Total) | 2.5 | U | |
| 100-42-5 | Styrene | 2.5 | U | |
| 75-25-2 | Bromoform | 2.5 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 2.5 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2.5 | U | |
| 108-86-1 | Bromobenzene | 2.5 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 2.5 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 2.5 | U | |
| 95-49-8 | 2-Chlorotoluene | 2.5 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2.5 | U | |
| 106-43-4 | 4-Chlorotoluene | 2.5 | U | |
| 98-06-6 | tert-Butylbenzene | 2.5 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2.5 | U | |
| 135-98-8 | sec-Butylbenzene | 2.5 | U | |
| 99-87-6 | 4-Isopropyltoluene | 2.5 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 2.5 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 2.5 | U | |
| 104-51-8 | n-Butylbenzene | 2.5 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 2.5 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2.5 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2.5 | U | |
| 87-68-3 | Hexachlorobutadiene | 2.5 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2.5 | U | |
| 91-20-3 | Naphthalene | 2.5 | U | |

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE 6 NO.

755015-TPMW-6

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-06A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7693.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 1.0 | U | |
| 74-83-9 | Bromomethane | 1.0 | U | |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 1.0 | U | |
| 75-15-0 | Carbon disulfide | 1.0 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 1.0 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |

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# 1B - FORM I VOA-2
## VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
755015-TPMW-6

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-06A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7693.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | U | |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | U | |
| 91-20-3 | Naphthalene | 1.0 | U | |

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

755015-MMW-01

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-07A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7694.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 10 | U | |
| 74-87-3 | Chloromethane | 10 | U | |
| 75-01-4 | Vinyl chloride | 820 | | |
| 74-83-9 | Bromomethane | 10 | U | |
| 75-00-3 | Chloroethane | 10 | U | |
| 75-69-4 | Trichlorofluoromethane | 10 | U | |
| 75-35-4 | 1,1-Dichloroethene | 10 | U | |
| 67-64-1 | Acetone | 50 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 10 | U | |
| 75-15-0 | Carbon disulfide | 10 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 10 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 10 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 10 | U | |
| 75-34-3 | 1,1-Dichloroethane | 10 | U | |
| 108-05-4 | Vinyl acetate | 10 | U | |
| 78-93-3 | 2-Butanone | 50 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 130 | | |
| 594-20-7 | 2,2-Dichloropropane | 10 | U | |
| 74-97-5 | Bromochloromethane | 10 | U | |
| 67-66-3 | Chloroform | 10 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U | |
| 563-58-6 | 1,1-Dichloropropene | 10 | U | |
| 56-23-5 | Carbon tetrachloride | 10 | U | |
| 107-06-2 | 1,2-Dichloroethane | 10 | U | |
| 71-43-2 | Benzene | 10 | U | |
| 79-01-6 | Trichloroethene | 10 | U | |
| 78-87-5 | 1,2-Dichloropropane | 10 | U | |
| 74-95-3 | Dibromomethane | 10 | U | |
| 75-27-4 | Bromodichloromethane | 10 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 50 | U | |
| 108-88-3 | Toluene | 10 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U | |
| 142-28-9 | 1,3-Dichloropropane | 10 | U | |

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

755015-MMW-01

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-07A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7694.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 10.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 10 | U | |
| 591-78-6 | 2-Hexanone | 50 | U | |
| 124-48-1 | Dibromochloromethane | 10 | U | |
| 106-93-4 | 1,2-Dibromoethane | 10 | U | |
| 108-90-7 | Chlorobenzene | 10 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 10 | U | |
| 100-41-4 | Ethylbenzene | 10 | U | |
| 179601-23-1 | m,p-Xylene | 10 | U | |
| 95-47-6 | o-Xylene | 10 | U | |
| 1330-20-7 | Xylene (Total) | 10 | U | |
| 100-42-5 | Styrene | 10 | U | |
| 75-25-2 | Bromoform | 10 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 10 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U | |
| 108-86-1 | Bromobenzene | 10 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 10 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 10 | U | |
| 95-49-8 | 2-Chlorotoluene | 10 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 10 | U | |
| 106-43-4 | 4-Chlorotoluene | 10 | U | |
| 98-06-6 | tert-Butylbenzene | 10 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 10 | U | |
| 135-98-8 | sec-Butylbenzene | 10 | U | |
| 99-87-6 | 4-Isopropyltoluene | 10 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 10 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 10 | U | |
| 104-51-8 | n-Butylbenzene | 10 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 10 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 10 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 10 | U | |
| 87-68-3 | Hexachlorobutadiene | 10 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 10 | U | |
| 91-20-3 | Naphthalene | 10 | U | |

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1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
755015-MMW-04

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-08A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7695.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 1.0 | U | |
| 74-83-9 | Bromomethane | 1.0 | U | |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 1.0 | U | |
| 75-15-0 | Carbon disulfide | 1.0 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 1.0 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |

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1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
755015-MMW-04

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-08A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7695.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | U | |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | U | |
| 91-20-3 | Naphthalene | 1.0 | U | |

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

755015-MMW-02

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-09A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7696.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 1.0 | U | |
| 74-83-9 | Bromomethane | 1.0 | U | |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 1.0 | U | |
| 75-15-0 | Carbon disulfide | 1.0 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 1.0 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |

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1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
755015-MMW-02

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-09A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7696.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/04/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | U | |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | U | |
| 91-20-3 | Naphthalene | 1.0 | U | |

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1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
755015-MW-14

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-10A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7697.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/05/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 1.0 | U | |
| 74-83-9 | Bromomethane | 1.0 | U | |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 1.0 | U | |
| 75-15-0 | Carbon disulfide | 1.0 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 1.0 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
755015-MW-14

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-10A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7697.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/05/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | U | |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | U | |
| 91-20-3 | Naphthalene | 1.0 | U | |

som13.12.31.1153

MW 7/23/14

SW846

11

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
TRIP BLANK

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-11A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7698.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/05/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 1.0 | U | |
| 74-83-9 | Bromomethane | 1.0 | U | |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | ~~U~~ | R |
| 74-88-4 | Iodomethane | 1.0 | U | |
| 75-15-0 | Carbon disulfide | 1.0 | ~~U~~ | UJ |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | ~~U~~ | R |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 1.0 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | ~~U~~ | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |

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MW 7/23/14

SW846

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
TRIP BLANK

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0129 Mod. Ref No.: SDG No.: SN0129

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0129-11A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M7698.D

Level: (TRACE/LOW/MED) LOW Date Received: 01/30/2014

% Moisture: not dec. Date Analyzed: 02/05/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | ~~U~~ | UJ |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | ~~U~~ | UJ |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | ~~U~~ | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | U | |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | U | |
| 91-20-3 | Naphthalene | 1.0 | U | |

MW 7/23/14

ENVIRONMENTAL
Data Services, Inc.

# DATA USABILITY SUMMARY REPORT
# CLINTON WEST PLAZA, ITHACA, NEW YORK

| | |
|---|---|
| Client: | EA Engineering, Science & Technology, Inc., Syracuse, New York |
| SDG: | N0162 |
| Laboratory: | Spectrum Analytical, Inc., Warwick, Rhode Island |
| Site: | Clinton West Plaza, Ithaca, New York |
| Date: | July 23, 2014 |

| EDS ID | Client Sample ID | Laboratory Sample ID | Matrix |
|---|---|---|---|
| 1 | 755015-MMW-03 | N0162-01 | Water |
| 2 | 755015-TPMW-4 | N0162-02 | Water |
| 3 | TRIP BLANK | N0162-03 | Water |

A Data Usability Summary Review was performed on the analytical data for two aqueous samples and one aqueous trip blank sample collected by EA Engineering on February 4, 2014 at the Clinton West Plaza site in Ithaca, New York. The samples were analyzed under Environmental Protection Agency (USEPA) *"Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions"* and the *Standard Methods for the Examination of Water and Wastewater.*

Specific method references are as follows:

| *Analysis* | *Method References* |
|---|---|
| VOCs | USEPA SW-846 Method 8260C |

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods and the USEPA Region II Data Review Standard Operating Procedures (SOPs) as follows:

- SOP Number HW-24, Revision 2, August 2008: Validating Volatile Organic Compounds by SW-846 Method 8260B;
- and the reviewer's professional judgment.

The following items/criteria were reviewed for this report:

***Organics***

- Data Completeness
- Holding times and sample preservation
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries
- Method blank and field blank contamination

- Gas Chromatography (GC)/Mass Spectroscopy (MS) tuning
- Initial and continuing calibration summaries
- Compound Quantitation
- Internal standard area and retention time summary forms
- Field Duplicate sample precision
- Tentatively Identified Compounds (TICs)

**Overall Usability Issues:**

There were no rejections of data.

Overall the data is acceptable for the intended purposes as qualified for the following deficiencies.

- Five compounds were qualified as estimated in all samples due to high initial calibration %RSD values.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedences of QC criteria.

**Data Completeness**

- The data is a complete Category B data package as defined under the requirements for the NYS Department of Environmental Conservation Analytical Services Protocol.

**Volatile Organics Compounds (VOCs)**

**Holding Times**

- All samples were analyzed within 14 days for preserved water samples.

**Surrogate Spike Recoveries**

- All samples exhibited acceptable surrogate %R values.

**Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries**

- A MS/MSD sample was not collected.

## Laboratory Control Samples

- The LCS samples exhibited acceptable %R values.

## Method Blank

- The method blanks were free of contamination.

## Field Blank

- Field QC results are summarized below.

| Blank ID | Compound | Conc. ug/L | Action Level ug/L | Qualifier | Affected Samples |
|---|---|---|---|---|---|
| TRIP BLANK | ND | - | - | - | - |

## GC/MS Tuning

- All criteria were met.

## Initial Calibration

- The following table presents compounds that exceeded 20 percent relative standard deviation (%RSD) and/or average RRF values <0.05 in the initial calibration (ICAL). A low RRF indicates poor indicates poor instrument sensitivity for these compounds. Positive results for these compounds in the affected samples are considered estimated and qualified (J). Non-detect results for these compounds in the affected samples are rejected (R) and are unusable for project objectives. A high %RSD may indicate a potential high or low bias. All results for these compounds in affected samples are considered estimated and qualified (J/UJ).

| ICAL Date | Compound | %RSD/RRF | Qualifier | Affected Samples |
|---|---|---|---|---|
| 02/12/14 | Bromomethane | 29.9% | J/UJ | All Samples |
| | Iodomethane | 20.8% | J/UJ | |
| | 1,2,4-Trichlorobenzene | 37.0% | J/UJ | |
| | Naphthalene | 27.9% | J/UJ | |
| | 1,2,3-Trichlorobenzene | 33.4% | J/UJ | |

## Continuing Calibration

- The samples were analyzed immediately after the ICAL.

**Compound Quantitation**

- All criteria were met.

**Internal Standard (IS) Area Performance**

- All internal standards met response and retention time (RT) criteria.

**Field Duplicate Sample Precision**

- Field duplicate samples were not collected.

**Tentatively Identified Compounds (TICs)**

- TICs were not reported.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Very truly yours,
Environmental Data Services, Inc.

Nancy Weaver 7/24/14
Nancy Weaver Date
Senior Chemist

## Data Qualifiers

| | | |
|---|---|---|
| J | = | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. |
| UJ | = | The analyte was not detected above the sample reporting limit; and the reporting limit is approximate. |
| U | = | The analyte was analyzed for, but was not detected above the sample reporting limit. |
| R | = | The sample results is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified. |

1

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
755015-MMW-03

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0162 Mod. Ref No.: SDG No.: SN0162

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0162-01A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D3118.D

Level: (TRACE/LOW/MED) LOW Date Received: 02/10/2014

% Moisture: not dec. Date Analyzed: 02/12/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 1.0 | U | |
| 74-83-9 | Bromomethane | 1.0 | ~~U~~ | UJ |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | U | |
| 74-88-4 | Iodomethane | 1.0 | ~~U~~ | UJ |
| 75-15-0 | Carbon disulfide | 1.0 | U | |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | U | |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 0.64 | J | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |



NW 7/23/14

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1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
755015-MMW-03

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0162 Mod. Ref No.: SDG No.: SN0162

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0162-01A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D3118.D

Level: (TRACE/LOW/MED) LOW Date Received: 02/10/2014

% Moisture: not dec. Date Analyzed: 02/12/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | U | |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | U | |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | U | |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | ~~U~~ | UJ |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | ~~U~~ | UJ |
| 91-20-3 | Naphthalene | 1.0 | ~~U~~ | UJ |

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MW 7/23/14

SW846

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 2

755015-TPMW-4

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0162 Mod. Ref No.: SDG No.: SN0162

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0162-02A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D3119.D

Level: (TRACE/LOW/MED) LOW Date Received: 02/10/2014

% Moisture: not dec. Date Analyzed: 02/12/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 44 | | |
| 74-83-9 | Bromomethane | 1.0 | ~~U~~ | UJ |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | U | |
| 74-88-4 | Iodomethane | 1.0 | ~~U~~ | UJ |
| 75-15-0 | Carbon disulfide | 1.0 | U | |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | U | |
| 156-59-2 | cis-1,2-Dichloroethene | 10 | | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 1.0 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |

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NW 7/23/14

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

755015-TPMW-4

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0162 Mod. Ref No.: SDG No.: SN0162

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0162-02A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D3119.D

Level: (TRACE/LOW/MED) LOW Date Received: 02/10/2014

% Moisture: not dec. Date Analyzed: 02/12/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | U | |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | U | |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | U | |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | ~~U~~ | UJ |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | ~~U~~ | UJ |
| 91-20-3 | Naphthalene | 1.0 | ~~U~~ | UJ |

MW 7/23/14

3

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP BLANK

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0162 Mod. Ref No.: SDG No.: SN0162

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0162-03A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D3117.D

Level: (TRACE/LOW/MED) LOW Date Received: 02/10/2014

% Moisture: not dec. Date Analyzed: 02/12/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U | |
| 74-87-3 | Chloromethane | 1.0 | U | |
| 75-01-4 | Vinyl chloride | 1.0 | U | |
| 74-83-9 | Bromomethane | 1.0 | ~~U~~ | UJ |
| 75-00-3 | Chloroethane | 1.0 | U | |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | |
| 67-64-1 | Acetone | 5.0 | U | |
| 74-88-4 | Iodomethane | 1.0 | ~~U~~ | UJ |
| 75-15-0 | Carbon disulfide | 1.0 | U | |
| 75-09-2 | Methylene chloride | 1.0 | U | |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | |
| 1634-04-4 | Methyl tert-butyl ether | 1.0 | U | |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | |
| 108-05-4 | Vinyl acetate | 1.0 | U | |
| 78-93-3 | 2-Butanone | 5.0 | U | |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | |
| 594-20-7 | 2,2-Dichloropropane | 1.0 | U | |
| 74-97-5 | Bromochloromethane | 1.0 | U | |
| 67-66-3 | Chloroform | 1.0 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U | |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | |
| 71-43-2 | Benzene | 1.0 | U | |
| 79-01-6 | Trichloroethene | 1.0 | U | |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U | |
| 74-95-3 | Dibromomethane | 1.0 | U | |
| 75-27-4 | Bromodichloromethane | 1.0 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 5.0 | U | |
| 108-88-3 | Toluene | 1.0 | U | |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U | |

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MW 7/23/14

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 3

TRIP BLANK

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N0162 Mod. Ref No.: SDG No.: SN0162

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N0162-03A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D3117.D

Level: (TRACE/LOW/MED) LOW Date Received: 02/10/2014

% Moisture: not dec. Date Analyzed: 02/12/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q | |
|---|---|---|---|---|
| 127-18-4 | Tetrachloroethene | 1.0 | U | |
| 591-78-6 | 2-Hexanone | 5.0 | U | |
| 124-48-1 | Dibromochloromethane | 1.0 | U | |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U | |
| 108-90-7 | Chlorobenzene | 1.0 | U | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U | |
| 100-41-4 | Ethylbenzene | 1.0 | U | |
| 179601-23-1 | m,p-Xylene | 1.0 | U | |
| 95-47-6 | o-Xylene | 1.0 | U | |
| 1330-20-7 | Xylene (Total) | 1.0 | U | |
| 100-42-5 | Styrene | 1.0 | U | |
| 75-25-2 | Bromoform | 1.0 | U | |
| 98-82-8 | Isopropylbenzene | 1.0 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | |
| 108-86-1 | Bromobenzene | 1.0 | U | |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | U | |
| 103-65-1 | n-Propylbenzene | 1.0 | U | |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U | |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U | |
| 98-06-6 | tert-Butylbenzene | 1.0 | U | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U | |
| 135-98-8 | sec-Butylbenzene | 1.0 | U | |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U | |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | |
| 104-51-8 | n-Butylbenzene | 1.0 | U | |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | U | |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | ~~U~~ | UJ |
| 87-68-3 | Hexachlorobutadiene | 1.0 | U | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | ~~U~~ | UJ |
| 91-20-3 | Naphthalene | 1.0 | ~~U~~ | UJ |

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NW 7/23/14

SW846

**ENVIRONMENTAL**
Data Services, Inc.

# DATA USABILITY SUMMARY REPORT
# CLINTON WEST PLAZA, ITHACA, NEW YORK

| | |
|---|---|
| Client: | EA Engineering, Science & Technology, Inc., Syracuse, New York |
| SDG: | F3043 |
| Laboratory: | Spectrum Analytical, Inc., Warwick, Rhode Island |
| Site: | Clinton West Plaza, Ithaca, New York |
| Date: | August 22, 2014 |

| EDS ID | Client Sample ID | Laboratory Sample ID | Matrix |
|---|---|---|---|
| 1 | 755015-MMW-01 | F3043-01 | Water |
| 2 | 755015-MW-14 | F3043-02 | Water |
| 3MS | 755015-MW-14MS | F3043-03MS | Water |
| 4MSD | 755015-MW-14MSD | F3043-04MSD | Water |
| 5 | 755015-MMW-02 | F3043-05 | Water |
| 6 | 755015-MMW-03 | F3043-06 | Water |
| 7 | 755015-TPMW-4 | F3043-07 | Water |
| 8 | 755015-TPMW-3 | F3043-08 | Water |
| 9 | 755015-MMW-04 | F3043-09 | Water |
| 10 | 755015-DUP070814 | F3043-10 | Water |
| 11 | 755015-TPM-01 | F3043-11 | Water |
| 12 | 755015-TPM-02 | F3043-12 | Water |
| 13 | 755015-TPM-03 | F3043-13 | Water |
| 14 | 755015-TPMW-6 | F3043-14 | Water |
| 15 | TB-070814 | F3043-15 | Water |

A Data Usability Summary Review was performed on the analytical data for twelve aqueous samples and one aqueous trip blank sample collected by EA Engineering on July 8-9, 2014 at the Clinton West Plaza site in Ithaca, New York. The samples were analyzed under Environmental Protection Agency (USEPA) *"Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions"* and the *Standard Methods for the Examination of Water and Wastewater.*

Specific method references are as follows:

| Analysis | Method References |
|---|---|
| VOCs | USEPA SW-846 Method 8260C |

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods and the USEPA Region II Data Review Standard Operating Procedures (SOPs) as follows:

- SOP Number HW-24, Revision 2, August 2008: Validating Volatile Organic Compounds by SW-846 Method 8260B;

- and the reviewer's professional judgment.

The following items/criteria were reviewed for this report:

***Organics***

- Data Completeness
- Holding times and sample preservation
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries
- Method blank and field blank contamination
- Gas Chromatography (GC)/Mass Spectroscopy (MS) tuning
- Initial and continuing calibration summaries
- Compound Quantitation
- Internal standard area and retention time summary forms
- Field Duplicate sample precision
- Tentatively Identified Compounds (TICs)

**Overall Usability Issues:**

There were no rejections of data.

Overall the data is acceptable for the intended purposes as qualified for the following deficiencies.

- Several compounds were qualified as estimated in all samples due to high continuing calibration %D values.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedences of QC criteria.

**Data Completeness**

- The data is a complete Category B data package as defined under the requirements for the NYS Department of Environmental Conservation Analytical Services Protocol.

**Volatile Organics Compounds (VOCs)**

**Holding Times**

- All samples were analyzed within 14 days for preserved water samples.

## Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

## Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The MS/MSD sample exhibited acceptable %R and RPD values.

## Laboratory Control Samples

- The LCS samples exhibited acceptable %R values except the following.

| LCS ID | Compound | %R | Qualifier | Affected Samples |
|---|---|---|---|---|
| VN0715WBS02 | 1,2-Dibromo-3-chloropropane | 136% | None | All Associated ND |

## Method Blank

- The method blanks were free of contamination.

## Field Blank

- Field QC results are summarized below.

| Blank ID | Compound | Conc. ug/L | Action Level ug/L | Qualifier | Affected Samples |
|---|---|---|---|---|---|
| TB-070814 | ND | - | - | - | - |

## GC/MS Tuning

- All criteria were met.

## Initial Calibration

- The initial calibrations exhibited acceptable %RSD and mean RRF values.

## Continuing Calibration

- The following table presents compounds that exceeded 20 percent deviation (%D) and/or RRF values <0.05 in the continuing calibration (CCAL). A low RRF indicates poor instrument sensitivity for these compounds. Positive results for these compounds in the affected samples are considered estimated and qualified (J). Non-detect results for these compounds in the affected samples are rejected (R) and are unusable for project objectives. A high %D may indicate a potential high or low bias. All results for these compounds in affected samples are considered estimated and qualified (J/UJ).

| CCAL Date | Compound | %D/RRF | Qualifier | Affected Samples |
|---|---|---|---|---|
| 07/14/14 | Dichlorodifluoromethane | 21.3% | J/UJ | 1, 2, 5-7, 15 |
| | Bromomethane | 27.1% | J/UJ | |
| | Acetone | 21.1% | J/UJ | |
| | Carbon tetrachloride | 21.9% | J/UJ | |
| | Tetrachloroethene | 21.8% | J/UJ | |
| | Styrene | 21.9% | J/UJ | |
| | Bromoform | 28.6% | J/UJ | |
| 07/16/14 | 1,2-Dibromo-3-chloropropane | 26.0% | J/UJ | 8-14 |

## Compound Quantitation

- All criteria were met.

## Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

## Field Duplicate Sample Precision

- Field duplicate results are summarized below.

| VOC | | | | |
|---|---|---|---|---|
| Compound | 755015-TPMW-4 ug/L | 755015-DUP070814 ug/L | RPD | Qualifier |
| Vinyl chloride | 100 | 110 | 10% | None |
| Acetone | 5U | 4.2 | NC | |
| cis-1,2-Dichloroethene | 33.2 | 32.8 | 1% | |

## Tentatively Identified Compounds (TICs)

- TICs were not reported.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Very truly yours,
Environmental Data Services, Inc.

Nancy Weaver 8/26/14

Nancy Weaver Date
Senior Chemist

## Data Qualifiers

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = The analyte was not detected above the sample reporting limit; and the reporting limit is approximate.

U = The analyte was analyzed for, but was not detected above the sample reporting limit.

R = The sample results is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-MMW-01 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-01 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017193.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 59.1 | | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 5 UJ | ~~U~~ | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 10.7 | | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

 NW 8/22/14

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-MMW-01 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-01 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017193.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 50.2 | | 61 - 141 | | 100% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51 | | 69 - 133 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 50 | | 65 - 126 | | 100% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 46.1 | | 58 - 135 | | 92% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 669915 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 983528 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 856226 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 356171 | 13.56 | | | | |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-MW-14 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-02 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017194.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 5 UJ | ~~U~~ | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 0.61 | J | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-MW-14 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-02 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017194.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 0.95 J | ~~J~~ | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 49.9 | | 61 - 141 | | 100% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.2 | | 69 - 133 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 50.1 | | 65 - 126 | | 100% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 46.6 | | 58 - 135 | | 93% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 703965 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 1036390 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 904611 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 380620 | 13.56 | | | | |

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A B C D E F G

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-MMW-02 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-05 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017197.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 5 UJ | ~~U~~ | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-MMW-02 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-05 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017197.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 51.1 | | 61 - 141 | | 102% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.7 | | 69 - 133 | | 101% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 50.1 | | 65 - 126 | | 100% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 46.7 | | 58 - 135 | | 93% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 683074 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 1017190 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 876681 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 380134 | 13.56 | | | | |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-MMW-03 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-06 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017196.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 5 UJ | ~~U~~ | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

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A B C D E F G

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-MMW-03 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-06 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017196.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 50.3 | | 61 - 141 | | 101% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.5 | | 69 - 133 | | 101% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 50.5 | | 65 - 126 | | 101% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 47.2 | | 58 - 135 | | 94% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 701566 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 1022460 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 905944 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 391301 | 13.56 | | | | |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPMW-4 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-07 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017200.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 100 | | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 5 UJ | ~~U~~ | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 33.2 | | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPMW-4 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-07 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017200.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 50.5 | | 61 - 141 | | 101% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.8 | | 69 - 133 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 50.3 | | 65 - 126 | | 101% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 46.4 | | 58 - 135 | | 93% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 693582 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 1021430 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 896889 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 387418 | 13.56 | | | | |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPMW-3 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-08 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017255.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 83.7 | | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 0.81 | J | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 4.4 | J | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1.1 | | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 140 | | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 0.83 | J | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |



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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/08/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPMW-3 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-08 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017255.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 UJ | ~~UQ~~ | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 47.2 | | 61 - 141 | | 94% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 49.2 | | 69 - 133 | | 98% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.3 | | 65 - 126 | | 99% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 42.6 | | 58 - 135 | | 85% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 737065 | 7.86 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 1066170 | 8.78 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 890230 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 343163 | 13.56 | | | | |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-MMW-04 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-09 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017256.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 5 | U | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-MMW-04 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-09 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017256.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 UJ | UQ | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 49.3 | | 61 - 141 | | 99% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.6 | | 69 - 133 | | 103% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.5 | | 65 - 126 | | 99% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 41.7 | | 58 - 135 | | 83% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 681220 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 984308 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 830457 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 299946 | 13.56 | | | | |

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# Report of Analysis

A B C D E F G

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-DUP070814 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-10 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017257.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 110 | | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 4.2 | J | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 32.8 | | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

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# Report of Analysis

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|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-DUP070814 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-10 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017257.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 UJ | ~~UQ~~ | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 48.7 | | 61 - 141 | | 97% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.8 | | 69 - 133 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.5 | | 65 - 126 | | 99% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 41.6 | | 58 - 135 | | 83% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 685011 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 986418 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 827805 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 298681 | 13.56 | | | | |

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A B C D E F G

# Report of Analysis

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|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPM-01 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-11 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017258.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 3.7 | J | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

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# Report of Analysis

A B C D E F G

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|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPM-01 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-11 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017258.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 UJ | ~~UQ~~ | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 49.6 | | 61 - 141 | | 99% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.2 | | 69 - 133 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.5 | | 65 - 126 | | 99% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 42.2 | | 58 - 135 | | 84% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 674737 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 982205 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 827130 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 307927 | 13.56 | | | | |

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# Report of Analysis

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|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPM-02 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-12 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017259.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 7.8 | | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 6.3 | | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

 MW 8/22/14

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPM-02 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-12 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017259.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 UJ | ~~UQ~~ | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 49.1 | | 61 - 141 | | 98% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51 | | 69 - 133 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.7 | | 65 - 126 | | 99% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 41.4 | | 58 - 135 | | 83% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 661615 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 957633 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 798678 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 285404 | 13.56 | | | | |

 MW 8/22/14

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# Report of Analysis

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|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPM-03 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-13 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017260.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 5 | U | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPM-03 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-13 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017260.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 UJ | ~~UQ~~ | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 49 | | 61 - 141 | | 98% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51.2 | | 69 - 133 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.4 | | 65 - 126 | | 99% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 40.4 | | 58 - 135 | | 81% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 659596 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 957072 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 782534 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 279395 | 13.56 | | | | |

 MW 8/22/14

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPMW-6 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-14 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017261.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 5 | U | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

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# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | 755015-TPMW-6 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-14 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

A B C D E F G

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017261.D | 1 | | 07/16/14 | VN071514 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 UJ | ~~UQ~~ | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 49 | | 61 - 141 | | 98% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 50.1 | | 69 - 133 | | 100% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 49.1 | | 65 - 126 | | 98% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 40.5 | | 58 - 135 | | 81% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 650790 | 7.87 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 939495 | 8.79 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 777721 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 279899 | 13.56 | | | | |

 MW 8/22/14

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | TB-070814 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-15 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017195.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| TARGETS | | | | | | | |
| 75-71-8 | Dichlorodifluoromethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 74-87-3 | Chloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-01-4 | Vinyl Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-83-9 | Bromomethane | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-00-3 | Chloroethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-69-4 | Trichlorofluoromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-35-4 | 1,1-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 67-64-1 | Acetone | 5 UJ | ~~U~~ | 0.5 | 1 | 5 | ug/L |
| 75-15-0 | Carbon Disulfide | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 1634-04-4 | Methyl tert-butyl Ether | 1 | U | 0.35 | 0.5 | 1 | ug/L |
| 79-20-9 | Methyl Acetate | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 75-09-2 | Methylene Chloride | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 156-60-5 | trans-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-34-3 | 1,1-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 110-82-7 | Cyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-93-3 | 2-Butanone | 5 | U | 1.3 | 2.5 | 5 | ug/L |
| 56-23-5 | Carbon Tetrachloride | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 156-59-2 | cis-1,2-Dichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 74-97-5 | Bromochloromethane | 1 | U | 0.2 | 0.5 | 1 | ug/L |
| 67-66-3 | Chloroform | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-87-2 | Methylcyclohexane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 71-43-2 | Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 107-06-2 | 1,2-Dichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-01-6 | Trichloroethene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 78-87-5 | 1,2-Dichloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 75-27-4 | Bromodichloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 108-10-1 | 4-Methyl-2-Pentanone | 5 | U | 1 | 1 | 5 | ug/L |
| 108-88-3 | Toluene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 10061-02-6 | t-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |

 MW 8/22/14

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

5

# Report of Analysis

| | | | |
|---|---|---|---|
| Client: | EA Engineering Science & Technology | Date Collected: | 07/09/14 |
| Project: | NYSDEC - Clinton West Plaza | Date Received: | 07/10/14 |
| Client Sample ID: | TB-070814 | SDG No.: | F3043 |
| Lab Sample ID: | F3043-15 | Matrix: | Water |
| Analytical Method: | SW8260 | % Moisture: | 100 |
| Sample Wt/Vol: | 5 Units: mL | Final Vol: | 5000 uL |
| Soil Aliquot Vol: | uL | Test: | VOCMS Group1 |
| GC Column: | RXI-624 ID : 0.25 | Level : | LOW |

| File ID/Qc Batch: | Dilution: | Prep Date | Date Analyzed | Prep Batch ID |
|---|---|---|---|---|
| VN017195.D | 1 | | 07/14/14 | VN071414 |

| CAS Number | Parameter | Conc. | Qualifier | MDL | LOD | LOQ / CRQL | Units |
|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-00-5 | 1,1,2-Trichloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 591-78-6 | 2-Hexanone | 5 | U | 1.9 | 2.5 | 5 | ug/L |
| 124-48-1 | Dibromochloromethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-93-4 | 1,2-Dibromoethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 127-18-4 | Tetrachloroethene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 108-90-7 | Chlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-41-4 | Ethyl Benzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 179601-23-1 | m/p-Xylenes | 2 | U | 0.4 | 0.4 | 2 | ug/L |
| 95-47-6 | o-Xylene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 100-42-5 | Styrene | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 75-25-2 | Bromoform | 1 UJ | ~~U~~ | 0.2 | 0.2 | 1 | ug/L |
| 98-82-8 | Isopropylbenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 541-73-1 | 1,3-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 95-50-1 | 1,2-Dichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 96-12-8 | 1,2-Dibromo-3-Chloropropane | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1 | U | 0.2 | 0.2 | 1 | ug/L |
| 123-91-1 | 1,4-Dioxane | 100 | U | 100 | 100 | 100 | ug/L |
| **SURROGATES** | | | | | | | |
| 17060-07-0 | 1,2-Dichloroethane-d4 | 50.1 | | 61 - 141 | | 100% | SPK: 50 |
| 1868-53-7 | Dibromofluoromethane | 51 | | 69 - 133 | | 102% | SPK: 50 |
| 2037-26-5 | Toluene-d8 | 50.1 | | 65 - 126 | | 100% | SPK: 50 |
| 460-00-4 | 4-Bromofluorobenzene | 45.8 | | 58 - 135 | | 92% | SPK: 50 |
| **INTERNAL STANDARDS** | | | | | | | |
| 363-72-4 | Pentafluorobenzene | 663590 | 7.86 | | | | |
| 540-36-3 | 1,4-Difluorobenzene | 968606 | 8.78 | | | | |
| 3114-55-4 | Chlorobenzene-d5 | 838999 | 11.61 | | | | |
| 3855-82-1 | 1,4-Dichlorobenzene-d4 | 355247 | 13.56 | | | | |

 MW 8/22/14

# Appendix E

# Institutional/Engineering Control Certification

**Enclosure 1**
**Engineering Controls - Standby Consultant/Contractor Certification Form**

| | | |
|---|---|---|
| **Site No.** 755015 | **Site Details** | **Box 1** |

**Site Name Clinton West Plaza**

Site Address: 609-625 West Clinton Street Zip Code: 14850
City/Town: Ithaca
County: Tompkins
Site Acreage: 2.5

Reporting Period: September 13, 2013 to September 29, 2014

| | | YES | NO |
|---|---|---|---|
| 1. | Is the information above correct? | ☒ | ☐ |
| | If NO, include handwritten above or on a separate sheet. | | |
| 2. | To your knowledge has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period? | ☐ | ☒ |
| 3. | To your knowledge has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))? | ☐ | ☒ |
| 4. | To your knowledge have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period? | ☐ | ☒ |
| | **If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.** | | |
| 5. | To your knowledge is the site currently undergoing development? | ☐ | ☒ |

**Box 2**

| | | YES | NO |
|---|---|---|---|
| 6. | Is the current site use consistent with the use(s) listed below? Restricted-Residential, Commercial, and Industrial | ☒ | ☐ |
| 7. | Are all ICs/ECs in place and functioning as designed? | ☒ | ☐ |

**IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and contact the DEC PM regarding the development of a Corrective Measures Work Plan to address these issues.**

Signature of Standby Consultant/Contractor ______________________ Date ____________

SITE NO. 755015 Box 3

**Description of Institutional Controls**

| Parcel | Owner | Institutional Control |
|---|---|---|
| 79.-6-8.2 | Clinton West, Ltd | Ground Water Use Restriction<br>Landuse Restriction<br>Monitoring Plan<br>Site Management Plan<br>O&M Plan |

Provision to impose an institutional control in the form of an environmental easement for the controlled property that:
(a) requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
(b) allows the use and development of the controlled property for restricted residential use in portions of the site zoned for residential use by the City of Ithaca;
(c) allows the use and development of the controlled property for commercial use in portions of the site zoned for commercial use by the City of Ithaca;
(d) restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Department, NYSDOH or County DOH;
(e) requires compliance with the Department approved Site Management Plan.
8. If the remedy results in contamination remaining at the site that does not allow for unrestricted use, a Site Management Plan will be required, which includes the following:
(a) an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to assure the following institutional and/or engineering controls remain in place and are effective:
Institutional Controls: The Environmental Easement discussed in Paragraph 6 above.
Engineering Controls: The sub-slab depressurization system discussed in Paragraph 4 above.
This plan includes, but is not be limited to:
(i) descriptions of the provisions of the environmental easement including any groundwater use restrictions;
(ii) provisions for the management and inspection of the identified engineering controls;
(iii) maintaining site access controls and Department notification; and
(iv) the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.
iii
(b) a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but is not limited to:
(i) monitoring of groundwater, soil vapor, and indoor air to assess the performance and effectiveness of the remedy;
(ii) a schedule of monitoring and frequency of submittals to the Department;
(iii) provision to evaluate the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified;
(iv) provision to evaluate the potential for soil vapor intrusion for existing buildings if building use changes significantly or if a vacant building become occupied.
(c) an Excavation Management Plan which describes management of soil and other media in the event of excavations in potentially contaminated portions of the site.
(d) an Operation and Maintenance Plan to assure continued operation, maintenance,

monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:
(i) compliance monitoring of treatment systems to assure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
(ii) maintaining site access controls and Department notification; and
(iii) providing the Department access to the site and O&M records.

**Box 4**

**Description of Engineering Controls**

| Parcel | Engineering Control |
|---|---|
| **79.-6-8.2** | Vapor Mitigation<br>Fencing/Access Control |

**Box 5**

## Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification, including data and material prepared by previous contractors for the current certifying period, if any;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

| YES | NO |
|---|---|
| ☒ | ☐ |

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

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

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

   (c) nothing has occurred that would constitute a failure to comply with the Site Management Plan, or equivalent if no Site Management Plan exists.

| YES | NO |
|---|---|
| ☒ | ☐ |

**IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and contact the DEC PM regarding the development of a Corrective Measures Work Plan to address these issues.**

Signature of Standby Consultant/Contractor ______________________ Date ____________

**IC/EC CERTIFICATIONS**

**Box 6**

**Signature**

I certify that all information in Boxes 2 through 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I DONALD CONAN at EA ENGINEERING, P.C.
print name

6712 BROOKLAWN PARKWAY

SYRACUSE NY 13211,
(print business address)

am certifying as a QUALIFIED ENVIRONMENTAL PROFESSIONAL

Donald Conan
Signature of

STATE OF NEW YORK DONALD FRANCIS CONAN III 075668 LICENSED PROFESSIONAL ENGINEER
Stamp (Required for PE)

12/19/2014
Date