

**2014
Periodic Review Report
Mr. C's Dry Cleaners Site
NYSDEC Site No. 915157
Village of East Aurora
Erie County, New York**

January 2015

Prepared for:

**NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
625 Broadway
Albany, New York 12233-7013**

Prepared by:

**ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
368 Pleasant View Drive
Lancaster, New York 14086**

Table of Contents

Section	Page
Enclosure 1	xiii
Executive Summary	1
1 Site Overview	1-1
1.1 Site Treatment and Monitoring Systems	1-2
1.2 Site Management Plan	1-3
1.3 Significant Remedial Activities in 2014	1-4
2 Remedial Systems Compliance	2-1
2.1 Mr. C's Dry Cleaners Site	2-1
2.2 Subslab Depressurization Systems	2-3
2.3 Groundwater Monitoring Well Network	2-4
3 Site Institutional and Engineering Controls Compliance Reporting	3-1
3.1 Institutional Controls	3-1
3.1.1 Mr. C's Dry Cleaners Site	3-1
3.1.2 Subslab Depressurization Systems	3-1
3.1.3 Groundwater Monitoring Well Network	3-2
3.2 Engineering Controls	3-4
3.2.1 Mr. C's Dry Cleaners Site	3-4
3.2.2 Subslab Depressurization Systems	3-4
3.2.3 Groundwater Monitoring Well Network	3-5
3.3 IC/EC Certification	3-5
4 Monitoring Plan Compliance Report	4-1
4.1 Mr. C's Dry Cleaners Site	4-1
4.2 Subslab Depressurization Systems	4-4
5 General Status of Remedial Treatment Equipment and Replacement Program	5-1
5.1 Mr. C's Dry Cleaners Remedial Treatment System Condition, Replacement, and Repairs in 2014	5-2

Table of Contents (cont.)

Section	Page
5.2	SVI Investigations and SSDS Installation..... 5-3
5.2.1	Phase I 5-3
5.2.2	Phase II..... 5-3
5.2.3	Phase III..... 5-4
5.3	SSDS Condition, Replacement, and Repairs in 2014 5-5
5.4	Groundwater Monitoring Well Network..... 5-5
5.4.1	Long-Term Groundwater Monitoring 5-7
5.4.1.1	Well Purging and Sampling Procedures 5-7
5.4.1.2	Quality Assurance and Quality Control..... 5-8
5.4.1.3	2014 Long-term Groundwater Monitoring Results 5-9
5.4.1.4	Comparison of 2014 LTGM Program Results to Previous Years 5-10
5.4.2	Maintenance Issues 5-11
5.5	Groundwater Bioremediation Pilot Study 5-12
6	Actions to Support Eventual Site Closure 6-1
6.1	Mr. C's Dry Cleaners Site Treatment System..... 6-1
6.2	Subslab Depressurization 6-1
6.3	Remedial Site Optimization 6-2
6.3.1	Additional Soil Vapor Intrusion Investigations - 2015 6-2
6.3.2	Continue to Monitor the Degradation of cis-DCE 6-3
6.3.3	Install a Downgradient Barrier West of PW-8..... 6-3
6.3.4	Evaluate the Feasibility and Relative Cost-Effectiveness of Enhanced Anaerobic Bioremediation to Meet Full-Scale Remedial Objectives 6-4
7	Annual Remedial Action Costs 7-1
8	Local Public Reporting in 2014 8-1
9	References 9-1

Appendices (on disk in back pocket)

A	Property Ownership of Current and Potential Easements
B	Groundwater Treatment System Reporting
C	2014 Long-Term Groundwater Monitoring Results
D	Completed SSDS Unit Inspection Forms – Presbyterian Church

Table of Contents (cont.)

Section	Page
E	Soil Vapor Intrusion Investigations (SVII) Data
F	Bioremediation Pilot Study Data
G	Local Public Reporting in 2014

List of Tables

Table		Page
2-1	Mr. C's Dry Cleaners Site Remediation, Effluent Criteria	2-2
2-2	Summary of Positive Analytical Results for Groundwater Samples	2-5
3-1	Institutional Controls – Review of Easements/TUOs	3-2
3-2	Engineering Controls – Mr. C’s Dry Cleaners Site Groundwater Treatment System.....	3-4
3-3	Engineering Controls – Subslab Depressurization Systems	3-5
3-4	Engineering Controls – Area-wide Monitoring Well and Pumping Well Network.....	3-5
4-1	Treatment System Uptime in 2014, Mr. C’s Dry Cleaners Site	4-2
4-2	Volumes of Groundwater Processed and Discharged by the Remedial Treatment System in 2014	4-3
4-3	VOCs Removal in 2014, Mr. C’s Dry Cleaners Site	4-3
5-1	Analytical Frequency Matrix, Mr. C’s Dry Cleaners Site	5-1
5-2	Mr. C’s Dry Cleaners Site Equipment Repair and Replacement Program, 2014	5-3
5-3	Well Construction Summary, Mr. C’s Dry Cleaners Site, East Aurora, New York	5-5
7-1	2014 Remedial Action Costs, Mr. C's Dry Cleaner Site.....	7-1



List of Figures



Figure		Page
1-1	General Site Location Map	1-5
1-2	Mr. C's Dry Cleaners Site Location Map	1-7
4-1	Historical Treatment Trends – Mr. C's Dry Cleaners Site	4-4

List of Abbreviations and Acronyms

AGC	annual guideline concentrations
Agway site	Agway Retail Store and Agway Energy Products site
AS	air sparging
ATDV	automatic tank drain valve
BGS	below ground surface
BTEX	benzene, toluene, ethyl benzene, and xylene
cVOC	chlorinated volatile organic compound
DER	Division of Environmental Remediation
EEEPC	Ecology and Environment Engineering, P.C.
EPA	(United States) Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	Feasibility Study
GAC	granular activated carbon
GES	Groundwater & Environmental Services, Inc.
gpm	gallons per minute
IAQ	indoor air quality
IC/EC	institutional controls and engineering controls
IO&MM	Inspection, Operations, Maintenance, and Monitoring
IEG	Iyer Environmental Group, PLLC
LTGM	Long-term groundwater monitoring
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
Matrix	Matrix Environmental Technologies, Inc.
MBE	minority-owned business enterprise
MPI	Malcolm-Pirnie, Inc.
MTBE	methyl tert-butyl ether
NYSDEC	New York State Department of Environmental Conservation

List of Abbreviations and Acronyms (cont.)

NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
O & M	operation and maintenance
OM&M	operations, maintenance, and monitoring
OMEI	O&M Enterprise, Inc.
PCE	perchloroethylene, or tetrachloroethene
PLC	programmable logic controller
PRR	Periodic Review Report
QIS	Quality Inspection Services, Inc.
PVC	polyvinyl chloride
RI	remedial investigation
ROD	record of decision
SGC	short-term guideline concentrations
SIM	Selected Ion Monitoring
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	subslab depressurization system
STL	Severn-Trent Laboratories, Inc.
SVE	soil vapor extraction
SVI	soil vapor intrusion
SVII	Soil Vapor Intrusion Investigation
TAGM	Technical and Administrative Guidance Memorandum
TCA	trichloroethane
TCE	trichloroethylene
TUO	temporary use and occupancy
Tyree	The Tyree Organization, Ltd.
VOC	volatile organic compound

Enclosure 1

Engineering Controls – Engineering Standby Contractor Certification Form

**Mr. C's Dry Cleaners Site
NYSDEC Site Number – 915157**



Enclosure 1
Engineering Controls - Standby Consultant/Contractor Certification Form

Site Details	Box 1	
Site No. 915157		
Site Name Mr. C's Dry Cleaners		
Site Address: 586 Main Street Zip Code: 14052 City/Town: East Aurora County: Erie Site Acreage: 1.0		
Reporting Period: January 1, 2014 to December 31, 2014		
	YES	NO
1. Is the information above correct?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. To your knowledge has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Box 2		
	YES	NO
6. Is the current site use consistent with the use(s) listed below? Commercial and Industrial	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Are all ICs/ECs in place and functioning as designed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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. 915157

Description of Institutional Controls

<u>Parcel</u>	<u>Owner</u>	<u>Institutional Control</u>
164.20-7-24	DELTORA, LLC - Paul Bandrowski	Monitoring Plan Site Management Plan O&M Plan

As called for in the March 1997 Record of Decision, the December 2013 Site Management Plan (SMP) shall govern Operation, Maintenance and Monitoring (OMM) of the site. The SMP includes treatment of groundwater by pump and treat technology under NYSDEC management. Treated water is being sampled, monitored and discharged through a dedicated discharge line along Whaley Avenue to Tannery Brook off Ridge Road and in accordance with discharge limits established by the NYSDEC's Division of Water. Treated air is also being sampled, monitored and discharged in accordance with NYS guidelines. OMM of SSDSs is also required by the SMP.

164.20-7-23	DELTORA, LLC - Paul Bandrowski	Site Management Plan Monitoring Plan O&M Plan
-------------	--------------------------------	-----------------------------------------------------

As called for in the March 1997 Record of Decision, the December 2013 Site Management Plan (SMP) shall govern Operation, Maintenance and Monitoring (OMM) of the site. The SMP includes treatment of groundwater by pump and treat technology under NYSDEC management. Treated water is being sampled, monitored and discharged through a dedicated discharge line along Whaley Avenue to Tannery Brook off Ridge Road and in accordance with discharge limits established by the NYSDEC's Division of Water. Treated air is also being sampled, monitored and discharged in accordance with NYS guidelines. OMM of SSDSs is also required by the SMP.

Description of Engineering Controls

<u>Parcel</u>	<u>Engineering Control</u>
164.20-7-24	Groundwater Treatment System

The site utilizes groundwater by pump and treat technology under NYSDEC management. Treated water is being sampled, monitored and discharged through a dedicated discharge line along Whaley Avenue to Tannery Brook off Ridge Road and in accordance with discharge limits established by the NYSDEC's Division of Water. Treated air is also being sampled, monitored and discharged in accordance with NYS guidelines. OMM of sub-slab depressurization systems are also required under site management.

164.20-7-23	Groundwater Treatment System
-------------	------------------------------

Periodic Review Report (PRR) Certification Statements

I certify by checking "YES" below that:

Site Name: Mr. C's Dry Cleaners

- 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 complete.

YES	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>

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
<input checked="" type="checkbox"/>	<input type="checkbox"/>

If the answer to question 2 is NO, sign and date below and contact the NYSDEC 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

Profession Engineer 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 Gerald A Strobel at Ecology and Environment Engineering, P.C.
print name

368 Pleasant View Drive

Lancaster, New York 14086
(print business address)

am certifying as a Professional Engineer.



Gerald A Strobel

Signature of Professional Engineer

Stamp
(Required for PE)

Date

1-30-15

Executive Summary

The 2014 Periodic Review Report (PRR) describes the effectiveness of the operations, maintenance, and monitoring (OM&M) work being performed at the Mr. C's Dry Cleaners Site (Mr. C's site), New York State Department of Environmental Conservation (NYSDEC) Site No. 915157, for the period from January 1 to December 31, 2014. The PRR also recommends additional actions to support eventual site closure.

The current OM&M work for the site is being performed by Ecology and Environment Engineering, P.C. (EEEPC) under Work Assignment D007617-11, which was approved by the NYSDEC Division of Environmental Remediation on October 2, 2012. The EEEPC site management work assignment is to continue until June 14, 2015.

The Mr. C's site is located at 586 Main Street in the village of East Aurora, Erie County, New York. The environmental contamination associated with the site resulted from the improper handling and management of perchloroethene (PCE), also known as tetrachloroethene, a solvent used in the dry cleaning process. The poor management practices resulted in contamination of the groundwater beneath and downgradient of the Mr. C's facility.

The groundwater pumping and treatment system has recovered and treated contaminated groundwater beneath and downgradient of the site since its installation in 2002. OM&M services for the Mr. C's site treatment system and ancillary equipment have been performed by EEEPC since November 2003. Remedial operations were also conducted at nearby properties where subslab depressurization systems (SSDS) were installed in 2004 and 2014.

A network of 26 groundwater monitoring wells, eight pumping wells, and 32 piezometers are located on the Mr. C's site and adjacent properties. Monitoring of and analytical reporting for the groundwater monitoring well network and recovery wells are performed on an annual basis. Long-term monitoring and reporting of the wells was performed in 2014.

Effectiveness of the Remedial Program in 2014

The effectiveness of the remedial systems at the Mr. C's site during the 2014 reporting period is described below.

■ **Mr. C's Remedial Groundwater Pumping and Treatment System**

Based on the reported hours of operation for 2014, the Mr. C's remedial groundwater pumping and treatment system effectively operated 92.5% of the time; the goal stated in the Record of Decision (ROD; NYSDEC 1997, 2000) is an uptime of 90%. The system treated 3,110,406 gallons of contaminated groundwater in 2014 and removed 14.7 pounds of volatile organic compounds (VOCs). In 2014, the treatment system had a contaminant-removal efficiency of 96.1%. The volume of contaminant removed has generally decreased over the past 12 years. This trend is directly related to the reduced volume of groundwater being removed. From treatment startup until December 2014, approximately 1,591 pounds of VOCs have been removed.

The remedial treatment system and equipment continues to achieve the remedial objectives established by the ROD for the site.

■ **Soil Vapor Intrusion Investigations, Phases 1, 2, and 3**

In 2014, a soil vapor intrusion investigation (SVII) was performed at six locations around the Mr. C's property (555 Fillmore Avenue, 586 Main Street - rear, 589 Main Street, 591 Main Street, 594 Main Street, and 16 Paine Avenue) at the direction of the NYSDOH. The analytical results of the investigation confirmed that subslab vapor mitigation was appropriate for four of the properties (586 Main Street - rear, 591 Main Street, 594 Main Street, and 16 Paine Avenue). EEEPC is developing vapor mitigation systems for each property, as directed by NYSDEC and the NYSDOH.

On November 6, 2014, EEEPC received a request for an additional phase of SVII services from NYSDOH and NYSDEC. SVII services were requested for a working list of 12 properties surrounding the Mr. C's site to evaluate properties outward from the site for potential VOC contamination. Further, SVII investigations will continue on properties outward from the site until NYSDOH guidance and thresholds are met. SVII inspection, sampling, and reporting services will be performed by EEEPC for these 12 locations during the 2014/2015 heating season.

■ **Subslab Depressurization Systems**

Subslab depressurization systems (SSDSs) were installed at two facilities in 2004. Based on the results of further SVII work performed in 2013, two additional SSDSs were installed in 2014 by TREC Environmental (a subcontractor to Groundwater & Environmental Services, Inc., of Cheektowaga, New York), and one SSDS was installed by IYER Environmental Group, PLLC, of Orchard Park, New York. The five SSDSs currently installed in and around the site were not part of the original remedy for the Mr. C's site.

On February 20, 2014, and December 11, 2014, the SSDS units at the First Presbyterian Church site were inspected for routine operational effectiveness. The SSDS units continue to operate as initially installed and in a manner protective of the public health and safety. The April 2014 indoor air sample results taken within the First Presbyterian Church were below the New York

State Department of Health (NYSDOH) guidance values for PCE and trichloroethylene (TCE) (NYSDOH 2006).

In 2014, the private residence and SSDS unit located at 27 Whaley Avenue could not be inspected, as repeated calls to the property owner to obtain access were unanswered. The effectiveness of this SSDS could not be evaluated in 2014.

Routine inspection of the new SSDS installations at the 586 Main Street, 572-576 Main Street, and 578-580 Main Street were performed on December 11, 2014. The inspections indicate that the systems are operating as originally designed.

■ **Former Agway Site Air Sparging/Soil Vapor Extraction Treatment System**

In 2001, an air sparging/soil vapor extraction (AS/SVE) treatment system was installed at the former Agway site to remediate an underground gasoline tank spill. After discussions with NYSDEC, it was agreed that the system was providing little benefit to the overall site remediation, and permanent decommissioning of the system commenced. The system was shut off on December 12, 2011, and the site equipment and an associated shed were removed from the site in 2013 (see Section 5.7). The surface and subsurface utility piping from the treatment system were decommissioned in June 2014. The former Agway site AS/SVE system was not part of the original remedy for the Mr. C's site.

■ **Groundwater Monitoring Well Network**

The Long-term Groundwater Monitoring (LTGM) program was established in 2002. In 2012, eight monitoring wells were replaced, two new monitoring wells were installed, and six damaged wells were decommissioned in accordance with NYSDEC's monitoring well decommissioning policy CP-43 (NYSDEC 2009). Twenty-six monitoring wells, eight pumping wells, and 32 piezometers comprise the groundwater monitoring well network. At present, groundwater is not being used as a potable water source in the current area of concern around the site.

In 2014, 24 monitoring wells, eight pumping wells, and 4 piezometers were sampled as a part of the LTGM program to evaluate the effectiveness of the groundwater pumping and treatment program. The Groundwater Bioremediation pilot study (pilot study; see next bullet) has reduced PCE concentrations in the study area, where contamination now consists primarily of cis-DCE. Each PCE degradation by-product is lighter and more mobile than PCE. Contaminated groundwater beneath the site has expanded northwest in the direction of groundwater flow as a result of the greater mobility of the PCE degradation by-products and turning off of pumping wells PW-5 and PW-7 during the pilot study to minimize secondary impacts of the bio-injected materials on the treatment system. The 2014 results of the LTGM program and comparison to the results from previous years are presented in Section 5.

■ **Groundwater Bioremediation Pilot Study**

Monitoring of the enhanced bioremediation pilot study that was initiated at the site in May 2013 continued through June 2014. E & E performed the final three rounds of performance monitoring for the pilot study in April, May, and June 2014. E & E issued Bioremediation Pilot Progress Report No. 3 to NYSDEC on June 2, 2014. The performance monitoring results for June 2014 are included in the final bioremediation summary report issued in January 2015.

The pilot study successfully determined that bioremediation technologies can be effective at reducing PCE concentrations at the Mr. C's site and confirmed that a complete degradation pathway exists to the non-hazardous degradation by-product of ethene. A final bioremediation summary report was issued to NYSDEC in January 2015 (see Appendix F). The pilot study is one component of the remedial system optimization that will be performed to support potential future modifications to the ROD. Throughout 2014, secondary impacts on the pumping and treatment system were observed as a result of the conversion of PCE to cis-DCE within the aquifer and the capture of groundwater by PW-5. PW-5 was returned to service on June 10, 2014, and shut off on September 15, 2014, due to its proximity to the injection points of the bioremediation pilot study. Secondary impacts were limited by shutting off PW-5 in September and adjusting the blower fan speed on the treatment system to increase removal of cis-DCE from the groundwater influent. Additional information regarding the pilot study activities and impacts in 2014 is presented in Sections 5.5.

An expanded site history, including associated regulatory information, is presented as part of the Site Management Plan (SMP; EEEPC 2013). The SMP is in the process of being updated to reflect the changes to the Site since 2013, including the installation of SSDS systems, and will be issued to the NYSDEC in the first quarter of 2015.

Compliance

Currently, the ICs and ECs outlined in the SMP remain in force, and the site is in compliance with the site remedy specified in the ROD issued in March 1997 (NYSDEC 1997) and modified by the Explanations of Significant Differences (ESD) issued in April 2000 (NYSDEC 2000). The SMP stipulates the required inspection, maintenance, and monitoring event frequency for the remedial and monitoring elements at the Mr. C's site.

In 2014, EEEPC issued monthly OM&M compliance reports for the operation of the groundwater pumping and treatment system and the effluent discharge to Tannery Brook. EEEPC subcontracted the OM&M services to Iyer Environmental Group, PLLC (IEG), of Orchard Park, New York, for the entire period of the work assignment. EEEPC provided oversight of the OM&M work.

The remedial treatment system and ancillary equipment operated in compliance with the requirements of the SMP and the State Pollutant Discharge Elimination System (SPDES) Equivalency Permit throughout 2014. The test results from the effluent samples collected in June, July, September, and October 2014 exceeded the SPDES Equivalency Permit limits. As a result, corrective actions (i.e., cleaning of air stripper trays and adjusting differential pressures in the air stripper) were performed in accordance with the SMP. Corrective actions followed by additional influent and effluent sampling continued until compliance was achieved. When the corrective actions undertaken in September and October 2014 per the SMP failed to result in compliance with the SPDES Equivalency Permit, it became evident that the cause was not equipment failure, but the increase in influent cis-DCE concentrations from the breakdown of PCE from the bioremediation program. cis-DCE has a lower Henry's Law constant, which makes it harder to remove by air stripping. The treatment system was adjusted by changing the blower fan speed to bring the system back into compliance on October 31, 2014.

Recommendations

Section 6 of the PRR provides recommendations that support eventual site closure or a change in site classification. Recommended remedial actions include the following:

1. Continued OM&M of the Mr. C's remedial groundwater treatment system.
2. Completion of the SVIIs of 12 existing structures around the Mr. C's site to evaluate the need for the installation of SSDS units.
3. Installation of SSDS units in the existing structures around the Mr. C's site based on analytical test results and direction from NYSDEC and NYSDOH.
4. Continued inspection, maintenance and air monitoring of the existing structures with SSDS units.
5. Continue the Long Term Groundwater Monitoring program and evaluate the results on an annual basis.
6. Continue site optimization review to determine whether the treatment system needs to continue operation beyond the time frame specified in the ROD, and whether any adjustments to the system need to be made, including re-evaluating the appropriateness of the selected remedy to achieve the cleanup objectives.
8. Because of the higher mobility associated with PCE degradation by-products, install a downgradient barrier to anaerobically degrade chlorinated ethenes as they migrate with bulk groundwater flow.
9. Continue to evaluate the SMP and submit recommended changes to the SMP based on upgrades/changes in treatment system(s) at the site.
10. Continue annual PRR reporting.

1

Site Overview

In accordance with the requirements specified in the current Mr. C's Site Management Plan (SMP) (EEEEPC 2013), this PRR presents information on the operations, maintenance, monitoring, compliance activities, and associated costs for the Mr. C's Dry Cleaners Site (Mr. C's site) during calendar year 2014. Because the volatile organic compound (VOC) contaminant plume (consisting mainly of tetrachloroethene [PCE] and its degradation by-products) extends beyond the immediate Mr. C's site treatment system facility, this PRR was prepared for the following systems located in the village of East Aurora, Erie County, New York, which are collectively operated, maintained, and monitored under the overall Mr. C's site Work Assignment:

- The Mr. C's site remedial treatment system, located at 586 Main Street;
- The groundwater pumping and recovery network;
- The former Agway Retail Store and Agway Energy Products site (former Agway site) AS/SVE system, located at 566 Main Street (decommissioned in 2011, with equipment removed in 2013 and piping removed in 2014);
- Five subslab depressurization systems located within and around the site at the following properties:
 - 9 Paine Street (First Presbyterian Church) – three-fan system units installed fall 2004;
 - 27 Whaley Avenue (private residence) – single-fan system installed fall 2004;
 - 572-576 Main Street (commercial building) – two-fan system units installed August 2014;
 - 578-580 Main Street (commercial building) – single-fan system installed August 2014; and,
 - 586 Main Street, Suite 3 (Mr. C's Treatment Building) – single-fan system installed April 2014.
- The groundwater monitoring well network.

These systems are described below. A general location map is provided as Figure 1-1, and a site map is provided as Figure 1-2.

1.1 Site Treatment and Monitoring Systems

Mr. C's Dry Cleaners Site – Remedial Treatment System

The remedial treatment system consists of eight groundwater pumping wells, a groundwater treatment system, and appurtenances at the Mr. C's site. The groundwater wells pump contaminated groundwater through double-walled piping to the treatment system located at the Mr. C's site. The treatment facility uses air stripping to treat the contaminated groundwater. The treated effluent is then discharged through 1,300 linear feet of double-walled polyvinyl chloride (PVC) piping to Tannery Brook, a small tributary of the East Branch of Cazenovia Creek that flows through the village of East Aurora.

Former Agway Site

The former remedial treatment system at the site includes eight air-sparging (AS) points, nine fully screened vapor-extraction points, and approximately 200 linear feet of SVE collection piping. This system was designed to collect extracted vapor contaminants, transport them to a central location, and discharge them at one central emission point into the atmosphere without treatment. The AS/SVE system was originally installed and operated by Matrix Environmental, Inc. (Matrix), of Orchard Park, New York, from 1999 to 2003 (Matrix 2003).

The AS/SVE system at the former Agway site was operated and maintained by Ecology and Environment Engineering, P.C. (EEEPC), of Lancaster, New York, from 2005 to December 2011, when its operation was discontinued with the approval of NYSDEC. An inventory of the systems components was compiled and sent to NYSDEC on December 16, 2011, so that the equipment could potentially be reused at another NYSDEC site. The equipment was removed from the treatment shed in October 2013 and transported to the American Thermostat site (a NYSDEC Region 4 site), and the shed was removed to the McKenna Landfill site (a NYSDEC Region 8 site). On June 12 and 13, 2014, aboveground and belowground utility piping was removed and the area was regraded for positive drainage.

Beginning in this 2014 PRR, remedial systems compliance, institutional controls (IC) and engineering controls (EC), and monitoring and replacement of controls on the former Agway site will not be included in the discussion of either the Mr. C's site or the groundwater monitoring well network. As of December 16, 2011, there is no longer an air discharge associated with the Former Agway Site, and the ECs associated with the former Agway site include only a handful of groundwater monitoring wells. No ICs are in place for the former Agway site AS/SVE system. The two groundwater pumping wells (PW-2 and PW-3) located on the former Agway site property are part of the Mr. C's remedy to treat the contaminated groundwater plume. Contaminated groundwater beneath the former Agway site is monitored and treated on-site as a part of the overall Mr. C's remedy because it lies within the bounds of the contaminated groundwater plume.

Subslab Depressurization Systems

SSDS units were installed at the First Presbyterian Church, located at 9 Paine Avenue (three fans) (NYSDEC 2004), and in the private residence at 27 Whaley Avenue (one fan) (NYSDEC 2005). In 2014, SSDS units were installed at the following properties: 586 Main Street (one fan), 572-576 Main Street (two fans), and 578-580 Main Street (one fan).

As a part of the installation program, the head custodian at the First Presbyterian Church and the property owners at the other properties were instructed on the general operations of the SSDS units. Each was provided with contact information for EEEPC and the operations, maintenance, and monitoring (OM&M) subcontractor in the event electrical or mechanical issues were encountered with the unit(s). The systems operate on a continuous basis. The access agreements to facilitate inspections and maintenance for SSDS units at 27 Whaley Avenue and the First Presbyterian Church are included in the 2013 SMP (EEEPC 2013). Access agreements to the SSDS units installed in 2014 will be negotiated in 2015 and included in SMP revisions.

Groundwater Monitoring Well Network

Initially, during the remedial investigation (RI) phase at the site, a total of 31 monitoring wells (does not include pumping wells and piezometers) were installed to evaluate the movement and extent of the contaminant plume in the groundwater beneath and around the Mr. C's site. The network of monitoring wells consisted of observation wells installed by Earth Dimensions, Inc., of East Aurora, New York, in the late 1980s for the initial site assessment, and observation wells installed by Empire Soil Investigations, Inc., of East Aurora, New York, and Malcolm-Pirnie, Inc., of Orchard Park, New York, from 1992-1996, during the remedial investigation/feasibility study (RI/FS) (MPI 1995a, 1995b, and 1996). Monitoring wells were installed by Matrix in 1992-1993 to monitor groundwater at the former Agway site. Groundwater pumping wells, piezometers, and monitoring wells were installed as part of the remedial construction performed by the Tyree Organization, Ltd., of Latham, New York, in 2001-2002. Between 2004 and 2013, EEEPC installed additional monitoring wells and replacement wells and decommissioned damaged and inactive wells around the site, as necessary. No replacement, installation, or decommissioning of wells occurred in 2014.

1.2 Site Management Plan

The original operations and maintenance (O&M) plan was issued by the contractor as part of the remedial project plan deliverables for final completion in September 2003 (Tyree 2003). The document was amended by EEEPC in March 2005 as a result of the removal of the vapor-phase granular activated-carbon (GAC) units from the treatment process. The GAC units were removed by EEEPC based on an air modeling study performed by EEEPC in 2004 (EEEPC 2004a) and subsequently approved by NYSDEC.

The first revision to the O&M plan was prepared and submitted in January 2008 under EEEPC Work Assignment D004442-DC13. The O&M plan was revised to the current SMP format in 2012 to describe measures to monitor and evaluate the performance and effectiveness of the ongoing remedial action with respect to the individual remedial units at and around the site, including the following:

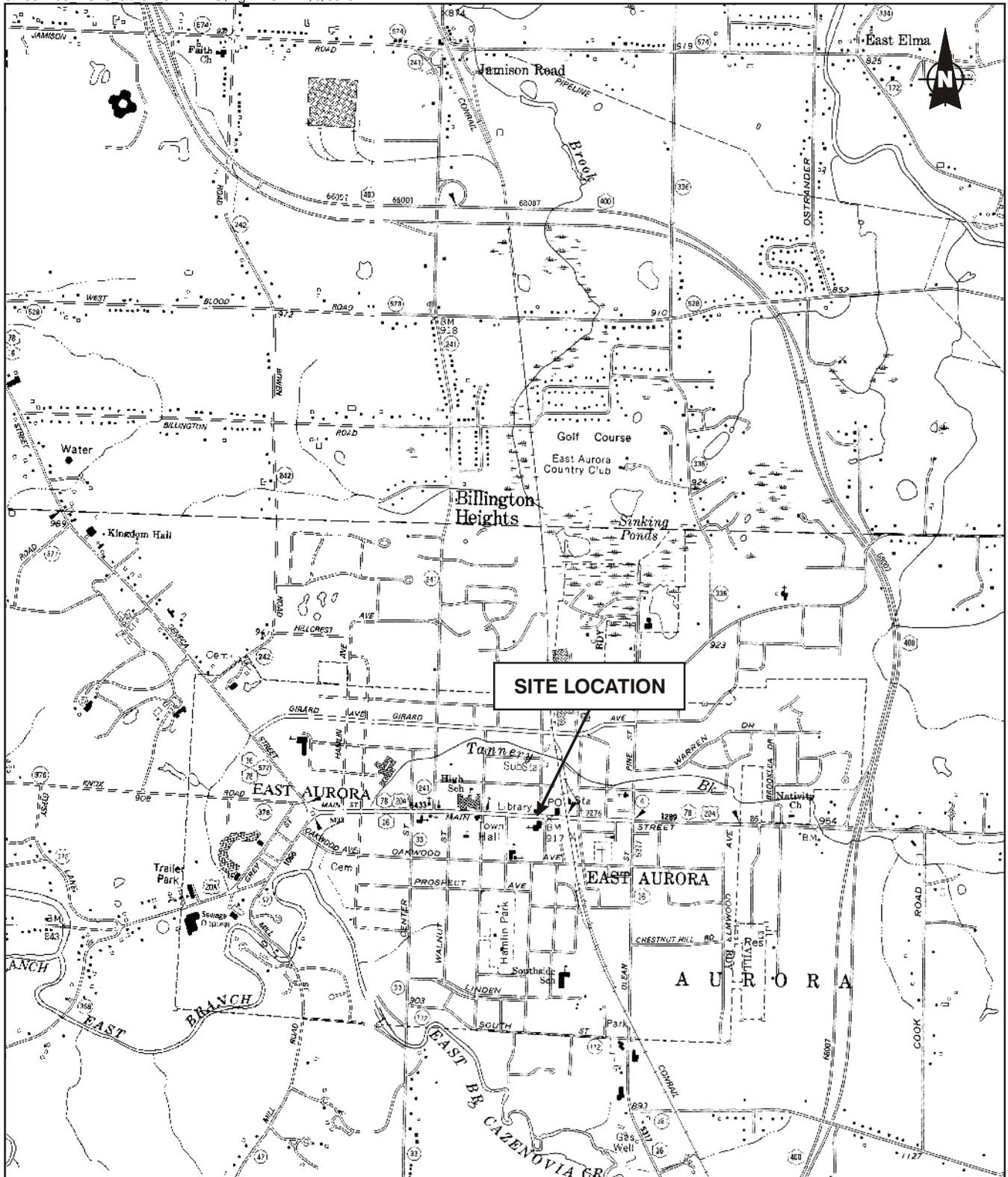
- Operation and maintenance of the remedial treatment units,
- Groundwater and air sampling,
- Analysis of the individual environmental matrices, and
- Reporting.

The most recent version of the SMP was submitted to NYSDEC in December 2013. As a result of significant changes to the site's ECs, including the installation of new subslab depressurization units, EEEPC is in the process of updating the SMP. The next revised SMP will be submitted to NYSDEC in early 2015.

1.3 Significant Remedial Activities in 2014

In 2014, significant remedial activities at the Mr. C's site included:

1. Performance of Phases I, II, and III of the planned soil vapor intrusion investigations (SVII) (see Section 5.2);
2. Conclusion of the enhanced and augmented bioremediation pilot study (see Sections 5.5); and
3. Installation of SSDS units in the Mr. C's treatment facility at 586 Main Street and the existing buildings at 572-576 Main Street and 578-580 Main Street, which NYSDOH determined would be required based on the Phase I and Phase II SVII results (see Sections 5.2 and 5.3).



SOURCE: NYS Department of Transportation Raster Quadrangle, 1988.

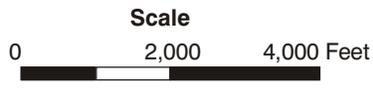
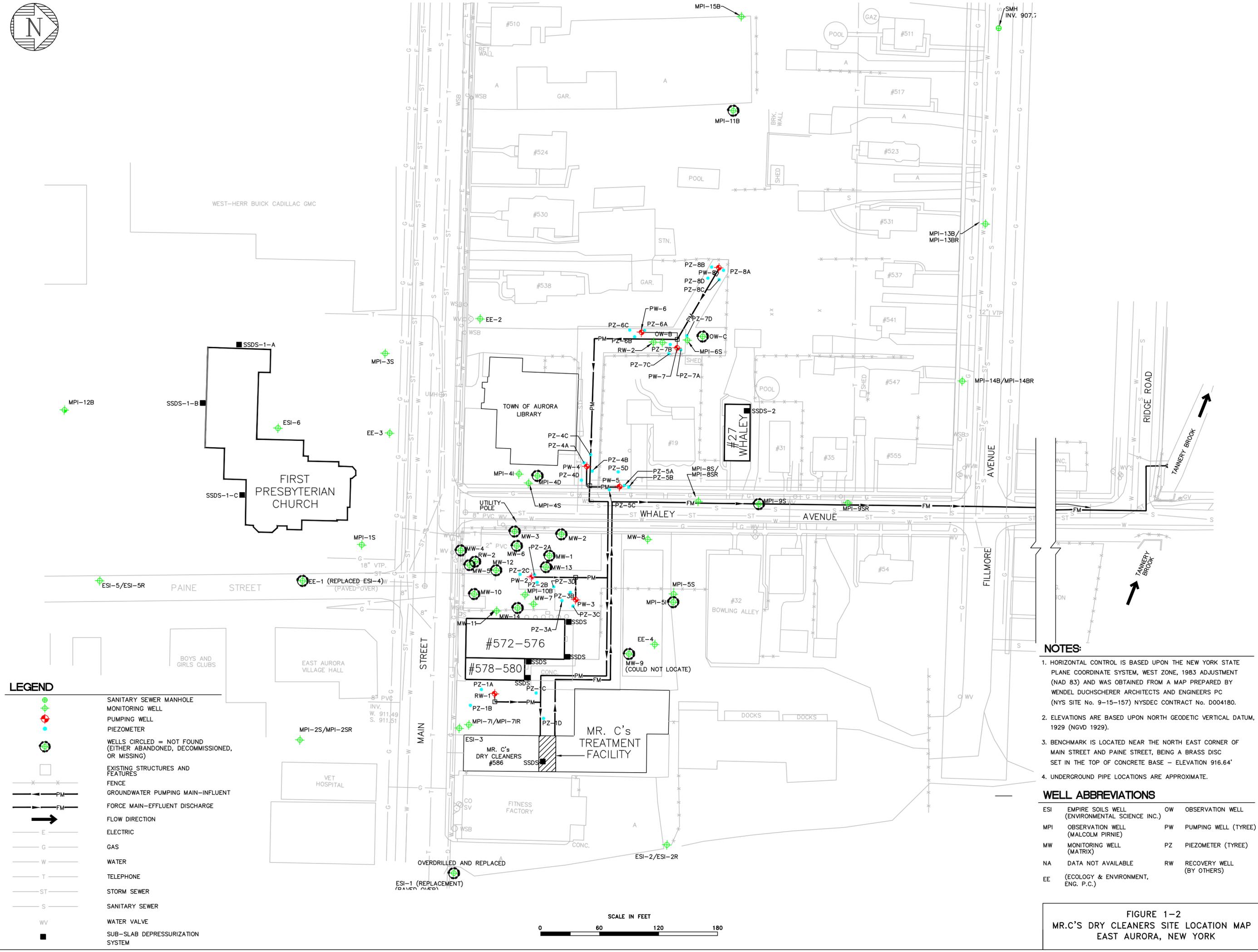


Figure 1-1 General Site Location Map



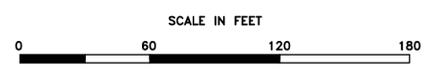
- NOTES:**
- HORIZONTAL CONTROL IS BASED UPON THE NEW YORK STATE PLANE COORDINATE SYSTEM, WEST ZONE, 1983 ADJUSTMENT (NAD 83) AND WAS OBTAINED FROM A MAP PREPARED BY WENDEL DUCHSCHERER ARCHITECTS AND ENGINEERS PC (NYS SITE No. 9-15-157) NYSDEC CONTRACT No. D004180.
 - ELEVATIONS ARE BASED UPON NORTH GEODETIC VERTICAL DATUM, 1929 (NGVD 1929).
 - BENCHMARK IS LOCATED NEAR THE NORTH EAST CORNER OF MAIN STREET AND PAINE STREET, BEING A BRASS DISC SET IN THE TOP OF CONCRETE BASE - ELEVATION 916.64'
 - UNDERGROUND PIPE LOCATIONS ARE APPROXIMATE.

WELL ABBREVIATIONS

ESI	EMPIRE SOILS WELL (ENVIRONMENTAL SCIENCE INC.)	OW	OBSERVATION WELL
MPI	OBSERVATION WELL (MALCOLM PIRNIE)	PW	PUMPING WELL (TYREE)
MW	MONITORING WELL (MATRIX)	PZ	PIEZOMETER (TYREE)
NA	DATA NOT AVAILABLE	RW	RECOVERY WELL (BY OTHERS)
EE	(ECOLOGY & ENVIRONMENT, ENG. P.C.)		

FIGURE 1-2
MR.C'S DRY CLEANERS SITE LOCATION MAP
EAST AURORA, NEW YORK

- LEGEND**
- SANITARY SEWER MANHOLE MONITORING WELL
 - PUMPING WELL
 - PIEZOMETER
 - WELLS CIRCLED = NOT FOUND (EITHER ABANDONED, DECOMMISSIONED, OR MISSING)
 - EXISTING STRUCTURES AND FEATURES
 - FENCE
 - GROUNDWATER PUMPING MAIN-INFLUENT
 - FORCE MAIN-EFFLUENT DISCHARGE
 - FLOW DIRECTION
 - ELECTRIC
 - GAS
 - WATER
 - TELEPHONE
 - STORM SEWER
 - SANITARY SEWER
 - WATER VALVE
 - SUB-SLAB DEPRESSURIZATION SYSTEM



F:\MrC\well_analysis Jan 2015\per well map_Figure 1-2.dwg
BUFPLOT: 1/19/15 kkk

2

Remedial Systems Compliance

The regulatory compliance requirements for the remedial groundwater treatment system at the Mr. C's site deal primarily with the discharge of treated effluent waters from the system. The original State Pollutant Discharge Elimination System (SPDES) Equivalency Permit for the site's remedial treatment system was part of the remedial construction contract (MPI 1999), which expired in April 2006. Although it was not renewed, continuance of the SPDES Equivalency Permit is being handled by the NYSDEC project manager.

The remedial operating systems associated with the Mr. C's site were in compliance with the SMP operating requirements for 2014. Information regarding each of the specific operating units is presented in the following subsections.

2.1 Mr. C's Dry Cleaners Site

Groundwater Treatment System

The remedial operating systems associated with the Mr. C's site were in compliance with the operating requirements of the SMP in 2014; however, the results for the first monthly effluent samples collected in June, July, September, and October did not achieve the SPDES Equivalency Discharge Permit requirements. As a result, corrective actions (i.e., cleaning of air stripper trays and adjusting differential pressures in the air stripper) were performed in accordance with the SMP. Following the corrective actions taken in June and July, additional samples were collected and compliance with the SPDES requirements was achieved.

In September, a second SPDES compliance sample was collected following the initial corrective actions, but the analytical results still did not achieve the SPDES requirements. Additional corrective actions were then taken (i.e., additional cleaning of the stripper trays and additional adjustment of the differential pressure), and a third SPDES compliance sample was collected. The analytical results for this sample still did not achieve the SPDES requirements; no further samples were collected in September.

In early October the air stripper was shut off, disassembled, and thoroughly cleaned, and the first SPDES compliance sample was collected. The analytical results for this sample still did not achieve the SPDES requirements. Additional adjustments were then made to the blower fan and the differential pressures in the

2 Remedial Systems Compliance

air stripper unit, and a second SPDES compliance sample was collected; however, the analytical results for this sample still did not achieve the SPDES requirements.

When the samples collected after the corrective actions undertaken in September and October 2014 did not achieve compliance with the SPDES Equivalency Permit requirements, it became evident that the cause was not equipment failure, but an increase in influent cis-DCE concentration. The increase in cis-DCE concentration was a result of the changes in geochemistry brought about by the success of the bioremediation pilot project. Because cis-DCE has a lower Henry's Law constant, it is more difficult to remove from the influent by air stripping. To account for this change, the treatment system was adjusted by changing the blower fan speed. Following this adjustment, a compliance sample was collected, and the analytical results for this sample were in compliance with the requirements of the SPDES Equivalency Permit.

The effluent discharge criteria used for the remedial treatment system at the Mr. C's site are presented in Table 2-1. The effluent criteria are based on the SPDES Equivalency Permit.

Table 2-1 Mr. C's Dry Cleaners Site Remediation, Effluent Criteria

Parameter/Analyte	Daily Maximum ¹	Units
Flow	216,000	gpd
pH	6.0 - 9.0	standard units
1,1-Dichloroethene	10	µg/L
1,2-Dichloroethane	10	µg/L
Trichloroethene	10	µg/L
Tetrachloroethene	10	µg/L
Vinyl chloride	10	µg/L
Benzene	5	µg/L
Ethylbenzene	5	µg/L
Methylene chloride	10	µg/L
1,1,1-Trichloroethane	10	µg/L
Toluene	5	µg/L
Methyl tert-butyl ether	NA	µg/L
o-Xylene	5	µg/L
m, p-Xylene	10	µg/L
Xylenes, total	NA	µg/L
Iron, total ²	600	µg/L
Aluminum ²	4,000	µg/L
Copper ²	48	µg/L
Lead ²	11	µg/L
Manganese ²	2,000	µg/L
Silver ²	100	µg/L
Vanadium ²	28	µg/L
Zinc ²	230	µg/L
Total dissolved solids ²	850	mg/L

Table 2-1 Mr. C's Dry Cleaners Site Remediation, Effluent Criteria

Parameter/Analyte	Daily Maximum ¹	Units
Total suspended solids ²	20	mg/L
Hardness	NA	mg/L
Cyanide, free ²	10	µg/L

Notes:

¹ Daily Maximum excerpted from Attachment E of Addendum 1 to Construction Contract Document D004180.

² Removed from the contaminant parameter list by NYSDEC Region 9 in February 2005.

Key:

gpd = Gallons per day

µg/L = Micrograms per liter

mg/L = Milligrams per liter

NA = Not applicable

The analytical data indicated that the need to implement corrective actions to meet the SPDES Equivalency Permit requirements was due to the changes in geochemistry caused by implementation of the bioremediation pilot study project. The PCE concentration in the October 31, 2014, influent sample was 320 µg/L, which was less than half the concentration detected prior to the pilot study. The concentration of cis-DCE in the same sample was 460 µg/L; prior to the pilot study, the concentration was nondetect. For more information on remedial treatment operations, refer to Section 4.1.

The change in the influent concentrations reflects the change in aquifer contaminant concentrations, and similar influent concentrations can be expected in future compliance samples. Assuming the same concentrations of cis-DCE and PCE in the influent, the air stripper will continue to have difficulty removing cis-DCE, which has a lower Henry's Law constant than PCE (295.8 atm compared to 1,679.17 atm¹). The Henry's Law constant is the ratio of vapor pressure to solubility; given a constant vapor pressure, a lower Henry's Law constant means that more of a contaminant will remain in solution. Based on the confirmation sample results, the adjustments made to the blower air speed have addressed this problem. As degradation proceeds to vinyl chloride, additional adjustments to the air stripper or additional treatment might be necessary to account for its lower Henry's Law constant. Additional information on the treatment system's performance during each month of operation is provided in Sections 4 and 5 of this PRR.

2.2 Subslab Depressurization Systems

Subslab Air Discharge

The NYSDOH has determined that the concentrations of PCE and TCE in indoor air should not exceed 100 micrograms (µg/m³) and 5 µg/m³, respectively (NYSDOH 2006).

¹ Michael R Lindeburg, PE. 2008. Civil Engineering Reference Manual for the PE Exam. Eleventh Edition.

First Presbyterian Church. Indoor air and subslab soil vapor/SSDS stack emission sampling was conducted on February 20, 2014. An indoor air quality report was submitted to NYSDEC on April 30, 2014, and is included in Appendix D.

In 2014, PCE concentrations in indoor air samples ranged from nondetect to $1.6 \mu\text{g}/\text{m}^3$, and TCE concentrations were nondetect at each location. The 2014 sample results were below the NYSDOH guidance values for PCE and TCE (NYSDOH 2006).

In subslab soil vapor samples collected from the west SSDS exhaust fan emission, the PCE and TCE concentrations were $560 \mu\text{g}/\text{m}^3$ and $23 \mu\text{g}/\text{m}^3$, respectively (see Appendix D). However, NYSDEC and the NYSDOH have not established guidance values for discharges of subslab air into the atmosphere from any of the fan emission points.

27 Whaley Avenue. In 2014, no indoor air sampling or SSDS inspection was performed at the 27 Whaley Avenue residence, because attempts made by EEEPC to contact the property owner to obtain access were unsuccessful. Further attempts to contact the property owner will be made in 2015. Air sampling at the 27 Whaley Avenue residence was last performed in November 2010 (EEEEPC 2011).

Mr. C's Building at 586 Main Street. In 2014, no indoor air sampling was performed at the 586 Main Street building following installation, but air sampling is planned for February 2015.

572-576 Main Street. In 2014, no indoor air sampling was performed at the 572-576 Main Street building following installation of the SSDS unit, but air sampling is planned for February 2015.

578-580 Main Street. In 2014, no indoor air sampling was performed at the 578-580 Main Street building following installation of the SSDS unit, but air sampling is planned for February 2015.

2.3 Groundwater Monitoring Well Network

Completion of the site remedy requires the groundwater quality to be remediated to meet the NYSDEC Class GA groundwater standards (NYSDEC 1998) to the extent practicable. Monitoring of the groundwater well network indicates that VOC contamination remains above the applicable standards, criteria, and guidance values.

Table 2-2 identifies the VOCs detected during the 2014 LTGM program (see Appendix C) using EPA method 8260 and compares these results to the applicable Class GA standard. The results are discussed in Section 5.4.1.

**Table 2-2 Summary of Positive Analytical Results for Groundwater Samples
Mr. C's Dry Cleaning, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	EE-2	EE-3	EE-4	ESI-2-R	ESI-3	ESI-5-R
			Sample Name:	EE-2-1022	EE-3-1016	EE-4-1023	ESI-2-R-1017	ESI-3-1014	ESI-5-R-1017
			Depth:	22 - 32 ft	18 - 28 ft	5 - 15 ft	9 - 19 ft	7 - 17 ft	5 - 15 ft
			Date:	10/22/14	10/16/14	10/23/14	10/17/14	10/14/14	10/17/14
Volatile Organics by Method SW846 8260C (µg/L)									
1,1,1-TRICHLOROETHANE	5			0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-DICHLOROETHANE	5			0.96 J	0.25 U	0.25 U	0.25 U	1.1 J	0.25 U
1,1-DICHLOROETHENE	5			1.1 J	0.39 U				
CARBON DISULFIDE	NA			0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
CHLOROFORM	7			0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
CHLOROMETHANE	5			0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
CIS-1,2-DICHLOROETHYLENE	5			260	20	0.48 U	0.48 U	0.48 U	0.48 U
ISOPROPYLBENZENE (CUMENE)	5			0.38 U	0.38 U	2.2 J	0.38 U	0.38 U	0.38 U
METHYLCYCLOHEXANE	NA			0.76 U	0.76 U	8.3	0.76 U	0.76 U	0.76 U
METHYL-TERT-BUTYL ETHER (MTBE)	10	G		31	23 J	0.24 U	0.24 U	0.24 U	0.24 U
TETRACHLOROETHYLENE(PCE)	5			2.2 J	1.1 J	1.8 J	0.65 U	180	0.65 U
TRANS-1,2-DICHLOROETHENE	5			3.4 J	0.65 U	1.9 J	0.65 U	0.65 U	0.65 U
TRICHLOROETHYLENE (TCE)	5			74	0.36 U				
VINYL CHLORIDE	2			8.2	0.50 U	1.2 J	0.50 U	0.50 U	0.50 U

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

Notes

G = Guidance value (no standard available)

NA = Not regulated/no available criteria

Other

µg/L = Micrograms per liter

"-Q" denotes field duplicate sample

1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.

2. Bold values denote positive hits.

3. Shaded cell exceeds groundwater standard.

**Table 2-2 Summary of Positive Analytical Results for Groundwater Samples
Mr. C's Dry Cleaning, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	ESI-6	MPI-1S	MPI-2S-R	MPI-3S	MPI-4I	MPI-4S
			Sample Name:	ESI-6-1015	MPI-1S-1016	MPI-2S-R-1017	MPI-3S-1016	MPI-4I-1022	MPI-4S-1022
			Depth:	7 - 17 ft	9 - 19 ft	8 - 18 ft	8 - 18 ft	32 - 42 ft	11 - 21 ft
			Date:	10/16/14	10/16/14	10/17/14	10/16/14	10/22/14	10/22/14
Volatile Organics by Method SW846 8260C (µg/L)									
1,1,1-TRICHLOROETHANE	5			0.50 U	0.50 U	3.4 J	0.50 U	0.50 U	0.50 U
1,1-DICHLOROETHANE	5			1.3 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,1-DICHLOROETHENE	5			0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
CARBON DISULFIDE	NA			0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
CHLOROFORM	7			0.33 U	0.33 U	1.3 J	0.33 U	0.33 U	0.33 U
CHLOROMETHANE	5			0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
CIS-1,2-DICHLOROETHYLENE	5			59	2.8 J	0.48 U	0.48 U	650	55
ISOPROPYLBENZENE (CUMENE)	5			0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
METHYLCYCLOHEXANE	NA			0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U
METHYL-TERT-BUTYL ETHER (MTBE)	10	G		0.24 U	0.24 U	0.24 U	45	240	0.24 U
TETRACHLOROETHYLENE(PCE)	5			410	56	2.9 J	1.9 J	150	4.3 J
TRANS-1,2-DICHLOROETHENE	5			0.65 U	0.65 U	0.65 U	0.65 U	2.1 J	0.65 U
TRICHLOROETHYLENE (TCE)	5			22	2.4 J	0.36 U	0.36 U	41	1.2 J
VINYL CHLORIDE	2			0.50 U	0.50 U	0.50 U	0.50 U	130	8.6

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

Notes

G = Guidance value (no standard available)

NA = Not regulated/no available criteria

Other

µg/L = Micrograms per liter

"-Q" denotes field duplicate sample

1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.

2. Bold values denote positive hits.

3. Shaded cell exceeds groundwater standard.

**Table 2-2 Summary of Positive Analytical Results for Groundwater Samples
Mr. C's Dry Cleaning, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	MPI-5S	MPI-6S	MPI-7I-R	MPI-8S-R	MPI-9S-R	MPI-10B
			Sample Name:	MPI-5S-1020	MPI-6S-1021	MPI-7I-R-1014	MPI-8S-R-1020	MPI-9S-R-1015	MPI-10B-1014
			Depth:	8 - 18 ft	12 - 22 ft	29 - 39 ft	8 - 18 ft	8 - 18 ft	17 - 32 ft
			Date:	10/20/14	10/21/14	10/14/14	10/20/14	10/15/14	10/14/14
Volatile Organics by Method SW846 8260C (µg/L)									
1,1,1-TRICHLOROETHANE	5			0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-DICHLOROETHANE	5			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,1-DICHLOROETHENE	5			0.39 U	3.2 J	0.39 U	0.39 U	0.39 U	0.39 U
CARBON DISULFIDE	NA			0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
CHLOROFORM	7			0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
CHLOROMETHANE	5			0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
CIS-1,2-DICHLOROETHYLENE	5			7.8	1300	0.48 U	37	0.48 U	0.48 U
ISOPROPYLBENZENE (CUMENE)	5			0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
METHYLCYCLOHEXANE	NA			0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U
METHYL-TERT-BUTYL ETHER (MTBE)	10	G		0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
TETRACHLOROETHYLENE(PCE)	5			24	15	2.0 J	130	1.7 J	220
TRANS-1,2-DICHLOROETHENE	5			5.2	16	0.65 U	1.8 J	0.65 U	0.65 U
TRICHLOROETHYLENE (TCE)	5			5.3	1.5 J	0.36 U	18	0.36 U	3.8 J
VINYL CHLORIDE	2			0.50 U	380	0.50 U	0.55 J	0.50 U	0.50 U

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

Notes

G = Guidance value (no standard available)

NA = Not regulated/no available criteria

Other

µg/L = Micrograms per liter

"-Q" denotes field duplicate sample

1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.

2. Bold values denote positive hits.

3. Shaded cell exceeds groundwater standard.

**Table 2-2 Summary of Positive Analytical Results for Groundwater Samples
Mr. C's Dry Cleaning, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	MPI-13B-R	MPI-14B-R	MPI-15B	MW-7	MW-8	MW-8
			Sample Name:	1015	1015	MPI-15B-1017	MW-7-1015	MW-8-1020	MW-8-1020-Q
			Depth:	17 - 32 ft	15 - 30 ft	10 - 20 ft	5 - 15 ft	5 - 15 ft	5 - 15 ft
			Date:	10/15/14	10/15/14	10/17/14	10/15/14	10/20/14	10/20/14
Volatile Organics by Method SW846 8260C (µg/L)									
1,1,1-TRICHLOROETHANE	5			0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-DICHLOROETHANE	5			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,1-DICHLOROETHENE	5			0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
CARBON DISULFIDE	NA			0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
CHLOROFORM	7			0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
CHLOROMETHANE	5			0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
CIS-1,2-DICHLOROETHYLENE	5			0.48 U	0.48 U	0.48 U	0.48 U	15	13
ISOPROPYLBENZENE (CUMENE)	5			0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
METHYLCYCLOHEXANE	NA			0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U
METHYL-TERT-BUTYL ETHER (MTBE)	10	G		0.24 U	0.24 U	6.2	0.24 U	0.24 U	0.24 U
TETRACHLOROETHYLENE(PCE)	5			3.7 J	6.2	0.65 U	1100	1.3 J	0.90 J
TRANS-1,2-DICHLOROETHENE	5			0.65 U	0.65 U	0.65 U	0.65 U	46	46
TRICHLOROETHYLENE (TCE)	5			0.81 J	0.36 U	0.36 U	3.8 J	1.7 J	1.5 J
VINYL CHLORIDE	2			0.50 U	0.50 U	0.50 U	0.50 U	7.2	6.4

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

Notes

G = Guidance value (no standard available)

NA = Not regulated/no available criteria

Other

µg/L = Micrograms per liter

"-Q" denotes field duplicate sample

1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.

2. Bold values denote positive hits.

3. Shaded cell exceeds groundwater standard.

**Table 2-2 Summary of Positive Analytical Results for Groundwater Samples
Mr. C's Dry Cleaning, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	MW-11	MW-11	PW-2	PW-3	PW-4	PW-5
			Sample Name:	MW-11-1014	MW-11-1014-Q	PW-2-1023	PW-3-1023	PW-4-1022	PW-5-1021
			Depth:	10 - 20 ft	10 - 20 ft	18 - 28 ft			
			Date:	10/14/14	10/14/14	10/23/14	10/23/14	10/22/14	10/21/14
Volatile Organics by Method SW846 8260C (µg/L)									
1,1,1-TRICHLOROETHANE	5			0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-DICHLOROETHANE	5			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,1-DICHLOROETHENE	5			0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.62 J
CARBON DISULFIDE	NA			0.34 U	0.34 U	0.34 U	0.34 U	1.4 J	0.34 U
CHLOROFORM	7			0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
CHLOROMETHANE	5			0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
CIS-1,2-DICHLOROETHYLENE	5			0.48 U	0.48 U	0.48 U	0.48 U	190 J	170
ISOPROPYLBENZENE (CUMENE)	5			0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
METHYLCYCLOHEXANE	NA			0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U
METHYL-TERT-BUTYL ETHER (MTBE)	10	G		0.24 U	0.24 U	0.24 U	0.24 U	9.3	0.24 U
TETRACHLOROETHYLENE(PCE)	5			1500	1600	620	220	2600	2700
TRANS-1,2-DICHLOROETHENE	5			0.65 U	0.65 U	0.65 U	0.65 U	2.1 J	4.2 J
TRICHLOROETHYLENE (TCE)	5			5.2	4.6 J	3.4 J	4.4 J	170	69
VINYL CHLORIDE	2			0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

Notes

G = Guidance value (no standard available)

NA = Not regulated/no available criteria

Other

µg/L = Micrograms per liter

"-Q" denotes field duplicate sample

1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.

2. Bold values denote positive hits.

3. Shaded cell exceeds groundwater standard.

**Table 2-2 Summary of Positive Analytical Results for Groundwater Samples
Mr. C's Dry Cleaning, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	PW-6	PW-7	PW-8	PZ-3B	PZ-5B	PZ-6A
			Sample Name:	PW-6-1021	PW-7-1021	PW-8-1021	PZ-3B-1020	PZ-5B-1021	PZ-6A-1021
			Depth:	18 - 28 ft	18 - 28 ft	18 - 28 ft	18 - 28 ft	18 - 28 ft	18 - 28 ft
			Date:	10/21/14	10/21/14	10/21/14	10/20/14	10/21/14	10/21/14
Volatile Organics by Method SW846 8260C (µg/L)									
1,1,1-TRICHLOROETHANE	5			0.50 U	0.50 U	0.50 U	0.50 U	2.0 U	0.50 U
1,1-DICHLOROETHANE	5			0.25 U	0.25 U	0.25 U	0.25 U	1.0 U	0.25 U
1,1-DICHLOROETHENE	5			0.39 U	0.39 U	1.6 J	0.39 U	1.6 U	2.1 J
CARBON DISULFIDE	NA			0.34 U	0.34 U	0.34 U	0.34 U	1.4 U	0.34 U
CHLOROFORM	7			0.33 U	0.33 U	0.33 U	0.33 U	1.3 U	0.33 U
CHLOROMETHANE	5			0.26 U	0.26 U	0.26 U	0.26 U	1.0 U	0.26 U
CIS-1,2-DICHLOROETHYLENE	5			7.9	99	980	1.9 J	6.0 J	880
ISOPROPYLBENZENE (CUMENE)	5			0.38 U	0.38 U	0.38 U	0.38 U	1.5 U	0.38 U
METHYLCYCLOHEXANE	NA			0.76 U	0.76 U	0.76 U	0.76 U	3.0 U	0.76 U
METHYL-TERT-BUTYL ETHER (MTBE)	10	G		0.24 U	1.5 J	14	0.24 U	0.96 U	26
TETRACHLOROETHYLENE(PCE)	5			23	4.0 J	260	150	2100	1400
TRANS-1,2-DICHLOROETHENE	5			0.65 U	0.65 U	2.8 J	0.78 J	8.0 J	5.8
TRICHLOROETHYLENE (TCE)	5			0.97 J	1.1 J	23	7.9	66	370
VINYL CHLORIDE	2			0.50 U	13	190	0.50 U	2.0 U	1.1 J

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

Notes

G = Guidance value (no standard available)

NA = Not regulated/no available criteria

Other

µg/L = Micrograms per liter

"-Q" denotes field duplicate sample

1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.

2. Bold values denote positive hits.

3. Shaded cell exceeds groundwater standard.

**Table 2-2 Summary of Positive Analytical Results for Groundwater Samples
Mr. C's Dry Cleaning, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	PZ-6A	PZ-8C	RW-1
			Sample Name:	PZ-6A-1021-Q	PZ-8C-1021	RW-1-1023
			Depth:	18 - 28 ft	18 - 28 ft	18 - 28 ft
			Date:	10/21/14	10/21/14	10/23/14
Volatile Organics by Method SW846 8260C (µg/L)						
1,1,1-TRICHLOROETHANE	5			0.50 U	0.50 U	0.50 U
1,1-DICHLOROETHANE	5			0.25 U	0.25 U	0.25 U
1,1-DICHLOROETHENE	5			2.2 J	0.39 U	0.39 U
CARBON DISULFIDE	NA			0.34 U	0.34 U	0.34 U
CHLOROFORM	7			0.33 U	0.33 U	0.33 U
CHLOROMETHANE	5			0.26 U	0.26 U	0.26 U
CIS-1,2-DICHLOROETHYLENE	5			930	30	0.48 U
ISOPROPYLBENZENE (CUMENE)	5			0.38 U	0.38 U	0.38 U
METHYLCYCLOHEXANE	NA			0.76 U	0.76 U	0.76 U
METHYL-TERT-BUTYL ETHER (MTBE)	10	G		26	33	0.24 U
TETRACHLOROETHYLENE(PCE)	5			1500	22	180
TRANS-1,2-DICHLOROETHENE	5			5.4	0.65 U	0.65 U
TRICHLOROETHYLENE (TCE)	5			400	2.0 J	1.1 J
VINYL CHLORIDE	2			1.0 J	63	0.50 U

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

Notes

G = Guidance value (no standard available)

NA = Not regulated/no available criteria

Other

µg/L = Micrograms per liter

"-Q" denotes field duplicate sample

1. New York State Department of Environmental Conservation, Technical and Operational Guidance Series Memorandum #1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, 1998 (with updates), Class GA Groundwater Standards and Guidance Values.

2. Bold values denote positive hits.

3. Shaded cell exceeds groundwater standard.

3

Site Institutional and Engineering Controls Compliance Reporting

Institutional controls (ICs) and engineering controls (ECs) are employed on the Mr. C's site to support remedial operations. Evaluations of the ICs and ECs in 2014 are provided below.

3.1 Institutional Controls

3.1.1 Mr. C's Dry Cleaners Site

Permanent easements, temporary use and occupancy (TUU) agreements, and access agreements have been obtained to provide access to nine private and public properties. The access was obtained to facilitate operation of the Mr. C's site remedial treatment system and groundwater pumping locations. Information on the permanent easements, TUU agreements, and access agreements for the Mr. C's site remedial treatment facility and groundwater pumping locations is provided in appendices to the SMP for the Mr. C's site (EEEEPC 2013).

The main ICs for the Mr. C's site are TUU agreements for the piping and treatment facility at the Mr. C's site (586 Main Street) and the former Crawford property (584 Main Street), both of which are currently owned by Deltora, LLC.

Based on a review of property ownership associated with the Mr. C's site by the Village of East Aurora Assessor (see Appendix A), as of January 13, 2015, there were two changes in property ownership during the 2014 reporting year. The ownership of the property of 572-576 Main Street has changed from Dennis Doeing to Intrepid Automotive Partners, and the ownership of 578-580 Main Street has changed from Lee A. Brownschidle to 580 Main Street, LLC. In 2014, property ownership was evaluated for an additional five properties which were part of the SVII investigations: 555 Fillmore Ave (owned by Eric and Kathie Aspaas), 594 Main Street (owned by 594 Main Street, LLC), 591 Main Street (owned by Red Brick Plaza, LLC), 589 Main Street (owned by Matthew Dunaif), and 16 Paine Street (owned by The Boys and Girls Club of East Aurora).

3.1.2 Subslab Depressurization Systems

Temporary access agreements have been obtained by NYSDEC for the First Presbyterian Church and 27 Whaley Avenue properties to facilitate the OM&M of the SSDS units. Property owners at 572-576 Main Street and 578-580 Main Street

3 Site Institutional and Engineering Controls Compliance Reporting

will be contacted by EEEPC in the first quarter of 2015 to request the same type of temporary access agreements.

3.1.3 Groundwater Monitoring Well Network

There are 26 groundwater monitoring wells, eight groundwater pumping wells, and 32 piezometers in the groundwater monitoring well network. These wells are located on private property and in the rights-of-way of village streets.

The necessary access agreements for the future maintenance and monitoring of the various recovery and monitoring wells have been obtained for each location (see Table 3-1). No changes to these access agreements were made in 2014.

The permanent easements and TUO agreements for the groundwater monitoring wells, pumping wells, and piezometers are adequate at this time; any additional ICs pursued in the future will be at the discretion of NYSDEC. Table 3-1 lists the status of the ICs for the properties across the Mr. C's Dry Cleaners site and for the off-site monitoring well network. This information can be used to facilitate future decisions regarding ICs.

Table 3-1 Institutional Controls - Review of Easements/TUOs

Location	Controls in Place?	Extent and Type of Control	Recommended TUO Actions?	
			New	Modify
Mr. C's Dry Cleaners site (586 Main Street) and the former Crawford property (584 Main Street), both owned by Deltora, LLC.	Yes	TUO agreement for piping and treatment facility. Wells MPI-7I and ESI-3 are covered under this TUO. MPI-7I was decommissioned and replaced with monitoring well MPI-7I-R in December 2011.	No	No
Former Agway site (566 Main Street)	Yes	TUO agreement for drainage pipeline, construction easement for rectangular area north of pipeline (expired), temporary vehicle parking for library patrons (2001) (expired), and vehicular parking for Department and contractor employees for the duration of the agreement (expired). No known IC for the existing wells on the corner of Whaley Avenue and Main Street, including MWs 1-14, MPI-10B, and MPI-5S and new well EE-4.	No	No
First Presbyterian Church (9 Paine Street)	Yes	Temporary access agreement for inspection and maintenance on SVE systems. No known IC for the existing monitoring wells, including MPI-3S, MPI-1S, ESI-6, MPI-12B, and EE-3 (new).	No	No ¹
27 Whaley Avenue (DeBois property)	Yes	Temporary access agreement for inspection and maintenance on SVE system.	No	No

3 Site Institutional and Engineering Controls Compliance Reporting

Table 3-1 Institutional Controls - Review of Easements/TUOs

Location	Controls in Place?	Extent and Type of Control	Recommended TUO Actions?	
			New	Modify
East Aurora Public Library (550 Main Street)	Yes	Permanent easement for the purposes of constructing, reconstructing, and maintaining the drainage pipeline, drainage structures, and appurtenances. Well MPI-6S is covered under this easement. No known IC for the monitoring wells on the east side of the library property, including MPI-4S and MPI-4I. MPI-4D was decommissioned in December 2011.	No	No ¹
Pitt property (19 Whaley Avenue)	Yes	TUO agreement for appurtenances on southeast corner of property (PW-5 and PZ5A-D).	No	No ¹
Brownschidle property (578 Main Street)	Yes	TUO agreement for pumping and force main pipelines on the property.	No	No
People, Inc., property (538 Main Street)	Yes	TUO agreement for drainage line pipe on the northeast corner of the property. No known IC for the appurtenances on the property, including EE-2, PW-8, and PZA-D.	No	No
Village of East Aurora	Yes	TUO agreement for Ridge Road, outlet to Tannery Brook, and Whaley Avenue right-of-way.	No	No
Railroad property	No	No known IC for MW ESI-1; however, this well could not be found and is considered abandoned.	No	NA
Village of East Aurora – Village Hall (571 Main Street)	No	No known IC for MPI-2S. MPI-2S was decommissioned and replaced in December 2011 with MPI-2S-R.	No	NA
Future Fitness, Inc., property (594 Main Street)	No	No known IC for MW ESI-2. Well not found in 2011; replaced in December 2011.	Yes	NA
524 Main Street	No	No TUO agreement for MW MPI-11B, which has never been sampled. This well was covered with compacted stone when the property owner repaved their lot. This well is considered abandoned.	No	NA
Iwankow property (511 Fillmore Avenue)	No	No known IC for MPI-15B. Not found in 2011. This well is considered abandoned.	No	NA

Notes:

¹ Modification would be needed for any other type of remedial work.

Key:

- MW = Monitoring Well
- NA = Not Applicable
- PW = Pumping Well
- TUO = Temporary Use and Occupancy

3 Site Institutional and Engineering Controls Compliance Reporting

3.2 Engineering Controls

The ECs that support remedial operations at the Mr. C's site, the First Presbyterian Church (9 Paine Avenue), and the properties at 27 Whaley Avenue, 572-576 Main Street, and 578-580 Main Street are listed in Tables 3-2 through 3-4. Routine inspections confirm that the ECs are consistently operating as designed.

3.2.1 Mr. C's Dry Cleaners Site

In 2014, the results of the inspections of the groundwater treatment system, pumping wells, and piezometers were reported monthly to NYSDEC. The monthly reports are included in Appendix B. The OM&M service inspection requirements are described in the SMP. Table 3-2 lists the ECs for the Mr. C's site and the current status of each control.

Table 3-2 Engineering Controls – Mr. C's Dry Cleaners Site Groundwater Treatment System

EC Description	In Place?	Operating?	Still Required?
Bag filters	Yes	Yes	Yes
Air stripper	Yes	Yes	Yes
Blowers	Yes	Yes	Yes
Equalization tank	Yes	Yes	Yes
Influent/effluent conveyance piping	Yes	Yes	Yes
Groundwater pumping wells and pumps	Yes	Yes	Yes
Sequestering agents and pumps	Yes	Yes	Yes

3.2.2 Subslab Depressurization Systems

There are five SSDS systems in and around the site, including three SSDS systems that were installed in 2014. The SSDS systems are monitored per the procedures described in the SMP (EEEPC 2013). The SMP is in the process of being updated to reflect the installation of the new SSDS systems, and will be issued to the NYSDEC in the first quarter of 2015. Table 3-3 lists the ECs for the SSDS units and the current status of each control.

The SSDS units at the First Presbyterian Church were inspected on February 20 and December 11, 2014 (see Section 4.2 for additional information). In 2014, the SSDS system at 27 Whaley was not inspected; access to inspect the system at the 27 Whaley Avenue residence has not been granted by the property owner since 2010. The three new systems installed in 2014 at the Mr. C's building at 586 Main Street and the buildings at 572-576 Main Street and 578-580 Main Street were inspected on December 11, 2014. Inspection forms are provided in Appendix E. All inspected systems were found to be operating as designed.

3 Site Institutional and Engineering Controls Compliance Reporting

Table 3-3 Engineering Controls – Subslab Depressurization Systems

Property	EC Description	In Place?	Operating?	Still Required?
First Presbyterian Church	SSDS units (3) and vapor-extraction piping	Yes	Yes	Yes
27 Whaley Avenue	SSDS units (1) and vapor-extraction piping	Yes	Unknown ¹	Yes
Mr. C's Building at 586 Main Street	SSDS units (1) and vapor extraction piping	Yes	Yes	Yes
572-576 Main Street	SSDS units (2) and vapor-extraction piping	Yes	Yes	Yes
578-580 Main Street	SSDS units (1) and vapor extraction piping	Yes	Yes	Yes

¹ Access not granted for inspection or maintenance by property owner.

3.2.3 Groundwater Monitoring Well Network

The groundwater monitoring wells, pumping wells, and piezometers were observed during sampling events under the LTGM program. The observations are documented in the purge logs provided with the long-term groundwater monitoring data in Appendix C. Table 3-4 lists the ECs for the groundwater monitoring well network and the current status of each control.

Table 3-4 Engineering Controls – Area-wide Monitoring Well and Pumping Well Network

EC Description	In Place?	Operating?	Still Required?
Groundwater monitoring wells	Yes	Yes	Yes
Groundwater pumping wells	Yes	Yes ¹	Yes
Piezometers	Yes	Yes	Yes

¹ Pumping wells PW-5 and PW-7 were shut off due to their proximity to bioremediation pilot study injection points. PW-6 has been shut off due to maintenance problems.

3.3 IC/EC Certification

The completed IC/EC Certification forms for the Mr. C's site and associated remedial treatment systems are provided in Enclosure 1 of this report.

4

Monitoring Plan Compliance Report

The following section describes the remedial treatment system monitoring compliance at the Mr. C's site, the First Presbyterian Church, the Whaley Avenue residence, and the properties at 572-576 Main Street and 578-580 Main Street.

4.1 Mr. C's Dry Cleaners Site

A summary of the remedial treatment operations at the Mr. C's site for the 12-month reporting time of January 1 to December 29, 2014, is provided below.

System Operational Uptime in 2014

The operational uptime percentages were calculated based on actual monthly hours of treatment system operations in the reporting period divided by the potential hours of operation in the reporting period.

Local power outages or equipment failure will affect operations of the remedial treatment system. To limit these downtimes, the system has an auto-dialer that sends an alarm to the OM&M subcontractor, IEG, and EEEPC if an equipment failure, power outage, or a high water level in the equalization tank occurs. In addition, the treatment facility can be called to remotely check on the status of the various operating equipment in the building.

In 2014, based on information obtained from the weekly OM&M reports from IEG, the remedial treatment system operated 7,860 hours out of a possible 8,496 hours, for an uptime operation of 92.5%. This is similar to the uptime operation of 2013 (92.4%). Table 4-1 provides details on the monthly operation of the treatment system.

In 2014, the treatment system had an uptime operation of 100% for seven out of twelve months. A power outage from January 1-9 reduced monthly uptime to 98.7%. In April, the system was shut down for installation of a sub-slab unit inside the treatment building, resulting in a monthly uptime of 75.8%. The uptime operation in August through October was affected by the compliance issues that were discussed in Section 2.1.

Table 4-1 Treatment System Uptime in 2014, Mr. C's Dry Cleaners Site

Month	Actual Period	Reporting Hours/ Maximum Hours	Operational Uptime (%)
January 2014	1/9/14 - 2/4/14	616/624	98.7%
February 2014	2/4/14 - 3/3/14	648/648	100.0%
March 2014	3/3/14 - 3/24/14	504/504	100.0%
April 2014	3/24/14 - 5/5/14	764/1008	75.8%
May 2014	5/5/14 - 6/3/14	696/696	100.0%
June 2014	6/3/14 - 6/30/14	648/648	100.0%
July 2014	6/30/14 - 8/4/14	840/840	100.0%
August 2014	8/4/14 - 9/4/14	408/744	54.8%
September 2014	9/4/14 - 10/6/14	720/768	93.8%
October 2014	10/6/14 - 11/5/14	720/720	66.7%
November 2014	11/5/14 - 12/1/14	624/624	100.0%
December 2014	12/1/14 - 12/29/14	672/672	100.0%
Total Hours of Operation in 2014		7,860/8,496	
Average Operational Uptime in 2014:			92.5%

Groundwater Processed and Discharged through the Remedial Treatment System in 2014

The volume of groundwater processed and discharged is read directly from the effluent discharge water meter located after the air-stripper unit. Readings are taken bi-monthly, and the volume of groundwater processed is then calculated for each monthly reporting period.

In 2014, based on information obtained from the OM&M subcontractor's weekly monitoring reports, the remedial treatment system processed and discharged 3,110,406 gallons of groundwater to Tannery Brook (see Table 4-2). This was a decrease of approximately 5% from the 3,267,021 gallons of groundwater processed and discharged in 2013. The decrease in volume resulted from pumping wells PW-5 and PW-7 being shut off during the groundwater bioremediation pilot study (see Section 5.4), SSDS installation in the treatment building in April, air stripper cleaning in September and October 2014, and pumping well PW-6 being shut off because its discharge pipe was clogged and under repair (see Figure 4-1).

Volatile Organic Compounds Removal in 2014

The estimated amount of VOCs removed is based on the analytical results for influent and effluent samples and the total flow processed. In 2014, approximately 14.7 pounds of VOCs were removed from the groundwater by the remedial treatment system (see Table 4-3). This was a decrease of 27.6% from the 20.3 pounds of VOCs removed in 2013.

Table 4-2 Volumes of Groundwater Processed and Discharged by the Remedial Treatment System in 2014

Month	Actual Period	Gallons
January	1/9/14 - 2/4/14	257,147
February	2/4/14 - 3/3/14	260,198
March	3/3/14 - 3/24/14	205,583
April	3/24/14 - 5/5/14	317,721
May	5/5/14 - 6/3/14	274,096
June	6/3/14 - 6/30/14	223,930
July	6/30/14 - 8/4/14	278,141
August	8/4/14 - 9/4/14	176,971
September	9/4/14 - 10/6/14	305,619
October	10/6/14 - 11/5/14	239,236
November	11/5/14 - 12/1/14	245,341
December	12/1/14 - 12/29/14	326,423
Total Gallons Treated:		3,110,406

Table 4-3 VOCs Removal in 2014, Mr. C's Dry Cleaners Site

Month	Actual Period	Influent VOCs (µg/L)	Effluent VOCs (µg/L)	Removal Efficiency (%)	VOCs Removed (pounds)
January	1/9/14 - 2/4/14	360.00	12	96.7%	0.8
February	2/4/14 - 3/3/14	386.00	7.9	97.9%	0.8
March	3/3/14 - 3/24/14	402.00	7.2	98.2%	0.7
April	3/24/14 - 5/5/14	506.00	0	100.0%	1.3
May	5/5/14 - 6/3/14	460.10	6.8	98.5%	1.0
June ¹	6/3/14 - 6/30/14	440.6	6.9	98.4%	0.8
July ¹	6/30/14 - 8/4/14	379.3	0	100.0%	0.9
August	8/4/14 - 9/4/14	250	0	100.0%	0.4
September ²	9/4/14 - 10/6/14	816	201.51	75.3%	1.6
October ³	10/6/14 - 11/5/14	821.8	14.6	98.2%	1.6
November	11/5/14 - 12/1/14	999	1.1	99.9%	2.1
December	12/1/14 - 12/29/14	1025.8	6.3	99.4%	2.8
Total Amount of VOCs Removed:					14.7

Notes:

- Two compliance samples were collected in June and July. The results for the compliance samples collected on June 10 and July 8, 2014, indicated effluent TCE concentrations of 53 µg/L and 61 µg/L respectively, which were noncompliant with the effluent discharge requirement for TCE (10 µg/L). The effluent concentration used in the compliance calculations is based on the compliant results from the June 17 and July 15, 2014, samples that were collected after response activities.
- Three compliance samples were collected in September. The results for the compliance samples collected on September 4 and September 22, 2014, indicated effluent cis-1,2,-dichloroethene concentrations of 11 µg/L and 30 µg/L, respectively, which were noncompliant with the effluent discharge requirement for cis-1,2,-dichloroethene (10 µg/L). The effluent concentration used in the compliance calculations is based on the compliant results from the October 1, 2014, sample that was collected after response activities.
- Three compliance samples were collected in October. The results for the compliance samples collected on October 14 and October 22, 2014, indicated effluent cis-1,2,-dichloroethene concentrations of 26 µg/L and 37 µg/L, respectively, which were noncompliant with the effluent discharge requirement for cis-1,2,-dichloroethene (10 µg/L). The effluent concentration used in the compliance calculations is based on the compliant results from the October 31, 2014, sample that was collected after response activities.

Key:

VOC = Volatile organic compound
 µg/L = Micrograms per liter

Historical Volatile Organic Compounds Removal

The amount of VOCs removed increased from 2002 to 2003, and has been decreasing since 2003. The total process volume also increased from 2002 to 2003, and has generally decreased since 2003. However, in 2009 the process volume treated increased (see Figure 4-1) due to maintenance and cleaning of the recovery wells. Between 2013 and 2014, process volumes further declined as pumping wells PW-5 and PW-7 were shut off to limit secondary impacts from the bioremediation pilot study and PW-6 remained off due to maintenance issues.

The upcoming system optimization (see Section 6.3) will be discussed with NYSDEC in light of the results of the bioremediation pilot study and the annual LTGM program, both of which were submitted in January 2015. It is anticipated that site optimization will include an evaluation of plume capture, pumping well locations, and pump capacities.

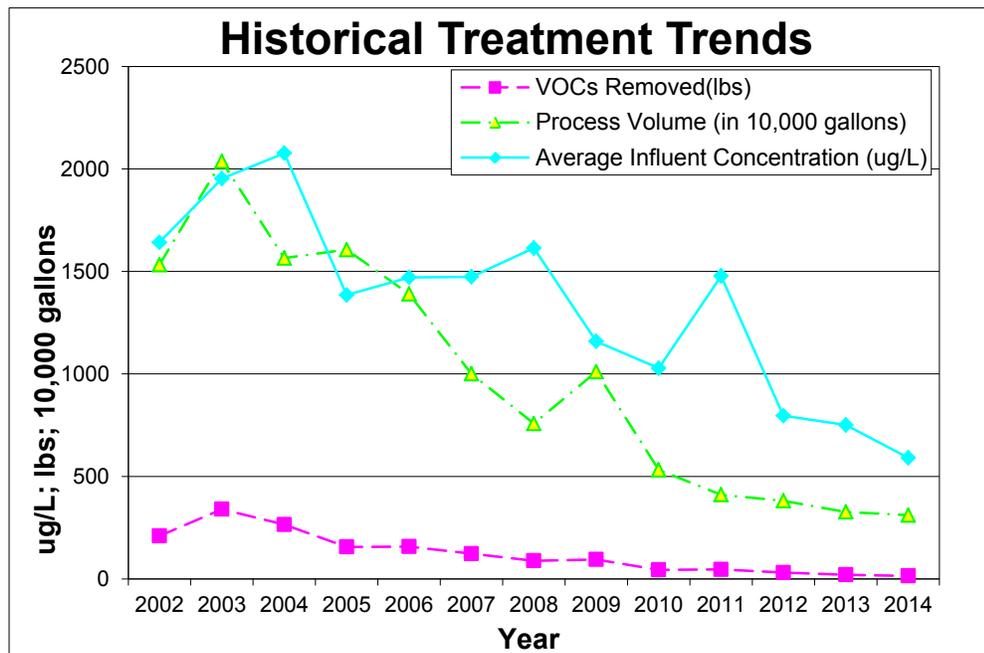


Figure 4-1 Historical Treatment Trends – Mr. C’s Dry Cleaners Site

4.2 Subslab Depressurization Systems

First Presbyterian Church

Routine inspections of the SSDSs at the First Presbyterian Church were performed on February 20 and December 11, 2014. The inspection results indicate that the systems at the church are operating as originally designed. Completed inspection forms are provided in Appendix E. Air sampling was also performed in the First Presbyterian Church on February 20, 2014. The air sampling results were provided to NYSDEC via a letter report submitted on April 30, 2014, which is included in Appendix E.

27 Whaley Avenue Residence

No inspection or air sampling was performed at the 27 Whaley Avenue residence in 2014, because the property owner did not respond to EEEPC's attempt to contact him by mail and in person to schedule the inspection. In the event that the property owner responds to future attempts, air sampling and inspection will be performed at this residence in 2015. The last round of air sampling performed at this residence occurred in 2010.

Mr. C's Treatment Building – 586 Main Street

Routine inspection of the SSDS at the 586 Main Street was performed on December 11, 2014. The inspection results indicate that the system is operating as originally designed. Completed inspection forms are provided in Appendix E. The last round of air sampling performed at this location occurred in 2013 during the Phase I SVII sampling.

572-576 Main Street

Routine inspection of the SSDS at 572-576 Main Street was performed on December 11, 2014. The inspection results indicate that the system is operating as originally designed. Completed inspection forms are provided in Appendix E. The last round of air sampling performed at this location occurred in 2013 during the Phase I SVII sampling.

578-580 Main Street

Routine inspection of the SSDS at the 578-580 Main Street was performed on December 11, 2014. The inspection results indicate that the system is operating as originally designed. Completed inspection forms are provided in Appendix E. The last round of air sampling performed at this location occurred in 2013 during the Phase I SVII sampling.

5

General Status of Remedial Treatment Equipment and Replacement Program

Operation and maintenance for the Mr. C's Dry Cleaners site is performed on a weekly basis by EEEPC's OM&M subcontractor, IEG. In the event of a major component system malfunction, power outage, or high water level in the equalization tank, an auto-dialer on the treatment system alerts IEG of the problem and a secondary alarm alerts EEEPC. Auto-dialer alarms are not connected to the SSDS units installed in and around the site, but the maintenance manager at the church and the owners of the other properties with SSDS units have been instructed to report any apparent malfunction of their SSDS units to EEEPC.

When equipment repairs are required, IEG reports them to EEEPC, and EEEPC reports them to NYSDEC. Information regarding the repairs performed on the remedial systems is provided by IEG in the weekly OM&M report submitted to EEEPC and in the monthly report submitted to NYSDEC.

Analytical services for groundwater and air analyses for the individual site and unit requirements are currently provided by Spectrum Analytical, Inc., of North Kingstown, Rhode Island (formerly Mitkem Corporation). The analytical frequency matrix is provided in Table 5-1.

Table 5-1 Analytical Frequency Matrix, Mr. C's Dry Cleaners Site

	Groundwater	Air	Schedule
Mr. C's compliance requirements			
a. Treatment system	X		Monthly
b. Groundwater monitoring wells network	X		Annually
First Presbyterian Church		X	Two years
27 Whaley Avenue residence		X	Two years
Mr. C's Building at 586 Main Street		X	Two years
572-576 Main Street		X	Two years
578-580 Main Street		X	Two years

5 General Status of Remedial Treatment Equipment and Replacement Program

Equipment is inspected on a periodic basis, or as needed. The SSDS units are routinely inspected once annually. The need for system adjustments, equipment repair, or equipment replacement is evaluated at that time and when issues are reported by the property owners.

5.1 Mr. C's Dry Cleaners Remedial Treatment System Condition, Replacement, and Repairs in 2014

Major components of the remedial treatment system, including the chemical sequestering system, equalization tank, bag filters, blowers, air-stripping unit, and groundwater pumping system, continue to operate at a high rate of efficiency as a result of the weekly monitoring and maintenance program. In particular, regular cleaning of the air stripper trays through the ports in the side have extended the system's ability to operate efficiently with minimal disturbance to the system's uptime. Such cleaning is necessary because, with use, the orifices in the air stripper trays become occluded by the buildup of calcium and iron.

The groundwater pumping network remains in working condition, with the exception of a clogged discharge line for pumping well PW-6, which is scheduled for cleaning in 2015. Items in the pumping network that have had highest maintenance requirements over the last few years have been the pumps and the level transducers for the groundwater pumping system. These two active components have been in operation for over five years. The groundwater pumps and transducers have an anticipated life expectancy of approximately two to three years. Replacement pumps and replacement transducers are, therefore, kept on hand for quick replacement after failure or for pre-emptive replacement.

Well screens are another item that require maintenance. The screens on the site's groundwater pumping well typically become clogged with soil fines and a buildup of calcium and iron, reducing the volume of contaminated groundwater that can be pumped to the treatment system. Typically, pumping wells are surged to clear the well screens based on an evaluation of the volume of influent to the treatment facility.

The reduced volume of water treated in 2014 is attributed to pumping wells PW-5 and PW-7 being turned off due to their proximity to the injection points of the pilot bioremediation program and pumping well PW-6 being turned off due to maintenance problems. Repair of pumping well PW-6 was planned for 2014, but the repair was not performed due to the inability to schedule construction within the East Aurora library parking lot. Well surging for these pumps will be re-evaluated for 2015 if and when pumping wells PW-5, PW-6, and PW-7 are turned back on and the capture volumes are reviewed.

In January, IEG responded to multiple alarms from the auto-dialer when the system shut down due to a local power outage. IEG worked with Ramsey Renovations, of East Aurora, New York, to inspect the electrical panel and with Carroll Plumbing, of Orchard Park, New York, to inspect the air stripper control panel.

5 General Status of Remedial Treatment Equipment and Replacement Program

The repair and replacement work performed on the Mr. C's site remedial treatment system in 2014 is identified in Table 5-2.

Table 5-2 Mr. C's Dry Cleaners Site Equipment Repair and Replacement Program, 2014

Activity
Changed bag filters as needed (January through December 2014, as needed)
Repaired redux line (February 2014)
Replaced ball check valve and installed SVE system (March-April 2014)
Repaired Piezometer ESI-3 (May 2014)
Removed hardware/materials from Agway site (June 2014)
Replaced influent pipe leaks (August-September 2014)
Swept spruce needles and cones off Library Parking lot (October 2014)
Cleaned the air stripper through ports with brushes and power washer (June, July, September, and October 2014)
Tore down and cleaned the air stripper unit (October 2014)
Replaced SVE drip bottle with larger bottle (November 2014)
Replaced bulb on control panel (December 2014)

5.2 SVI Investigations and SSDS Installation

5.2.1 Phase I

In 2014, SSDS units were installed in three properties based on the results of the Phase I SVII investigations performed in 2013. Draft work plans for the SSDS units at 578-580 and 572-576 Main Street locations were issued to NYSDEC on March 29 and May 1, 2014, respectively. EEEPC has prepared construction summary reports for each system, which are scheduled to be submitted to NYSDEC in the first quarter of 2015.

5.2.2 Phase II

EEEPC performed air sampling and associated inspections in the first quarter heating season of 2014 as part of the Phase II SVII investigations. Properties investigated during the Phase II investigations included 555 Fillmore Avenue, which is a private residence; 586 Main Street, rear, which includes the Country Cupboard shop; 589 Main Street, which includes a veterinary hospital; 591 Main Street, a commercial property; 594 Main Street, formerly the Fitness Factory; and 16 Paine Avenue, which includes the Boys & Girls Club.

EEEPC performed subslab vapor and indoor air sampling in the six selected buildings in February 2014, in accordance with the NYSDOH's October 2006 *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York* and the work plan prepared by EEEPC, which was approved by NYSDEC and is included in the SMP. In each building, EEEPC collected one subslab soil vapor sample, as well as one indoor air sample from each floor. Outdoor ambient air samples were collected at three of the six properties. More information on the Phase II SVII investigations is presented in the *2014 Soil Vapor Intrusion Sam-*

5 General Status of Remedial Treatment Equipment and Replacement Program

pling Report, which was submitted to NYSDEC on June 3, 2014, and is included in Appendix E.

The NYSDOH Vapor Mitigation Decision Matrix recommends mitigation where subslab concentrations of PCE are 1,000 or more $\mu\text{g}/\text{m}^3$ and where subslab concentrations of TCE are 250 or more $\mu\text{g}/\text{m}^3$, regardless of indoor air concentrations (NYSDOH 2006). PCE was detected in the subslab vapor at all six buildings that were sampled, at concentrations ranging from 1.0 $\mu\text{g}/\text{m}^3$ to 8,800 $\mu\text{g}/\text{m}^3$. TCE was detected in the subslab vapor at two of the buildings at concentrations up to 9.7 $\mu\text{g}/\text{m}^3$. According to the NYSDOH matrix, mitigation is warranted at 594 Main Street and 591 Main Street based on the detected subslab PCE concentrations of 2,080 $\mu\text{g}/\text{m}^3$ and 1,610 $\mu\text{g}/\text{m}^3$, respectively.

The NYSDOH has indoor air guidance values of 100 $\mu\text{g}/\text{m}^3$ for PCE and 5 $\mu\text{g}/\text{m}^3$ for TCE. PCE was detected in the ambient indoor air (basement and first floor samples) at all six buildings that were sampled; the concentrations ranged from 0.81 $\mu\text{g}/\text{m}^3$ to 100 $\mu\text{g}/\text{m}^3$. TCE was not detected in any indoor air samples collected from these structures.

Based on the sample results for 586 Main Street (rear), which had a subslab PCE concentration of 882 $\mu\text{g}/\text{m}^3$ and a first floor indoor air PCE concentration of 7.66 $\mu\text{g}/\text{m}^3$, the NYSDOH Vapor Mitigation Decision Matrix – Table 2 (NYSDOH 2006) recommended monitoring and/or mitigation. Monitoring and/or mitigation was also recommended for the building at 16 Paine Avenue, which had a subslab PCE concentration of 271 $\mu\text{g}/\text{m}^3$ and a first floor indoor air PCE concentration of 3.9 $\mu\text{g}/\text{m}^3$.

The concentrations of PCE detected in the subslab vapor at locations 555 Fillmore Avenue and 589 Main Street were less than 100 $\mu\text{g}/\text{m}^3$, and the corresponding indoor air concentrations (basement and first floor) were less than 3 $\mu\text{g}/\text{m}^3$. Therefore, no further action was recommended at these properties based on the NYSDOH matrix (NYSDOH, 2006).

E & E summarized the sample results and the NYSDOH matrix recommendations in the *2014 Soil Vapor Intrusion Sampling Report* (see Appendix E). Based on its review of the results, the NYSDOH determined that SSDS units needed to be installed in the buildings at 586 Main Street (rear), 594 Main Street, 591 Main Street, and 16 Paine Avenue to protect human health and safety. The NYSDOH issued letters to the individual property owners regarding the analytical results for air samples on June 30, 2014. Copies of the letters sent to the property owners are provided in Appendix E. Installation of the SSDS units for these buildings is scheduled for 2015.

5.2.3 Phase III

Following the SVIIs described above, NYSDEC and the NYSDOH selected an additional 20 properties around the site for a third phase of investigations (see

5 General Status of Remedial Treatment Equipment and Replacement Program

Section 6.3.1 for a list of the properties). EEEPC will schedule and perform the air sampling and associated inspections in the first quarter heating season of 2015.

5.3 SSDS Condition, Replacement, and Repairs in 2014

No replacements or repairs were performed on the SSDS units at 27 Whaley Avenue and 9 Paine Avenue in 2014. Both property owners have been instructed to contact EEEPC if there are unusual noises or if a system shutdown occurs. The individual warranties on SSDS fans at the First Presbyterian Church and 27 Whaley Avenue residence have expired. The routine inspection of the SSDS units at the First Presbyterian Church on December 11, 2014, indicated that the systems are in good working condition. Copies of the First Presbyterian Church System Field Inspection forms are provided in Appendix E.

The single SSDS unit at the 27 Whaley Avenue residence could not be inspected in 2014 (see Section 3.2.2) because permission to access the property could not be obtained. However, the unit was in very good condition when it was last inspected in 2010.

5.4 Groundwater Monitoring Well Network

The groundwater monitoring well network remains in operable condition. Well construction details for the individual wells in the Mr. C's groundwater monitoring network are provided in Table 5-3.

Table 5-3 Well Construction Summary, Mr. C's Dry Cleaners Site, East Aurora, New York

Well ID ¹	Well Inner Dia. ² (inches)	Total Well Depth (ft) TOIC	TOIC Casing Elev. (ft AMSL)	Ground Elev. (ft AMSL)	Screen Int. (ft BGS)	Sand Pack Int. (ft BGS)	Top of Seal (ft BGS)	Screened Unit	Northing ³	Easting ³
EE-1	2	26.37	913.46	913.63	23 - 28	21 - 28.5	15	OA	1008368.502	1140146.786
EE-2	2	31.34	916.3	916.51	22 - 32	20 - 32	15	OA	1008549.179	1139877.201
EE-3	2	28	914.64	914.9	18-28	16-28	14	OA	1008457.12	1139994.78
EE-4	2	14.25	916.69	916.9	5-15	3-15	0.5	OA	1008726.94	1140212.13
ESI-2-R	2	18.9	917.44	917.7	9-19	7-19	5	OA	1008739.35	1140418.33
ESI-3	2	15.42	915.85	916.41	7 - 17	6 - 18	4.1	OA	1008527.962	1140298.338
ESI-5-R	2	14.55	912.19	912.5	5-15	3-15	1	OA	1008162	1140146.65
ESI-6	2	15.93	914.48	914.92	7 - 17	6 - 18	3.8	OA	1008343.484	1139989.729
MPI-1S	2	18.64	915.08	915.38	9 - 19	7.2 - 19.5	5.3	OA	1008428.703	1140109.692
MPI-2S-R	2	18.4	915.63	915.9	8-18	6-18	4	OA	1008365.76	1140310.44
MPI-3S	2	17.41	914.4	914.79	8 - 18	5.7 - 18.5	3.7	OA	1008452.501	1139912.758
MPI-4S	2	20.24	914.82	915.12	11 - 21	8.8 - 21.5	6.8	OA	1008598.538	1140046.256
MPI-4I	2	41.5	915.66	916.12	32 - 42	29.8 - 42.5	4	LA	1008588.814	1140036.833
MPI-5S	2	17.34	916.45	916.78	8 - 18	5.9 - 18.4	3.9	OA	1008746.102	1140160.367
MPI-6S	2	21.65	915.03	915.35	12.3 - 22.3	10 - 23	7.9	OA	1008760.202	1139899.182
MPI-7I-R	2	38.5	915.44	915.8	28.9-38.9	26.5-39	24.5	LA	1008537.71	1140294.84
MPI-8S-R	2	17.4	913.96	914.5	8-18	6-18	4	OA	1008771.32	1140064.97
MPI-9S-R	2	16.52	913.38	914	8-18	6-18	4	OA	1008923.5	1140066.68
MPI-10B	2	31.11	915.68	916.07	16.5 - 31.5	13 - 32	11	OA	1008594.937	1140161.039
MPI-12B	2	34.62	911.19	911.44	20 - 35	15 - 35	11.5	OA	1008126.058	1139971.023
MPI-13B-R	2	29.5	912.69	913.2	16.5-31.5	14.5-31.5	12.5	LA	1009063.59	1139779.59

5 General Status of Remedial Treatment Equipment and Replacement Program

Table 5-3 Well Construction Summary, Mr. C's Dry Cleaners Site, East Aurora, New York

Well ID ¹	Well Inner Dia. ² (inches)	Total Well Depth (ft TOIC)	TOIC Casing Elev. (ft AMSL)	Ground Elev. (ft AMSL)	Screen Int. (ft BGS)	Sand Pack Int. (ft BGS)	Top of Seal (ft BGS)	Screened Unit	Northing ³	Easting ³
MPI-14B-R	2	28.2	913.71	914	15-30	13-30	11	LA	1009039.96	1139941.28
MPI-15B	2	28.15	913.72	913.7	NA	NA	NA	OA	1008815.15	1139566.43
MW-7	2	13.97	915.96	916.34	5 - 14.5	NA - 15	3	OA	1008603.486	1140170.72
MW-8	2	13.57	915.62	915.97	5 - 14.5	NA - 15	3	OA	1008719.861	1140104.112
MW-11	2	17.91	914.39	914.4	NA	NA	NA	--	1008565.98	1140177.64
RW-1	6	24.48	NA	NA	17.9 - 27.9	10 - 30	7	OA	1008563.899	1140262.844
PW-2	4	29.02	NA	NA	NA - 32	NA	NA	OA	1008601.547	1140142.874
PW-3	4	28.67	NA	NA	NA - 32	NA	NA	OA	1008646.528	1140166.174
PW-4	4	29.04	NA	NA	NA - 32	NA	NA	OA	1008657.699	1140029.129
PW-5	4	28.47	NA	NA	NA - 32	NA	NA	OA	1008691.158	1140049.864
PW-6	4	28.3	NA	NA	NA - 32	NA	NA	OA	1008713.539	1139891.103
PW-7	4	26.49	NA	NA	NA - 32	NA	NA	OA	1008749.764	1139907.169
PW-8	4	26.82	NA	NA	NA - 32	NA	NA	OA	1008792.235	1139824.621
Decommissioned Wells										
ESI-5	2	12.32	912.64	912.9	5 - 15	4 - 16	2	OA	1008162	1140146.65
MPI-2S	2	9.52	NA	NA	8 - 18	6 - 18.5	3.8	OA	1008365.76	1140310.44
MPI-4D	8	NA	NA	915.97	66-76	64-77.5	60	--	1008607.54	1140038.781
MPI-7I	2	13.37	916.14	916.42	29.5 - 39.5	27.1 - 40	5.3	LA	1008537.71	1140294.84
MPI-8S	2	6.54	NA	NA	8 - 18	6 - 18.5	4	OA	1008771.32	1140064.97
MPI-13B	2	31.43	913.25	913.49	17 - 32	15 - 32	10	OA	1009063.59	1139779.59
Abandoned or Missing Wells										
ESI-1 Replacement	2	19.74	916.99	917.35	10.5 - 20.5	8 - 21	4	OA	1008522.429	1140447.504
ESI-2	2	NA	NA	NA	9 - 19	8 - 20	6	OA	1008739.35	1140418.33
ESI-4	2	26.37	NA	NA	5 - 15	4 - 16	2	OA	NA	NA
MW-1	2	NA	NA	NA	12 - 22	10.6 - 22	9	OA	1008619.702	1140120.901
MW-2	2	NA	NA	NA	10 - 15	NA	NA	OA	1008631.906	1140098.904
MW-3	4	NA	NA	NA	7 - 17	6.1 - 18	3.7	OA	1008584.312	1140095.979
MW-4	4	16.67	914.02	914.47	7.3 - 17.3	6.6 - 18	4.7	OA	NA	NA
MW-5	2	NA	NA	NA	10 - 15	NA	NA	OA	1008538.419	1140130.518
MW-6	2	NA	NA	NA	5 - 14.5	NA - 15	3	OA	1008586.532	1140110.819
MW-9	2	NA	NA	NA	5 - 14.5	NA - 15	3	OA	1008700.677	1140221.924
MW-10	2	NA	NA	NA	4 - 13.5	NA - 14	2	OA	1008543.146	1140160.301
MW-14	2	NA	NA	NA	NA - 18.2 (TOIC)	NA	NA	OA	1008587.34	1140174.681
MPI-1D	NA	NA	NA	NA	NA	NA	NA	--	NA	NA
MPI-5D	Borehole only – no well construction log									
MPI-5I	NA	NA	NA	NA	32 - 42	30 - 42.5	8	OA	1008745.758	1140168.687

5 General Status of Remedial Treatment Equipment and Replacement Program

Table 5-3 Well Construction Summary, Mr. C's Dry Cleaners Site, East Aurora, New York

Well ID ¹	Well Inner Dia. ² (inches)	Total Well Depth (ft TOIC)	TOIC Casing Elev. (ft AMSL)	Ground Elev. (ft AMSL)	Screen Int. (ft BGS)	Sand Pack Int. (ft BGS)	Top of Seal (ft BGS)	Screened Unit	Northing ³	Easting ³
<i>MPI-7D</i>	Borehole only – no well construction log									
<i>MPI-9S</i>	2	NA	NA	NA	8 - 18	6.5 - 18.5	4.5	OA	1008923.5	1140066.68
<i>MPI-11B</i>	2	NA	NA	NA	15 - 30	13 - 30.5	8.5	OA	1008806.891	1139663.098
<i>MPI-14B</i>	2	27.54	913.18	913.68	15 - 30	11 - 30	8.5	OA	1009039.96	1139941.28
<i>OW-B</i>	2	26.41	NA	NA	22.5 - 27.5	10.5 - 27.5	8	OA	1008734.848	1139901.616
<i>RW-2</i>	4	NA	NA	NA	18 - 28	10 - 28	8	OA	1008725.751	1139901.252

Note:

1. Wells in *italic text* were previously abandoned or destroyed, or were otherwise not locatable in 2011.
2. Well inner diameter is the same for both the casing and the well screen.
3. Coordinates system is New York State Plane West Zone (feet). Coordinates are either from the Clear Creek Land Surveying, LLC, survey on May 31, 2012, or estimated in AutoCAD relative to the May 2012 surveyed locations.

Key:

- AMSL = Above mean sea level
- BGS = Below ground surface
- dia = Diameter
- elev = Elevation
- ft = Feet
- int = Interval
- LA = Lacustrine aquifer
- NA = Not available
- OA = Outwash aquifer
- TOIC = Top of inner casing

5.4.1 Long-Term Groundwater Monitoring

Sampling was performed by EEEPC personnel from October 14 to 23, 2014. A total of 32 wells (24 monitoring wells and eight pumping wells) and four piezometers were sampled during the 2014 long-term groundwater monitoring event. Two monitoring wells could not be sampled (EE-1 and MPI-12B) because they had been paved over. The LTGM program letter report was submitted to NYSDEC on January 19, 2015, and is included in Appendix C.

5.4.1.1 Well Purging and Sampling Procedures

All sampled monitoring wells and piezometers were purged prior to sampling in accordance with Appendix I of the SMP. The Mr. C's Monitoring Well Sampling Plan (Appendix I of the SMP) requires that all wells be purged and sampled using one of two methods: low-flow purging and sampling or standard purging and sampling. The bioremediation performance monitoring wells and piezometers were sampled using the low-flow sampling method, while all other wells were sampled using the standard purging and sampling method.

The monitoring wells were purged using a submersible pump with new or dedicated polyethylene tubing or disposable polyethylene bailers on new polypropylene line. New polypropylene line was used for the bioremediation performance monitoring wells and piezometers; dedicated line was used for the other monitor-

5 General Status of Remedial Treatment Equipment and Replacement Program

ing wells. Prior to purging, static water levels were measured to within ± 0.01 foot in each well using a Solinst water level meter.

The monitoring wells were purged of approximately three to five times the volume (or greater) of water standing in the well. Purged water from the monitoring wells was containerized and transported to the on-site treatment facility for processing. Temperature, pH, specific conductance, turbidity, and oxygen reduction potential (ORP) were measured and recorded, at a minimum, prior to purging, after each well volume was purged, and just prior to sampling using a LaMotte 2020 turbidity meter, YSI Pro Plus quatro flow-through cell, and/or a Myron 6P Ultrameter II (water parameter kit). Purging was performed until pH, specific conductance, and temperature had stabilized and turbidity was 50 nephelometric turbidity units (NTUs) or less. Purge records are provided in Appendix C.

The eight groundwater pumping wells (RW-1, PW-2, PW-3, PW-4, PW-5, PW-6, PW-7, and PW-8) were sampled using new bailers. The pumping wells were not purged prior to sampling, either because they were consistently pumped as part of the groundwater treatment system operation, or they contained injected material from the bioremediation pilot study, which was conducted between May 2013 and June 2014.

The samples collected as part of the LTGM program were analyzed for VOCs by Spectrum Analytical, Inc., using EPA method 8260. A summary of the positive detections of VOCs is presented in Table 2-2. The complete analytical results were provided in electronic form through EQUIS, and a copy of the laboratory report is provided in the 2014 LTGM Report (see Appendix C).

5.4.1.2 Quality Assurance and Quality Control

Field duplicate, matrix spike/matrix spike duplicate (MS/MSD), and rinsate blank samples were collected for QA/QC purposes. Independent data validation of the analytical results was performed by EEPC. The data usability summary reports (DUSRs) are provided as Attachment A of the 2014 LTGM Report (see Appendix C). Several results were qualified and one QA/QC issue was noted:

- Methyl-tert-butyl ether (MTBE) was estimated and qualified as J in sample EE-3-1016 because the analyte exceeded recovery in the laboratory control sample.
- Methylene chloride was detected in rinsate blank RB01-1022. The analyte was not detected in the samples; therefore, there is no impact on data usability.
- Sample PZ-5B-1021 was initially analyzed at a fourfold dilution. Elevated reporting limits are provided for the initial analysis. In sample PZ-5B-1021, vinyl chloride was not detected at the reporting limit of 2.0 $\mu\text{g}/\text{L}$. The reporting limit for vinyl chloride at the four fold dilution is equal to its NYSDEC Class GA groundwater standard, which impacts data usability.

5 General Status of Remedial Treatment Equipment and Replacement Program

5.4.1.3 2014 Long-term Groundwater Monitoring Results

Appendix C contains the iso-contour maps created to show the 2014 total VOC and PCE contaminant plumes. These figures were generated using Surfer Modeling Software. The LTGM program letter report in Appendix C contains a groundwater contour map. A discussion on the size of the plume and level of contamination observed in 2014 versus 2013 is presented in the next section.

The results of the groundwater monitoring indicate the following:

- Six VOCs (PCE, TCE, cis-DCE, trans-DCE, vinyl chloride, and MTBE) were detected in the groundwater samples at levels that exceed their NYSDEC Class GA groundwater standards and the guidance values used to screen the groundwater data.
- Nine VOCs (1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, carbon disulfide, chloroform, chloromethane, cyclohexane, isopropylbenzene [cumene], and methylcyclohexane) were detected in the groundwater samples; these compounds either have no applicable standard or guidance value, or were detected at levels below their NYSDEC Class GA groundwater standards and below the guidance values used to screen the groundwater data.
- PCE was detected above the groundwater standard for total VOCs (5 µg/L) in 18 wells and four piezometers across the site. The highest concentration of PCE (2,700 µg/L, estimated) was detected in a sample collected from pumping well PW-5. Historically, the highest concentration of PCE has been detected in samples collected from monitoring wells MPI-6S and PW-6. PCE in MPI-6S has been reduced from 6,800 µg/L in 2012, before bioremediation, to 15 µg/L in 2014. Contamination at MPI-6S is now primarily cis-DCE, which was detected at 1,300 µg/L. Contaminant concentrations in pumping well PW-6 were lower than the results collected from piezometer PZ-6A, which showed an increase in the total VOC concentration from 1,600 µg/L in 2013 to over 2,800 µg/L in 2014.
- TCE was detected above the groundwater standard for total VOCs (5 µg/L) in nine wells and three piezometers across the site. The highest concentration of TCE, 400 µg/L, was detected in a sample collected from piezometer PZ-6A.
- cis-DCE was detected above the groundwater standard for total VOCs (5 µg/L) in 14 wells and three piezometers across the site. The highest concentration of cis-DCE, 1,300 µg/L, was detected in a sample collected from monitoring well MPI-6S in 2014.
- trans-DCE was detected above the groundwater standard for total VOCs (5 µg/L) in three wells and one piezometer. The highest concentration of trans-DCE, 46 µg/L, was detected in a sample collected from monitoring well MW-8.
- Vinyl chloride was detected above its groundwater standard (2 µg/L) in seven wells. Vinyl chloride has increased in concentration across the site since

5 General Status of Remedial Treatment Equipment and Replacement Program

2013. The highest concentration of vinyl chloride (380 µg/L) was detected in a sample collected from monitoring well MPI-6S.

- MTBE was detected in wells EE-2 (31 µg/L), EE-3 (23 µg/L), MPI-15B (6.2 µg/L), MPI-3S (45 µg/L), MPI-4I (240 µg/L), PW-4 (9.3 µg/L), PW-7 (1.5 µg/L), and PW-8 (14 µg/L). MTBE has not spread, nor have its concentrations changed significantly since 2013. MTBE was also detected in piezometers PZ-6A (26 µg/L) and PZ-8C (33 µg/L). The guidance value for MTBE is 10 µg/L.

5.4.1.4 Comparison of 2014 LTGM Program Results to Previous Years

Iso-contour maps showing the total VOC and PCE contaminant plumes were created based on long-term groundwater sampling data for 2004, 2007, 2009, 2010, 2012, 2013, and 2014. The iso-contour maps are provided in the individual LTGM program reports (EEPC 2004b, 2007, 2009, 2010, 2012, 2014a). The 2014 LTGM report is provided in Appendix C.

The following observations are based on comparisons to previous years:

- Groundwater contours at the site show that the plume is captured by the operating pumping wells.
- Groundwater “hot spots” that were centered on monitoring wells MW-11 and MPI-6S in 2012 were reduced in concentration by the bioremediation pilot study performed in 2013 and 2014 (see Section 5.5). PCE in well MW-8 (1.3 µg/L, estimated) remained below the NYS Class GA groundwater standard of 5 µg/L in the November 2014 sample. The PCE level in well MPI-6S has decreased from the baseline concentration of 7,750 µg/L taken in November 2011 to 15 µg/L in 2014. In 2014, the total VOC concentration in well MPI-6S (1,720 µg/L) was similar to the 2013 concentration (1,500 µg/L).
- In 2014, the highest total cVOC concentrations were detected in samples from pumping wells PW-4 and PW-5, at 2,960 µg/L and 2,950 µg/L, respectively. In 2013, the total cVOC concentrations in wells PW-4 and PW-5 were 4,900 µg/L and 710 µg/L, respectively. PW-5 is locked-out to limit secondary impacts on the pumping and treatment system due to contaminant degradation and their proximity to the injection points of the bioremediation pilot study.
- EEPC used MAROS software to analyze the change in the PCE mass, center of mass, and plume spread using the Mann-Kendall statistical analysis. MAROS was developed by GSI Environmental, Inc., on behalf of the Air Force Center for Engineering and the Environment in 1998 and is publicly available. The moment analysis is not meant to be used as an exact calculation of mass and movement of mass; it is designed to provide approximations for the purpose of making relative comparisons over time. The Mann-Kendall statistic calculated in the MAROS software measures the trend in the data. For example, for the first moment, it measures the trend in the distance from the source area to the center of mass. The center of mass was input to the

5 General Status of Remedial Treatment Equipment and Replacement Program

MAROS software to be the location of PW-4, which is approximately the spatial center of the high cVOC concentrations in the area. The following are based on the results of the analysis:

- The mass of PCE is decreasing (a decreasing trend was indicated by a strongly negative Mann Kendall statistic calculated from the zeroth moment of the 2007 to 2014 PCE data);
- The center of mass of PCE has remained at approximately the same distance from PW-4 as it was in 2013, but since 2007 it has moved somewhat to the west (stable north-south), and potentially increasing east-west trends were indicated by the Mann Kendall statistic calculated from the first moment of the data); and
- Since 2007, there has been some spreading of the PCE plume to the north (an increasing trend in the north-south direction was indicated by the Mann Kendall statistic calculated from the second moment of the data), but no trend was identified in the east-west direction.

The spreading of the PCE plume, which is not readily apparent on the figure prepared using Surfer Modeling Software, is likely a result of PCE concentrations in PW-6 increasing from 2013. The MAROS Spatial Moment Analysis Summary is provided in Appendix C.

- EEEPC also used MAROS software to analyze the change in the mass, center of mass, and plume spread of TCE, cis-DCE, trans-DCE, and VC using the Mann-Kendall statistical analysis. Based the results of the analysis, the mass of cis-DCE, trans-DCE, and VC each increased from 2013, as would be expected from the bioremediation pilot study. The mass of TCE remained about the same. As a whole, the center of mass of total VOCs is moving farther from the PW-4 toward the northwest. The total cVOC spread can be seen in the figure generated using Surfer Modeling Software. Total VOC concentrations in the downgradient sentinel wells MPI-15B, MPI-13B-R, and MPI-9S-R remain below the NYSDEC Class GA groundwater standard of 5 µg/L. In 2014, total VOC concentrations in well MPI-14B-R were just above the total VOC groundwater standard at 6.2 µg/L. Pumping wells PW-5 and PW-7 are planned to remain shut off to minimize secondary impacts on the pumping and treatment system (see Section 2.1). In Section 6, EEEPC recommends implementing further actions to reduce spreading of the plume.

5.4.2 Maintenance Issues

EEEPC's OM&M subcontractor continued making repairs of the groundwater monitoring wells. Well maintenance issues included replacing missing or stripped bolts, replacing existing or installing new asphalt/concrete pads, replacing existing well covers, installing a new watertight well cap, and removing or replacing a portion of a cracked casing. The OM&M subcontractor will continue to address maintenance issues in 2015.

5 General Status of Remedial Treatment Equipment and Replacement Program

5.5 Groundwater Bioremediation Pilot Study

In April, May, and June of 2014, EEEPC performed the final three rounds of performance monitoring of the pilot study. E & E issued Bioremediation Pilot Progress Report No. 3 to NYSDEC on June 2, 2014 (EEEPC 2014b). Progress Report No. 3 and the laboratory analytical results are included in Appendix F. A bioremediation summary report was issued to NYSDEC in January 2015 (see Appendix F).

The success of the pilot study can be demonstrated by multiple metrics or indicators. The pilot study has reduced contaminant concentrations in the pilot study area. The pilot study was successfully designed to overcome competing reactions and to create the geochemical conditions conducive to anaerobic bioremediation of chlorinated ethenes. Electron donor injections were successfully distributed throughout the pilot study area by direct push technologies. The pilot study has augmented the subsurface with microbial populations capable of degrading PCE and each of its degradation by-products. The pilot study has provided cost information that can be used in future remedial system optimization studies to evaluate remedy alternatives and their cost effectiveness.

Throughout 2014, secondary impacts on the pumping and treatment system were observed. Monthly OM&M sampling of the treatment system routinely detected PCE degradation by-products in the influent and effluent. These secondary impacts were limited by shutting off PW-5 in September and adjusting the blower fan speed on the treatment system to increase removal of cis-DCE from the treated effluent. Secondary impacts are discussed further in Section 2.1. Recommendations from the bioremediation summary report are included in Section 6.

6

Actions to Support Eventual Site Closure

Per the ROD, the overall project goal is to remediate the Mr. C's site sufficient to meet applicable standards, criteria, and guidance (SCG) values and be protective of human health and the environment. The goals selected for the site include: (1) mitigation of human health risks by reducing the potential for inhalation of vapors in on-site and off-site basements, (2) remediation of the source area of the contaminant plume to prevent further migration of the cVOCs and reduce volatilization into adjacent basements, and (3) achieving NYSDEC groundwater quality standards to the extent practicable. Suggested future actions or modifications to improve the individual operations and shorten the time required to attain the project goals are presented below.

6.1 Mr. C's Dry Cleaners Site Treatment System

Throughout 2014, the treatment system continued to collect groundwater and efficiently remove VOCs through air stripping. From January to June 2014, while the bioremediation pilot study was proceeding, the treatment system remained operable, with the exception of pumping wells PW-5 and PW-7, which were locked-out and tagged-out. The year-long bioremediation pilot study concluded in 2014, although bioremediation continues to occur and groundwater chemistry continues to be influenced by the bioremediation. As discussed in Section 2.1, PW-5 and PW-7 continue to be locked-out and tagged-out to minimize secondary impacts on the treatment system.

6.2 Subslab Depressurization

No modifications to the SSDS units installed in and around the site are currently recommended. Five sites have active subslab systems and should be inspected, maintained, and monitored under the SMP. Inspections conducted in 2014 identified four of the five systems as operating as designed. Access to the residence at 27 Whaley Avenue for SSDS inspection and sampling has not been provided since 2010. The results for indoor air samples collected at the First Presbyterian Church in February 2014 shows that PCE and TCE levels in indoor air continue to be well below the NYSDOH indoor air guidance values.

Due to the elevated levels of PCE in the subslab vapor in buildings around the Mr. C's site that were detected during Phase II of the SVII program (see Section

5.2.2), depressurization of the subslab and venting to above the roofline will be implemented in 2015 to mitigate the concerns for vapor intrusion. Additional systems are scheduled to be constructed on the following properties:

- 586 Main Street, rear (commercial property);
- 594 Main Street (commercial property);
- 591 Main Street (commercial property); and,
- 16 Paine Avenue (commercial property).

The installation, maintenance, and monitoring of these subslab depressurization systems are another remedial measure towards the reclassification and closure of the remedial groundwater treatment activities at the Mr. C's Dry Cleaners site.

6.3 Remedial Site Optimization

Efforts to optimize the site's operation began in 2013 with the bioremediation pilot study and the SVII investigations. The goal of optimizing the Mr. C's site project is to protect human health and safety through soil-vapor intrusion mitigation and continued groundwater cleanup. Since no property owners rely on groundwater-derived potable water, exposure to contaminated groundwater is not anticipated.

The pilot study successfully determined that bioremediation technologies are effective at reducing PCE concentrations at the site. The results of the bioremediation pilot study completed in 2014 provides recommendations to NYSDEC for a larger bioremediation program designed to evaluate alternatives to groundwater cleanup via the existing pumping and treatment system. This evaluation is discussed below in Section 6.3.4. Successful site optimization would lead to site closure in a shorter timeframe and at a lower cost than the remedy currently in place.

Following site closure, the remedial groundwater treatment system will be shut down and dismantled. In addition, the SMP will be updated and revised to include the following items:

- Review of ICs and ECs,
- Groundwater monitoring, and
- Indoor air monitoring and maintenance of the SSDS units.

Based on the findings of the final closure report, NYSDEC and the NYSDOH would determine whether to reclassify the site.

6.3.1 Additional Soil Vapor Intrusion Investigations - 2015

The following 20 properties have been proposed for additional SVIIs based on conversations between NYSDEC and the NYDOH:

- 523, 531, 537, 541, and 577 Fillmore Avenue;
- 527, 617, 618, and 624 Main Street;
- 27 Riley Street;
- 17 and 33 Elm Street;
- 32, 36, 39, 42, 45, and 48 Paine Street; and,
- 45 and 49 Savage Place.

The individual property owners have been sent an initial letter from NYSDEC regarding the investigations (see Appendix E). EEEPC will follow up in 2015 to schedule and perform the air sampling and associated inspections. Once the analytical results have been reviewed, validated, and submitted for review, the NYSDOH will determine the need for subslab vapor mitigation for each property.

6.3.2 Continue to Monitor the Degradation of cis-DCE

Baseline and performance monitoring was performed as part of the standalone pilot study; therefore, these analyses are not required as a continuing part of site OM&M. However, EEEPC presented recommendations for continued monitoring of VOCs, TOC, and dissolved gases in select performance monitoring wells in the bioremediation summary report (see Appendix F). Supplemental monitoring may identify cis-DCE or VC stall, if it occurs, which would require consideration of mitigation actions to reduce off-site migration and volatilization of these mobile and hazardous chemicals.

6.3.3 Install a Downgradient Barrier West of PW-8

The potential for secondary impacts from increased off-site migration of PCE degradation by-products is greatest in the vicinity of PZ-8C, which is a piezometer around PW-8, an active pumping well at the downgradient edge of the source. Natural groundwater gradients already flow through the contaminated plume toward PW-8. Throughout the pilot study, VOCs were observed migrating toward PW-8. It will be important to monitor VOC concentrations at this well, because the next closest downgradient sentinel well is located several hundred feet to the west and multiple residential properties are located between the two wells.

A treatment barrier would need to be installed in a line cross-gradient to the direction of groundwater flow and should be engineered to provide a long-term source of organic carbon to promote anaerobic bioremediation. The barrier technologies recommended consists of a series of closely spaced injections of an emulsified oil electron donor, such as those used in the pilot study. Because of the site's location in a commercial/residential neighborhood, it would be easier to mobilize direct-push injection equipment to this area than the machinery needed for alternative barrier technologies.

6.3.4 Evaluate the Feasibility and Relative Cost-Effectiveness of Enhanced Anaerobic Bioremediation to Meet Full-Scale Remedial Objectives

The pumping and treatment system will likely face declines in groundwater pumping volumes and total cVOCs removed in line with current trends (see Section 4.1). The bioremediation pilot study has changed the aquifer's geochemistry, which can be expected to contribute to additional declines in system performance. Because of the change in groundwater geochemistry resulting from the bioremediation pilot study, the system has experienced operation issues with biofilms and inorganic precipitation within the system, which will lead to increased maintenance costs. The degradation of PCE to cis-DCE makes the contamination more difficult to remove by the air stripper. Declines in the pumping system's performance due to biofilm buildup and the treatment system's removal efficiency due to the increase in cis-1,2 DCE may lead to non-compliance with the SPDES Equivalency Permit, as was observed in 2014.

Conversely, it is likely that continued bioremediation will gain efficiencies during full-scale implementation, and the scope and frequency of bioaugmentation and monitoring can be reduced from the level of the pilot study efforts. DNA analyses, which were the costliest of those performed under the pilot study, have shown that the microbes in the aquifer have the genes to produce the enzymes needed to reduce each degradation by-product of PCE; therefore, these analyses can be eliminated or performed annually to reduce costs. Baseline samples for competing electron acceptors have been collected at monitoring wells MPI-7I and MPI-4I, which can be used in the design of injections in areas sharing the same aerobic or anaerobic geochemical conditions.

Bioremediation technologies present an opportunity to optimize the site remedy. A full-scale implementation of the bioremediation pilot study should begin with a downgradient barrier and could also include treatment of the contaminant plume itself. The aquifer groundwater contours observed in 2014 showed a flattening of groundwater gradients across the site due to pumping wells PW-5, PW-6, and PW-7 being out of service. With less groundwater captured through pumping, gradients during a full-scale application may change. Therefore, the implementation of a downgradient barrier in the short-term, as recommended, may need to be supplemented with additional downgradient barriers during the design of the source area to be treated. Full-scale application of enhanced bioremediation is desirable; however, it remains to be seen if it would facilitate earlier site closure. EEEPC recommends evaluating the cost and appropriateness of full-scale bioremediation alternatives.

7

Annual Remedial Action Costs

The total 2014 cost for work performed by EEEPC and its subcontractor, IEG, for the remedial treatment program for the Mr. C's Dry Cleaners site, including the individual the operating units, was \$348,375 (see Table 7-1).

Table 7-1 2014 Remedial Action Costs, Mr. C's Dry Cleaner Site

Task	Description	Cost
A. Site Management Plan - Updates and Revisions		
	EEEPC Admin and Reporting	\$9,700
	Subtotal A:	\$9,700
B. Operations, Maintenance and Monitoring Services		
	Subcontracted - OM&M Services	\$90,850
	Subcontracted - Analytical Services	\$6,800
	Utilities - Electric, Gas, and Telephone	\$14,600
	Replacement Equipment	\$16,000
	SSDS Unit(s) Inspection and Reporting	\$2,200
	Agway Decommissioning and Transport	\$500
	EEEPC Admin and Reporting	\$31,350
	Subtotal B:	\$162,300
C. Groundwater Sampling and Reporting		
	Field Sampling Program	\$24,100
	Subcontracted - Analytical Services	\$2,900
	EEEPC Admin and Reporting	\$6,000
	Subtotal C:	\$33,000
D. Annual Periodic Review Reporting		
	EEEPC Admin and Reporting	\$13,800
	Subtotal D:	\$13,800
E. Remedial System Optimization		
	Subcontracted - Analytical Services (Bio)	\$16,000
	EEEPC Field Performance Sampling and Reporting	\$32,500
	SVII/SSDS Air Sampling, Oversight, and Reporting	\$47,500
	Subcontracted - SVII Air Analytical Services	\$6,000
	EEEPC Administration and Reporting	\$27,575
	Subtotal E:	\$129,575
	Grand Total (Items A-E)	\$348,375

8

Local Public Reporting in 2014

Local newspaper articles or information was identified by EEEPC during 2014 that provided information that has or could impact the Mr. C's Dry Cleaners site. Newspaper articles related to proposed work in and around the Mr. C's site are provided in Appendix G. This information includes the following:

- **Erie County Real Estate Transactions.** Real estate transactions in excess of \$5,000, as listed in the Erie County Clerk's office for the week ending January 31, 2014, were reported on March 9, 2014, and included the sale of 578 Main Street by Lee A. Brownschidle to 580 Main Street LLC for \$225,000.
- **Erie County Real Estate Transactions.** Real estate transactions in excess of \$5,000, as listed in the Erie County clerk's office for the week ending March 28, 2014, were reported on May 4, 2014, and included the sale of 572 Main Street by Dennis Doeing to Intrepid Automotive Partners for \$222,562.

9

References

- Ecology and Environment Engineering, P.C. (EEEEPC). 2014a. 2013 *Long-term Groundwater Monitoring Report. Letter report to NYSDEC*, January 16, 2013.
- _____. 2014b. *Mr. C's Dry Cleaners Site, Contract # D007617, Site # 9-15-157, Bioremediation Pilot Progress Report 03*. Letter report to NYSDEC, June 2, 2014.
- _____. 2013. *Site Management Plan for the Mr. C's Dry Cleaners Site, East Aurora, Erie County, New York, NYSDEC Site No. 9-15-157*. December 2013.
- _____. 2012. *2012 Long-term Groundwater Monitoring Results*, Letter report to NYSDEC, July 26, 2012.
- _____. 2011. *Indoor Air Quality Report – 27 Whaley Avenue*. Letter report to NYSDEC, September 2011.
- _____. 2010. *2010 Long-term Groundwater Sampling and Data Summary Report, Mr. C's Dry Cleaners Site, East Aurora, New York*. July 2010.
- _____. 2009. *2009 Long-term Groundwater Sampling and Data Summary Report, Mr. C's Dry Cleaners Site, East Aurora, New York*. August 2009.
- _____. 2007. *2007 Long-term Groundwater Sampling and Data Summary Report, Mr. C's Dry Cleaners Site, East Aurora, New York*. December 2007.
- _____. 2004a. *Review for the Necessity of Granular Activated-Carbon Units on the Influent Air Stream, Mr. C's Dry Cleaner's Site*. September 2004.
- _____. 2004b. *Mr. C's Dry Cleaners 2004 Groundwater and Subsurface Soil Sampling Draft Data Summary Report, East Aurora, New York*. July 2004.
- Malcolm Pirnie, Inc. (MPI). 1995a. *Remedial Investigation Report – Mr. C's Dry Cleaners Super Fund Site*.

- _____. 1995b. *Remedial Investigation Report Addendum A: Aquifer Testing Report – Mr. C’s Dry Cleaners Super Fund Site.*
- _____. 1996. *Feasibility Study Report – Mr. C’s Dry Cleaners Super Fund Site.*
- _____. 1999. *Mr. C’s Remedial Construction Contract D004180.*
- Matrix Environmental, Inc. (Matrix). 2003. *Final Analytical Report*, November 2003.
- New York State Department of Environmental Conservation (NYSDEC). 2010. *Technical Guidance for Site Investigation and Remediation, Division of Environmental Remediation (DER) -10.* May 2010.
- _____. 2009. *CP-43: Groundwater Monitoring Well Decommissioning Policy.* November 2009.
- _____. 2005. *SSDS units installed at 27 Whaley.* February 2005
- _____. 2004. *SSDS units installed at 1st Presbyterian Church.* September 2004
- _____. 2000, *Explanation of Significant Differences*, April 2000.
- _____. 1998. *Division of Water Technical and Operational Guidance Series (1.1.1): Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Division of Water, Albany, New York, with updates.*
- _____. 1997. *Division of Remediation - Record of Decision, Mr. C’s Dry Cleaners Site, East Aurora (V), Erie County, Site Number 9-15-157,* March 1997.
- New York State Department of Health (NYSDOH). 2006. *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, October 2006. Albany, New York: Center for Environmental Health, Bureau of Environmental Exposure Investigation.
- The Tyree Organization Limited (Tyree). 2003. *Mr. C’s Dry Cleaners Site Operations and Maintenance Plan*, September 2003