

**2015
Periodic Review Report
Mr. C's Dry Cleaners Site
NYSDEC Site No. 915157
Village of East Aurora
Erie County, New York**

January 2016

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 2015	1-4
2 Remedial Systems Compliance	2-1
2.1 Mr. C’s Dry Cleaners Site	2-1
2.2 Subslab Depressurization Systems	2-2
2.3 Groundwater Monitoring Well Network.....	2-3
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.....	3-1
3.2 Engineering Controls.....	3-3
3.2.1 Mr. C’s Dry Cleaners Site	3-3
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 2015	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..... 5-3
5.3	SSDS Condition, Replacement, and Repairs in 2015 5-4
5.4	Groundwater Monitoring Well Network..... 5-4
5.4.1	Long-Term Groundwater Monitoring 5-6
5.4.1.1	Well Purging and Sampling Procedures 5-6
5.4.1.2	Quality Assurance and Quality Control 5-7
5.4.1.3	2015 Long-term Groundwater Monitoring Results 5-8
5.4.1.4	Comparison of 2015 LTGM Program Results to Previous Years 5-9
5.4.2	Maintenance Issues 5-9
5.5	Groundwater Bioremediation Pilot Study..... 5-9
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	Evaluate the Feasibility and Relative Cost-Effectiveness of Enhanced Anaerobic Bioremediation to Meet Full-Scale Remedial Objectives 6-3
7	Annual Remedial Action Costs 7-1
8	Local Public Reporting in 2015 8-1
9	References..... 9-1
Appendix	
A	Property Ownership of Current and Potential Easementson disk
B	Groundwater Treatment System Reportingon disk
C	2015 Long-Term Groundwater Monitoring Resultson disk
D	Completed SSDS Unit Inspection Forms – Presbyterian Churchon disk
E	Soil Vapor Intrusion Investigations (SVII) Data.....on disk

Table of Contents (cont.)

Section	Page
F Local Public Reporting in 2015	F-1

List of Tables

Table		Page
2-1	Mr. C's Dry Cleaners Site Remediation, Effluent Criteria.....	2-1
2-2	Summary of Positive Analytical Results for Groundwater Samples	2-4
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	3-4
3-4	Engineering Controls – Area-wide Monitoring Well and Pumping Well Network.....	3-5
4-1	Treatment System Uptime in 2015, Mr. C’s Dry Cleaners Site	4-2
4-2	Volumes of Groundwater Processed and Discharged by the Remedial Treatment System in 2015	4-3
4-3	VOCs Removal in 2015, 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, 2015	5-3
5-3	Well Construction Summary, Mr. C’s Dry Cleaners Site, East Aurora, New York	5-4
7-1	2015 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: less than 1.0 acre		
Reporting Period: January 1, 2015 to December 31, 2015		
	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. 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. 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

Groundwater is treated 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. 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 Thomas R. Heins at Ecology and Environment Engineering, P.C.
print name

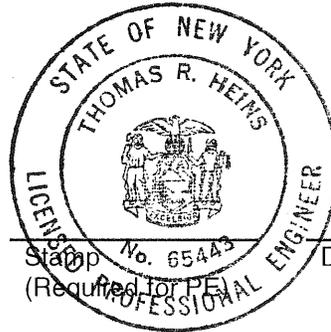
368 Pleasant View Drive

Lancaster, New York 14086
(print business address)

am certifying as a Professional Engineer.

Thomas R. Heins

Signature of Professional Engineer



Stamp No. 65443 Date

1/29/16

Executive Summary

The 2015 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, 2015. 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. (EEEEPC) under Work Assignment D007617-11.1, which was approved by the NYSDEC Division of Environmental Remediation on May 27, 2015. The EEEPC site management work assignment is to continue until July 31, 2016.

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 subsurface depressurization systems (SSDS) were installed in 2004, 2005, 2013, 2014, and 2015.

A network of 26 groundwater monitoring wells, eight groundwater 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 2015.

Effectiveness of the Remedial Program in 2015

The effectiveness of the remedial systems at the Mr. C's site during the 2015 reporting period is described below.

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

Based on the reported hours of operation for 2015, the Mr. C's remedial groundwater pumping and treatment system effectively operated 95.7% of the time; the goal stated in the Record of Decision (ROD; NYSDEC 1997, 2000) is an uptime of 90%. The system treated 4,001,315 gallons of contaminated groundwater in 2015 and removed 22.7 pounds of volatile organic compounds (VOCs). In 2015, the treatment system had a contaminant-removal efficiency of 98.6%. The volume of contaminants removed has generally decreased over the past 13 years. This trend is directly related to the reduced volume of groundwater being removed. From treatment startup until December 2015, approximately 1,600 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 (SVII), Phases I, II, and III**

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. SVII inspection, sampling, and reporting services were performed by EEEPC for six of the 12 properties during the 2014/2015 heating season (45 Paine Street, 547 Fillmore Avenue, 23 Paine Street, 48 Paine Street, 31 Paine Street, and 27 Riley Street). The owners of the other six properties did not elect to have inspections or indoor air testing. The analytical results of the investigation confirmed that subslab vapor mitigation was appropriate for two of the properties (23 Paine Street and 31 Paine Street). EEEPC will proceed with designing vapor mitigation systems once directed by NYSDEC after consultation with the NYSDOH.

■ **Subslab Depressurization Systems**

Subslab depressurization systems (SSDSs) were installed at two facilities in 2004 and 2005. 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. Based on the results of SVII work performed in 2014, four additional SSDSs were installed in 2015 by Groundwater & Environmental Services, Inc. The SSDSs were installed at 16 Paine Street, 586 Main Street (Suite 4), 591 Main Street, and 594 Main Street. The nine SSDSs currently installed in and around the site were 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 2015, 22 monitoring wells, six 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 limit secondary impacts of the bio-injected materials on the treatment system. The 2015 results of the LTGM program and comparison to the results from previous years are presented in Section 5.

■ **Groundwater Bioremediation Pilot Study**

The Bioremediation Pilot Study was initiated in May 2013 and completed in June 2014. 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 2015, secondary impacts on the pumping and treatment system were observed as a result of the conversion of PCE to cis-DCE. Secondary impacts were limited by shutting off PW-7 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 2015 is presented in Section 5.5.

An expanded site history, including associated regulatory information, is presented as part of the Site Management Plan (SMP; EEEPC 2015a). The SMP was updated to reflect the changes to the Site since 2013, including the installation of SSDS systems, and was issued to NYSDEC on February 27, 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 2015, EEEPC issued monthly OM&M reports for the operation of the ground-water 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 2015. The test results from the effluent samples collected in February and June 2015 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. The June exceedance was due to failures of the process logic control (PLC) panel for the treatment system. The faulty PLC was replaced, and the treatment system was adjusted to improve operational efficiency. In both cases, corrective actions followed by additional influent and effluent sampling continued until compliance had been achieved. Increases in influent cis-DCE concentrations from the breakdown of PCE from the bioremediation program resulted in several failures of the remedial treatment system effluent to comply with the SPDES Equivalency Permit in 2014. cis-DCE has a lower Henry's Law constant, which made 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. Elevated levels of cis-DCE continued throughout 2015, but alterations of blower speed, adjustment of differential pressures in the air stripper, and system cleaning have enabled the treatment system to meet permit limits.

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 nine 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, includ-

ing 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 2015a.), 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 2015. 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);
- Nine 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;
 - 586 Main Street, (Mr. C's Treatment Building) – single-fan system installed April 2014;
 - 586 Main Street, Suite 4 (Country Cupboard) – single-fan system installed February 2015;
 - 16 Paine Street (Boys & Girls Club) – single-fan system installed February 2015;

- 591 Main Street (commercial building) – single-fan system installed February 2015; and
 - 594 Main Street (commercial building) – two-fan system installed February 2015.
- 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.

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). In 2015, SSDSs were installed at the following properties: 16 Paine Street (one fan), 586 Main Street - Suite 4 (one fan), 591 Main Street (two fans), and 594 Main Street (two fans).

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 2015 SMP (EEEPC 2015a.). Access agreements to the SSDS units installed in 2014 and 2015 will be negotiated in 2016 and included in SMP revisions.

Groundwater Monitoring Well Network

During the remedial investigation (RI; MPI 1995a) 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 2015. Currently, there are 24 active monitoring wells, six active pumping wells, and four active piezometers around the Mr. C's site.

The results of the 2015 Annual Long-term Groundwater Monitoring Report (EEEEPC 2015b) is provided in Appendix C.

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 (EEEEPC 2004a) and subsequently approved by NYSDEC.

The first revision to the O&M plan was prepared and submitted in January 2008 (EEEEPC 2008). The O&M plan was revised to the current SMP format in 2012 (EEEEPC 2012a) 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:

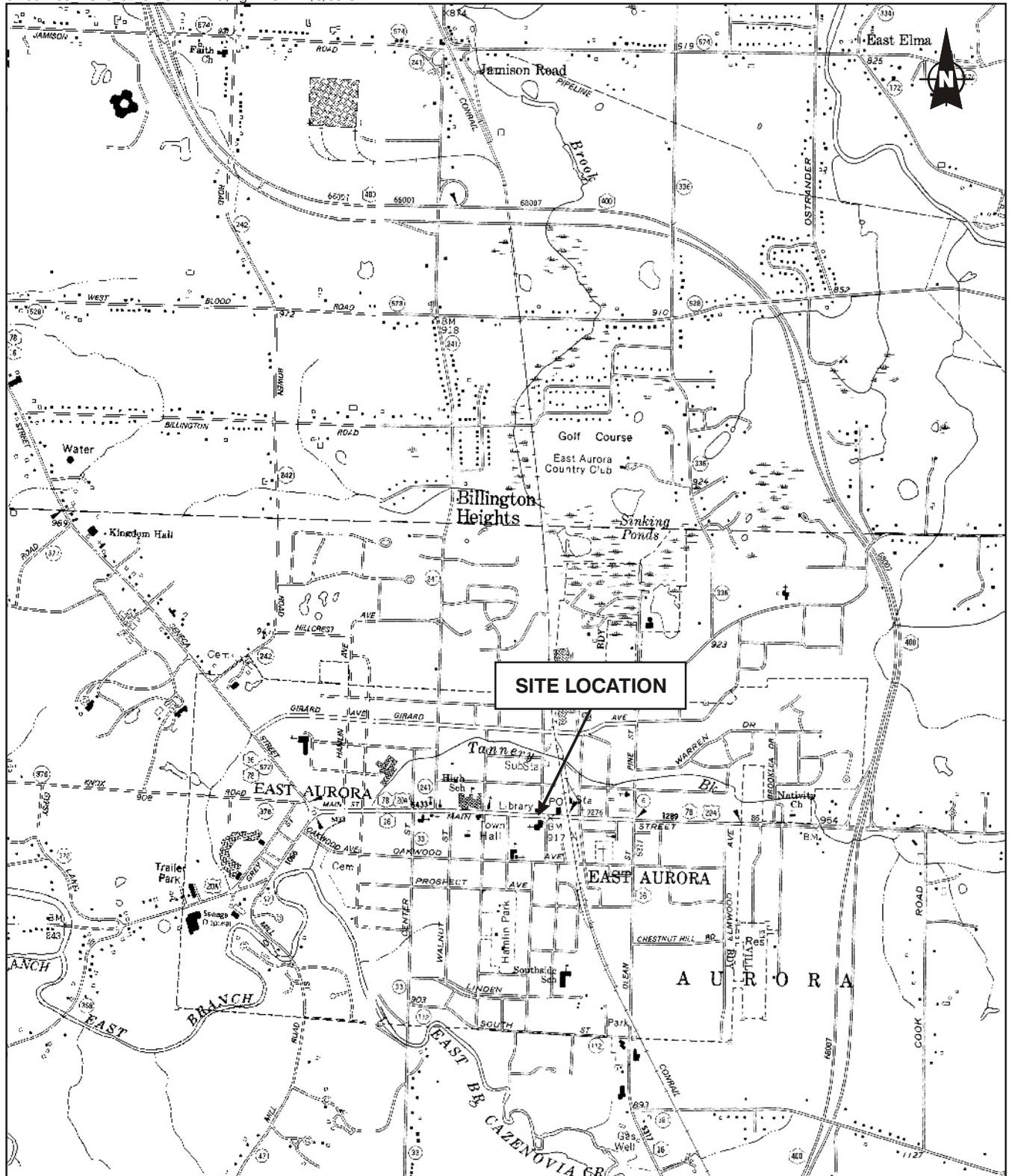
- Operation and maintenance of the remedial treatment units,
- Groundwater and air sampling,
- Analysis of the individual environmental matrices, and
- Reporting.

The most recent version of the SMP (EEEEPC 2015a), which was submitted in February 2015, included updates and results of the Bioremediation Pilot Study and the 2014/2015 Heating Season Indoor Air & Subslab Vapor Sampling Plan (Appendix J of the SMP), and information on the installation of additional SSDS.

1.3 Significant Remedial Activities in 2015

In 2015 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. Finalized report of the enhanced and augmented bioremediation pilot study (see Sections 5.5); and
3. Installation of SSDS units at 16 Paine Street, 586 Main Street (Suite 4), 591 Main Street and 594 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.

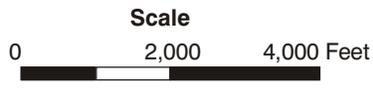
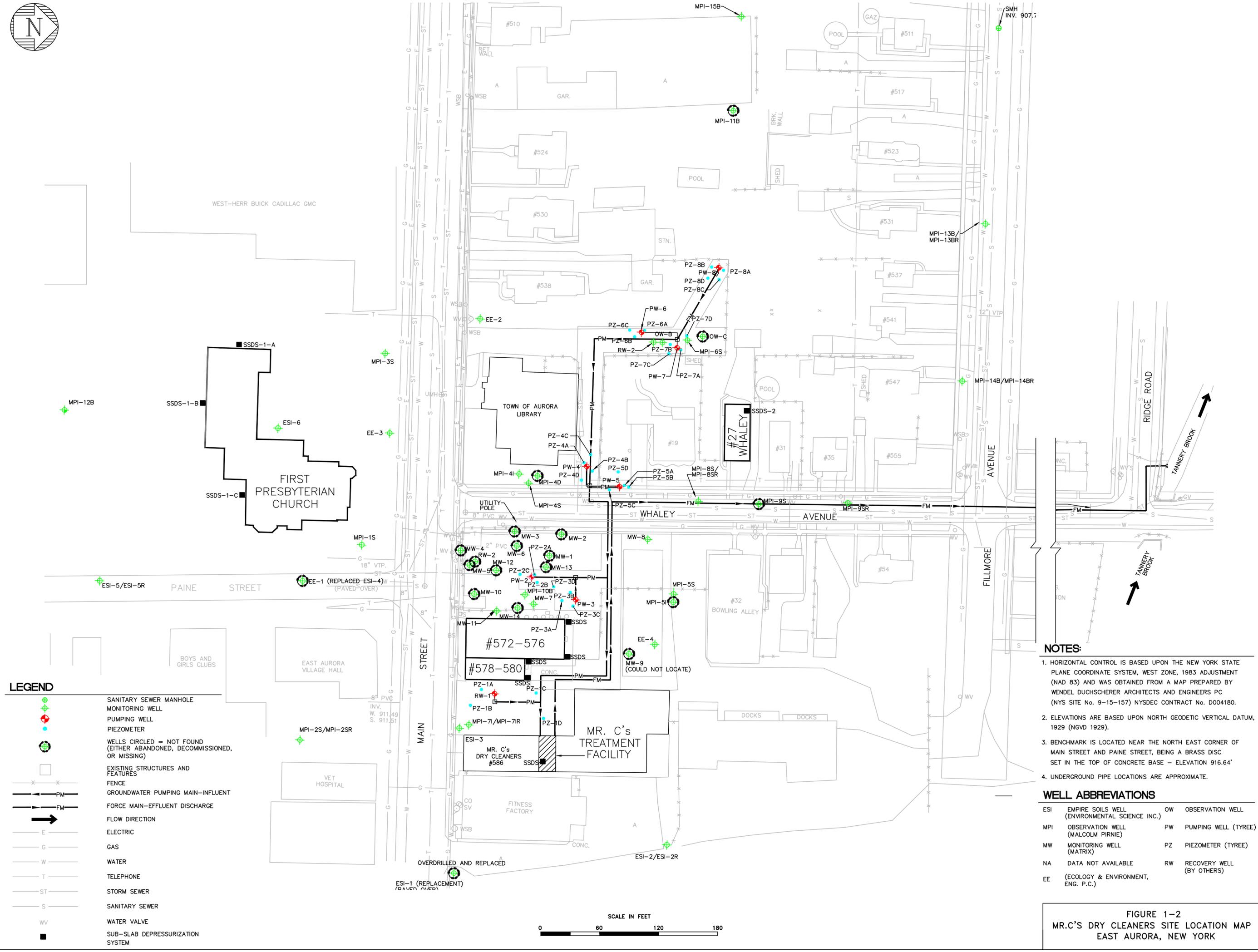


Figure 1-1 General Site Location Map



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

- 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.)		

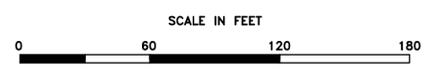


FIGURE 1-2
MR.C'S DRY CLEANERS SITE LOCATION MAP
EAST AURORA, NEW YORK

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 2015. 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 2015. The results for the first monthly effluent samples collected in February and June 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. In addition, the process logic control (PLC) panel of the treatment system failed and was replaced in June. Following the corrective actions taken in February and June, additional samples were collected, and the results indicated that compliance with the SPDES requirements had been achieved.

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

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

Parameter/Analyte	Daily Maximum ¹	Units
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
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

In 2015, PCE and cis-DCE influent concentrations remained similar to the influent concentrations of 2014. For more information on remedial treatment operations, refer to Section 4.1.

2.2 Subslab Depressurization Systems

First Presbyterian Church. Based on historically consistent sampling results below NYSDOH guidelines, NYSDEC directed that indoor air and subslab soil vapor sampling not be conducted in 2015.

27 Whaley Avenue. In 2015, 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 at-

tempts to contact the property owner will be made in 2016. Air sampling at the 27 Whaley Avenue residence was last performed in November 2010 (EEEEPC 2011).

572-576 Main Street. Indoor air sampling was performed on January 14, 2015, to verify the success of the SSDS put in operation on August 15, 2014. The SSDS reduced TCE concentrations present in basement air from $7.09 \mu\text{g}/\text{m}^3$ to $0.97 \mu\text{g}/\text{m}^3$. It also reduced PCE concentrations from $46.4 \mu\text{g}/\text{m}^3$ to $31.26 \mu\text{g}/\text{m}^3$.

578-580 Main Street. Indoor air sampling was performed on January 14, 2015, to verify the success of the SSDS put in operation on August 15, 2014. The sample results showed that PCE in basement air had decreased from $157 \mu\text{g}/\text{m}^3$ to $1.02 \mu\text{g}/\text{m}^3$ and that PCE in first floor air had decreased from $100 \mu\text{g}/\text{m}^3$ to $1.08 \mu\text{g}/\text{m}^3$.

586 Main Street, Suite 4. Indoor air sampling was performed on March 19, 2015, to verify the success of the SSDS put in operation on February 18, 2015. The sample results showed that PCE in first floor ambient air had decreased from $7.7 \mu\text{g}/\text{m}^3$ to $1.9 \mu\text{g}/\text{m}^3$.

591 Main Street. Post-installation sampling will be performed once the owner's construction for the entire facility is completed at the site. A second SSDS unit needs to be installed in the first quarter of 2016 to complete the project.

594 Main Street. Indoor air sampling was performed on March 19, 2015, to verify the success of the SSDS put in operation on February 18, 2015. The sample results showed that PCE in first floor ambient air had decreased from $100 \mu\text{g}/\text{m}^3$ to $0.61 \mu\text{g}/\text{m}^3$.

16 Paine Street. Indoor air sampling was performed on March 19, 2015, to verify the success of the SSDS put in operation January 27, 2015. The sample results showed that PCE in first floor air had decreased from $3.9 \mu\text{g}/\text{m}^3$ to non-detect.

586 Main Street - Mr. C's Treatment Building. No indoor air sampling completed because of the processing of VOC contaminated groundwater through the treatment equipment in the building.

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 2015 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 Cleaners Site, East Aurora, New York**

Analyte	Location ID:		EE-2	EE-3	ESI-2-R	ESI-3	ESI-5-R	ESI-6
	Sample Name:	Notes	EE-2-OCT15	EE-3-OCT15	ESI-2-R-OCT15	ESI-3-OCT15	ESI-5-R-OCT15	ESI-6-OCT15
Screening Criteria ⁽¹⁾	Depth:		22 - 32 ft	18 - 28 ft	9 - 19 ft	7 - 17 ft	5 - 15 ft	7 - 17 ft
	Date:		10/26/15	10/23/15	10/26/15	10/28/15	10/26/15	10/23/15
Volatile Organics by Method SW8260C (µg/L)								
1,1,1-Trichloroethane	5		0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	2.5 U
1,1-Dichloroethane	5		0.82 J	0.25 U	0.25 U	0.98 J	0.25 U	1.3 U
1,1-Dichloroethene	5		0.80 J	0.39 U	0.39 U	0.39 U	0.39 U	2.0 U
1,2-Dichloroethane	0.6		0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	2.1 U
Acetone	50	G	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	11 U
Carbon Disulfide	60	G	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	1.7 U
Chloroform	7		0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	1.7 U
Cis-1,2-Dichloroethylene	5		230	15	0.48 U	0.48 U	0.48 U	32
Methyl-Tert-Butyl Ether	10	G	19	22	0.24 U	0.24 U	0.24 U	1.2 U
Tetrachloroethylene (PCE)	5		97	1.3 J	0.65 U	140	0.65 U	320
Trans-1,2-Dichloroethene	5		1.6 J	0.65 U	0.65 U	0.65 U	0.65 U	3.3 U
Trichloroethylene (TCE)	5		140	0.36 U	0.36 U	0.36 U	0.36 U	21 J
Vinyl Chloride	2		4.7 J	0.50 U	0.50 U	0.50 U	0.50 U	2.5 U

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

UJ = Not detected/estimated detection limit

Notes

G = Guidance value (no standard available)

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 Cleaners Site, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	MPI-13B-R	MPI-14B-R	MPI-15B	MPI-1S	MPI-2S-R	MPI-3S
			Sample Name:	OCT15	OCT15	MPI-15B-OCT15	MPI-1S-OCT15	MPI-2S-R-OCT15	MPI-3S-OCT15
			Depth:	17 - 32 ft	15 - 30 ft	0 - 0 ft	9 - 19 ft	8 - 18 ft	8 - 18 ft
			Date:	10/22/15	10/22/15	10/27/15	10/23/15	10/26/15	10/23/15
Volatile Organics by Method SW8260C (µg/L)									
1,1,1-Trichloroethane	5			0.50 U	0.50 U	0.50 U	0.50 U	3.0 J	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
1,2-Dichloroethane	0.6			0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	2.2 J
Acetone	50	G		2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Carbon Disulfide	60	G		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	4.4 J	0.33 U
Cis-1,2-Dichloroethylene	5			0.48 U	0.48 U	0.48 U	3.1 J	0.48 U	0.48 U
Methyl-Tert-Butyl Ether	10	G		0.24 U	0.24 U	1.1 J	0.24 U	0.24 U	35
Tetrachloroethylene (PCE)	5			6.7	2.3 J	0.65 U	45	1.9 J	0.65 U
Trans-1,2-Dichloroethene	5			0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
Trichloroethylene (TCE)	5			0.36 U	0.36 U	0.36 U	2.3 J	0.36 U	0.36 U
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)

UJ = Not detected/estimated detection limit

Notes

G = Guidance value (no standard available)

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 Cleaners Site, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	MPI-4I	MPI-4S	MPI-5S	MPI-6S	MPI-6S	MPI-7I-R
			Sample Name:	MPI-4I-OCT15	MPI-4S-OCT15	MPI-5S-OCT15	MPI-6S-OCT15	MPI-6S-OCT15-Q	MPI-7I-R-OCT15
			Depth:	32 - 42 ft	11 - 21 ft	8 - 18 ft	12 - 22 ft	12 - 22 ft	29 - 39 ft
			Date:	10/26/15	10/27/15	10/21/15	10/27/15	10/27/15	10/28/15
Volatile Organics by Method SW8260C (µg/L)									
1,1,1-Trichloroethane	5			0.50 U	0.50 U				
1,1-Dichloroethane	5			0.25 U	0.25 U				
1,1-Dichloroethene	5			0.39 U	0.39 U				
1,2-Dichloroethane	0.6			0.41 U	0.41 U				
Acetone	50	G		2.2 U	2.2 U	2.2 U	12 J	8.4 J	2.2 U
Carbon Disulfide	60	G		0.34 U	0.34 U				
Chloroform	7			0.33 U	0.33 U				
Cis-1,2-Dichloroethylene	5			720	41	8.4	18 J	35 J	0.48 U
Methyl-Tert-Butyl Ether	10	G		310	1.3 J	0.24 U	0.24 U	0.24 U	0.24 U
Tetrachloroethylene (PCE)	5			71	4.4 J	30	0.65 U	0.65 U	1.2 J
Trans-1,2-Dichloroethene	5			1.6 J	0.65 U	4.4 J	0.65 U	1.0 J	0.65 U
Trichloroethylene (TCE)	5			31	1.6 J	5.7	0.36 U	0.36 U	0.36 U
Vinyl Chloride	2			180	6.4	1.5 J	14 J	35 J	0.50 U

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

UJ = Not detected/estimated detection limit

Notes

G = Guidance value (no standard available)

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 Cleaners Site, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	MPI-8S-R	MPI-9S-R	MW-11	MW-7	MW-7	MW-8
			Sample Name:	MPI-8S-R-OCT15	MPI-9S-R-OCT15	MW-11-OCT15	MW-7-OCT15	MW-7-OCT15-Q	MW-8-OCT15
			Depth:	8 - 18 ft	8 - 18 ft	10 - 20 ft	5 - 15 ft	5 - 15 ft	5 - 15 ft
			Date:	10/21/15	10/22/15	10/28/15	10/22/15	10/22/15	10/21/15
Volatile Organics by Method SW8260C (µg/L)									
1,1,1-Trichloroethane	5			0.50 U	0.50 U	0.50 U	5.0 U	5.0 U	0.50 U
1,1-Dichloroethane	5			0.25 U	0.25 U	0.25 U	2.5 U	2.5 U	0.25 U
1,1-Dichloroethene	5			0.39 U	0.39 U	0.39 U	3.9 U	3.9 U	0.39 U
1,2-Dichloroethane	0.6			0.41 U	0.41 U	0.41 U	4.1 U	4.1 U	0.41 U
Acetone	50	G		2.2 U	2.2 U	2.2 U	22 U	22 U	2.2 U
Carbon Disulfide	60	G		0.34 U	0.34 U	1.9 J	3.4 U	3.4 U	0.34 U
Chloroform	7			0.33 U	0.33 U	0.33 U	3.3 U	3.3 U	0.33 U
Cis-1,2-Dichloroethylene	5			71	0.48 U	0.48 U	4.8 U	4.8 U	12
Methyl-Tert-Butyl Ether	10	G		0.24 U	0.24 U	0.24 U	2.4 U	2.4 U	0.24 U
Tetrachloroethylene (PCE)	5			150	1.2 J	1400	840	860	0.65 U
Trans-1,2-Dichloroethene	5			1.6 J	0.65 U	0.65 U	6.5 U	6.5 U	16
Trichloroethylene (TCE)	5			17	0.36 U	4.8 J	3.6 U	3.6 U	0.36 U
Vinyl Chloride	2			0.50 U	0.50 U	0.50 U	5.0 U	5.0 U	7.4

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

UJ = Not detected/estimated detection limit

Notes

G = Guidance value (no standard available)

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 Cleaners Site, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	PW-2	PW-3	PW-4	PW-5	PW-6	PW-8
			Sample Name:	PW-2-OCT15	PW-3-OCT15	PW-4-OCT15	PW-5-OCT15	PW-6-OCT15	PW-8-OCT15
			Depth:	18 - 28 ft	18 - 28 ft				
			Date:	10/28/15	10/28/15	10/28/15	10/28/15	10/28/15	10/28/15
Volatile Organics by Method SW8260C (µg/L)									
1,1,1-Trichloroethane	5			0.50 U	0.50 U				
1,1-Dichloroethane	5			0.25 U	0.25 U				
1,1-Dichloroethene	5			0.39 U	0.39 U	0.39 U	0.39 U	1.8 J	0.39 U
1,2-Dichloroethane	0.6			0.41 U	0.41 U				
Acetone	50	G		2.2 U	2.2 U				
Carbon Disulfide	60	G		0.34 U	0.34 U				
Chloroform	7			0.33 U	0.33 U				
Cis-1,2-Dichloroethylene	5			0.48 U	0.48 U	81	99	61 J	150
Methyl-Tert-Butyl Ether	10	G		0.24 U	0.24 U	8.5	0.24 U	1.4 J	2.7 J
Tetrachloroethylene (PCE)	5			380	100	2000	2300	2000	170
Trans-1,2-Dichloroethene	5			0.65 U	0.65 U	1.4 J	3.5 J	0.84 J	0.65 U
Trichloroethylene (TCE)	5			1.8 J	2.1 J	110	31	130 J	8.4
Vinyl Chloride	2			0.50 U	0.50 U	0.50 U	8.8	0.50 U	8.9

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

UJ = Not detected/estimated detection limit

Notes

G = Guidance value (no standard available)

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 Cleaners Site, East Aurora, New York**

Analyte	Screening Criteria ⁽¹⁾	Notes	Location ID:	PZ-3B	PZ-5B	PZ-6A	PZ-8C
			Sample Name:	PZ-3B-OCT15	PZ-5B-OCT15	PZ-6A-OCT15	PZ-8C-OCT15
			Depth:	18 - 28 ft	18 - 28 ft	18 - 28 ft	18 - 28 ft
			Date:	10/22/15	10/21/15	10/27/15	10/27/15
Volatile Organics by Method SW8260C (µg/L)							
1,1,1-Trichloroethane	5			0.50 U	10 U	0.50 U	0.50 U
1,1-Dichloroethane	5			0.25 U	5.0 U	0.25 U	0.25 U
1,1-Dichloroethene	5			0.39 U	7.8 U	4.2 J	0.39 U
1,2-Dichloroethane	0.6			0.41 U	8.2 U	0.41 U	0.41 U
Acetone	50	G		2.2 U	44 U	2.2 U	2.2 U
Carbon Disulfide	60	G		0.34 U	6.8 U	2.1 J	3.0 J
Chloroform	7			0.33 U	6.6 U	0.33 U	0.33 U
Cis-1,2-Dichloroethylene	5			1.2 J	14 J	410	56
Methyl-Tert-Butyl Ether	10	G		0.24 U	4.8 U	6.8	26
Tetrachloroethylene (PCE)	5			150	3000	670	0.65 U
Trans-1,2-Dichloroethene	5			0.65 U	20 J	3.0 J	1.1 J
Trichloroethylene (TCE)	5			8.4	70 J	190	0.36 U
Vinyl Chloride	2			0.50 U	10 U	0.85 J	110

Key:

Qualifiers

J = Estimated value

U = Not detected (method detection limit shown)

UJ = Not detected/estimated detection limit

Notes

G = Guidance value (no standard available)

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 (TUO) 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, TUO 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 2015a).

The main ICs for the Mr. C's site are TUO 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 July 2, 2015, there were no changes in property ownership during the 2015 reporting year (Town of Aurora 2015).

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 were 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.

3 Site Institutional and Engineering Controls Compliance Reporting

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 2015.

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. Modify existing access agreement to include monitoring wells MPI-3S, MPI-1S, ESI-6, MPI-12B, and EE-3 (new).	No	Yes
27 Whaley Avenue (DeBois property)	Yes	Temporary access agreement for inspection and maintenance on SVE system.	No	No
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. Modify existing access agreement to include monitoring wells MPI-4S and MPI-4I.	No	Yes

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
Pitt property (19 Whaley Avenue)	Yes	TUO agreement for pumping well PW-5 and piezometers PZ-5A-D.	No	No ¹
Brownschidle property (578 Main Street)	Yes	TUO agreement for pumping and force main discharge pipelines on the property.	No	No
People, Inc., property (538 Main Street)	Yes	TUO agreement for pumping pipe line on the northeast corner of the property. Modify existing TUO agreement to include monitoring well EE-2.	No	Yes
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

3.2 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, 578-580 Main Street, 586 Main Street (Suite 4), 591 Main Street, 594 Main Street, and 16 Paine 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 2015, the results of the inspections of the groundwater treatment system, pumping wells, and piezometers were reported monthly to NYSDEC. The monthly re-

3 Site Institutional and Engineering Controls Compliance Reporting

ports 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 nine SSDS systems in and around the site, including four SSDS systems that were installed in 2015. The SSDS systems are monitored per the procedures described in the SMP (EEEP 2015a.). 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 October 29, 2015 (see Section 4.2 for additional information). In 2015, 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 SSDS at 572-576 Main Street and 586 Main Street were inspected on January 18, 2016 and the SSDS at 578-580 Main Street was inspected January 19, 2016. All inspected systems were found to be operating as designed, with the exception of the First Presbyterian Church, which had a broken fan in room 114. The fan was fixed shortly after inspection.

Table 3-3 Engineering Controls – Subslab Depressurization Systems

Property	EC Description	In Place?	Operating?	Still Required?
9 Paine Street (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

3 Site Institutional and Engineering Controls Compliance Reporting

Table 3-3 Engineering Controls – Subslab Depressurization Systems

Property	EC Description	In Place?	Operating?	Still Required?
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
591 Main Street (Commercial Building)	SSDS units (1) and vapor extraction piping	Yes	Yes	Yes
594 Main Street (Aurora Outfitters)	SSDS units (2) and vapor extraction piping	Yes	Yes	Yes
586 Main Street, Suite 4 (Country Cupboard)	SSDS units (1) and vapor extraction piping	Yes	Yes	Yes
16 Paine Street (Boys and Girls Club)	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 well PW-7 was shut off May 2015 due to its proximity to bioremediation pilot study injection points. PW-3 and PW-6 were shut off February and January 2015, respectively, due to maintenance problems but were fixed in September 2015.

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, 578-580 Main Street, 586 Main Street (Suite 4), 591 Main Street, 594 Main Street, and 16 Paine 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, 2015, to January 4, 2016, is provided below.

System Operational Uptime in 2015

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 2015, based on information obtained from the weekly OM&M reports from IEG, the remedial treatment system operated 8,520 hours out of a possible 8,904 hours, for an uptime operation of 95.7%. This is similar to the uptime operation of 2014 (92.5%). Table 4-1 provides details on the monthly operation of the treatment system.

In 2015, the treatment system had an uptime operation of 100% for eleven out of twelve months. Replacement of the PLC panel in June required a system shut down that reduced operational uptime that month to 46.7%.

Table 4-1 Treatment System Uptime in 2015, Mr. C's Dry Cleaners Site

Month	Actual Period	Reporting Hours/ Maximum Hours	Operational Uptime (%)
January 2015	12/29/14 - 2/4/15	888/888	100.0%
February 2015	2/4/15 - 3/3/15	648/648	100.0%
March 2015	3/3/15 - 3/30/15	648/648	100.0%
April 2015	3/30/15 - 5/4/15	840/840	100.0%
May 2015	5/4/15 - 6/2/15	696/696	100.0%
June 2015	6/2/15 - 7/2/15	336/720	46.7%
July 2015	7/2/15 - 8/3/15	768/768	100.0%
August 2015	8/3/15 - 8/31/15	672/672	100.0%
September 2015	8/31/15 - 10/6/15	864/864	100.0%
October 2015	10/6/15 - 11/3/15	672/672	100.0%
November 2015	11/3/15 - 11/30/15	648/648	100.0%
December 2015	11/30/15 - 1/4/16	840/840	100.0%
Total Hours of Operation in 2015		8,520/8,904	
Average Operational Uptime in 2015:			95.7%

Groundwater Processed and Discharged through the Remedial Treatment System in 2015

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 2015, based on information obtained from the OM&M subcontractor's weekly monitoring reports, the remedial treatment system processed and discharged 4,001,315 gallons of groundwater to Tannery Brook (see Table 4-2). This was an increase of approximately 27% from the 3,110,406 gallons of groundwater processed and discharged in 2014. The increase in volume resulted from pumping well PW-5 and PW-6 being put back into operation.

Volatile Organic Compounds Removal in 2015

The estimated amount of VOCs removed is based on the analytical results for influent and effluent samples and the total flow processed. In 2015, approximately 22.7 pounds of VOCs were removed from the groundwater by the remedial treatment system (see Table 4-3). This was an increase of 54.4% over the 14.7 pounds of VOCs removed in 2014, but similar to the 20.3 pounds of VOCs removed in 2013.

Table 4-2 Volumes of Groundwater Processed and Discharged by the Remedial Treatment System in 2015

Month	Actual Period	Gallons
January	12/29/15 - 2/4/15	400,228
February	2/4/15 - 3/3/15	278,328
March	3/3/15 - 3/30/15	316,184
April	3/30/15 - 5/4/15	426,516
May	5/4/15 - 6/2/15	317,968
June	6/2/15 - 7/2/15	150,785
July	7/2/15 - 8/3/15	345,737
August	8/3/15 - 8/31/15	224,755
September	8/31/15 - 10/6/15	386,828
October	10/6/15 - 11/3/15	376,529
November	11/3/15 - 11/30/15	347,075
December	11/30/15 - 1/4/16	430,382
Total Gallons Treated:		4,001,315

Table 4-3 VOCs Removal in 2015, Mr. C's Dry Cleaners Site

Month	Actual Period	Influent VOCs (µg/L)	Effluent VOCs (µg/L)	Removal Efficiency (%)	VOCs Removed (pounds)
January	12/29/15 - 2/4/15	818.00	7.8	99.1%	2.71
February ¹	2/4/15 - 3/3/15	856.9	15.82	97.2%	1.95
March	3/3/15 - 3/30/15	937.9	11	98.8%	2.45
April	3/30/15 - 5/4/15	683.00	4.3	99.4%	2.42
May	5/4/15 - 6/2/15	700.0	0	100.0%	1.86
June ¹	6/2/15 - 7/2/15	543.0	0	100.0%	0.68
July	7/2/15 - 8/3/15	562.0	0	100.0%	1.62
August	8/3/15 - 8/31/15	593	0	100.0%	1.11
September	8/31/15 - 10/6/15	579.2	1.4	99.8%	1.87
October	10/6/15 - 11/3/15	725.1	22.07	97.0%	2.21
November	11/3/15 - 11/30/15	575.7	5.3	99.1%	1.65
December	11/30/15 - 1/4/16	623.9	16.5	97.4%	2.18
Total Amount of VOCs Removed:					22.7

Notes:

¹ Two compliance samples were collected in February and June. The results for the compliance samples collected on February 6 and June 10, 2015, indicated effluent cis-DCE concentrations of 13 µg/L and 18 µg/L, respectively, which were noncompliant with the effluent discharge requirement for cis-DCE (10 µg/L). The June 10 sample also indicated an effluent TCE concentration of 15 µg/L, which was 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 February 26 and July 13, 2015, samples that were 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 generally 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. PW-7 remained off throughout 2015 because of the pilot study, and in February PW-3 was turned off due to maintenance issues. PW-3 and PW-6 were fixed in September and were on throughout the remainder of 2015.

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.

Historical Treatment Trends

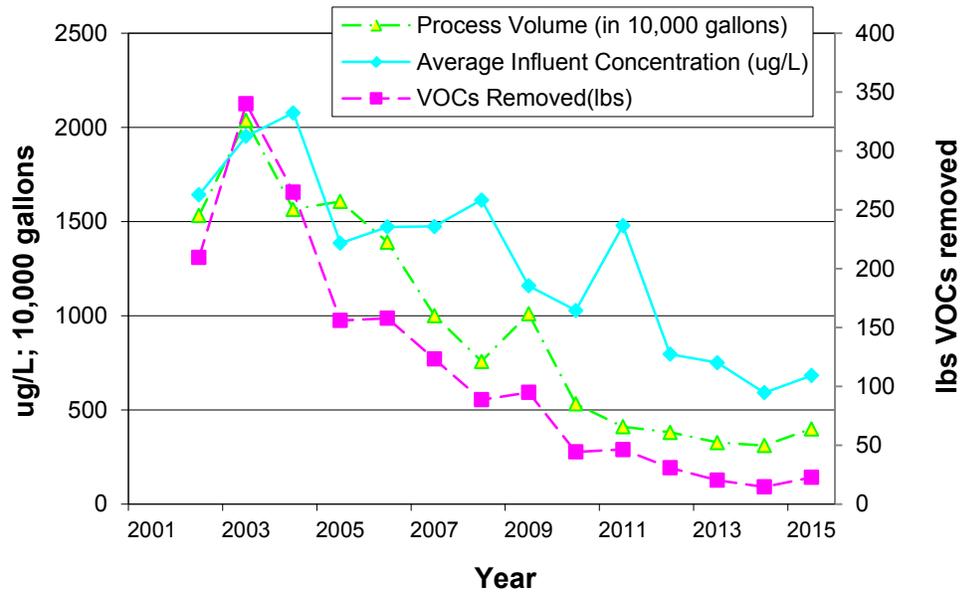


Figure 4-1 Historical Treatment Trends – Mr. C’s Dry Cleaners Site

4.2 Subslab Depressurization Systems

First Presbyterian Church

Routine inspections of the SSDSs at the First Presbyterian Church were performed on October 29, 2015. The inspection results indicate that the systems at the church are operating as originally designed, with the exception of the fan in room 114, which was broken. The fan was fixed in 2015. Completed inspection forms are provided in Appendix D. Air sampling was last 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 2015, 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 2016. The last round of air sampling at this residence was performed in 2010.

Mr. C's Treatment Building – 586 Main Street

No inspection was completed in 2015. Routine inspection of the SSDS at the 586 Main Street was performed on January 18, 2016. The inspection results indicate that the system is operating as originally designed. Completed inspection forms are provided in Appendix D.

572-576 Main Street

No inspection was completed in 2015. Routine inspection of the SSDS at 572-576 Main Street was performed on January 18, 2016. The inspection results indicate that the system is operating as originally designed. Completed inspection forms are provided in Appendix D. The last round of air sampling at this location was performed on January 14, 2015.

578-580 Main Street

No inspection was completed in 2015. Routine inspection of the SSDS at 578-580 Main Street was performed on January 19, 2016. The inspection results indicate that the system is operating as originally designed. Completed inspection forms are provided in Appendix D. The last round of air sampling at this location was performed on January 14, 2015, as part of post-SSDS installation monitoring.

586 Main Street, Suite 4

Inspection of the SSDS system occurred on January 27, 2015, as part of system installation. Routine inspection of the system was also performed on January 21, 2016. The inspection results indicate that the system is operating as originally designed. Completed inspection forms are provided in Appendix D. The last round of air sampling at this location was performed on March 19, 2015, as part of post-SSDS installation monitoring.

591 Main Street

Installation of the first SSDS at 591 Main Street occurred on February 5, 2015. The system was inspected and tested for sufficient back pressure on June 10, 2015. The system was inspected again on January 21, 2016 after the second SSDS was installed in early January 2016. Both inspection results indicate that the system is operating as originally designed. Completed inspection forms are provided in Appendix D. Air sampling will be performed in the first quarter heating season of 2016 as a part of post-SSDS installation monitoring.

594 Main Street

Inspection of the SSDS occurred at 594 Main Street on March 19, 2015 as part of system installation. Routine inspection of the system was also performed on January 21, 2016. Both inspection results indicate that the system is operating as originally designed. Completed inspection forms are provided in Appendix D. The last round of air sampling at this location was performed on March 19, 2015, as part of post-SSDS installation monitoring.

16 Paine Street

Inspection of the SSDS occurred at 16 Paine Street on January 27, 2015 as a part of system installation. Routine inspection of the system was also performed January 21, 2016. Both inspections indicate that the system is operating as originally designed. Completed inspection forms are provided in Appendix D. The last round of air sampling at this location was performed on March 19, 2015, as part of post-SSDS installation monitoring.

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 indoor 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
586 Main Street, Suite 4, (Country Cupboard)		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

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

	Groundwater	Air	Schedule
591 Main Street		X	Two years
594 Main Street		X	Two years
16 Paine Street		X	Two years

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 2015

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 after the clogged discharge line for pumping well PW-6 was cleaned and the pump of PW-3 was replaced in September of 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.

The screens on the site’s groundwater pumping well typically become clogged with soil fines and a build-up 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 repair and replacement work performed on the Mr. C’s site remedial treatment system in 2015 is identified in Table 5-2.

5 General Status of Remedial Treatment Equipment and Replacement Program

Table 5-2 Mr. C's Dry Cleaners Site Equipment Repair and Replacement Program, 2015

Activity
Changed bag filters (January through December 2015, as needed)
Emptied SVE system condensate bottle (January 2015)
Emptied SVE bottle (January–March 2015)
Repaired leaky fitting from equalization tank near Intrepid Automotive (April 2015)
PLC panel replaced (July 2015)
Air stripper exhaust pipe drip buckets emptied (July 2015)
Dripping air stripper exhaust pipe repaired (August 2015)
Replaced Redix line valve (August 2015)
Inspected and secured cover on monitoring well MPI-5S (August 2015)
PanelView reprogrammed, fixed date, removed HI/LO alarms for well pumps (August 2015)
Replaced pitless adapters on MW-6, MW-7, and MW-8 (August 2015)
Swept spruce needles and cones off Library parking lot (November 2015)
Replaced SVE fan on the west side of the Presbyterian Church (December 2015)
Repaired blower pipe, added duct tape and caulk (December 2015)
Collected air stripper scale samples and sent samples to CDI. Met with CDI to do tests on the scale (December 2015)
Replaced well pump in PW-2 (December 2015)

5.2 SVI Investigations and SSDS Installation

5.2.1 Phase I

For properties 578-580 and 572-576 Main Street, EEEPC is preparing construction summary reports for each SSDS, which will be submitted to NYSDEC in the first quarter of 2016.

5.2.2 Phase II

Based on air sampling results and the NYSDOH Vapor Decision Matrix, the NYSDOH determined that SSDS units needed to be installed in the following buildings to protect human health and safety: 16 Paine Avenue, 586 Main Street (Suite 4), 594 Main Street, and 591 Main Street. Installation of the SSDS units for these buildings was completed on January 27, January 27, January 19, and February 5, 2015, respectively. EEEPC is preparing construction summary reports for each system, which will be submitted to NYSDEC in the first quarter of 2016.

5.2.3 Phase III

NYSDEC, in consultation with the NYSDOH, selected an additional 12 properties around the site for a third phase of investigations. Of those 12 properties, six owners elected to have their properties investigated in the first quarter of the 2015 heating season: 547 Fillmore Avenue, a private residence; 27 Riley Street, Riley Street Station; 23 Paine Street, a private residence; 31 Paine Street, a private resi-

5 General Status of Remedial Treatment Equipment and Replacement Program

dence; 45 Paine Street, a private residence; and 48 Paine Street, a private residence. More information on the Phase III SVII investigations is presented in the *2015 Soil Vapor Intrusion Sampling Report*, which was submitted to NYSDEC on August 11, 2015 (see Appendix E).

Based on its review of the results, the NYSDOH determined that SSDS units needed to be installed in the buildings at 23 and 31 Paine Street to protect human health and safety. The NYSDOH will issue letters to the individual property owners regarding the analytical results for air samples in 2016. Installation of the SSDS units for these buildings is planned for 2016.

5.3 SSDS Condition, Replacement, and Repairs in 2015

No replacements or repairs were performed on the SSDS unit at 27 Whaley Avenue in 2015. The fan in room 114 at 9 Paine Avenue was replaced after it failed. Both property owners have been instructed to contact EEPC 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. Copies of the First Presbyterian Church System Field Inspection forms are provided in Appendix D.

The single SSDS unit at the 27 Whaley Avenue residence could not be inspected in 2015 (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

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-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
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

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-5D</i>	Borehole only – no well construction log									
<i>MPI-5I</i>	NA	NA	NA	NA	32 - 42	30 - 42.5	8	OA	1008745.758	1140168.687
<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 based on 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 21 to 30, 2015. A total of 28 wells (22 monitoring wells and six pumping wells) and four piezometers were sampled during the 2015 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 (EEEPC 2015b) was submitted to NYSDEC on December 21, 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 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 six groundwater pumping wells (PW-2, PW-3, PW-4, PW-5, PW-6, 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 2015 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 EEEPC. The data usability summary reports (DUSRs) are provided as Attachment A of the 2015 LTGM Report (see Appendix C). Several results were qualified and one QA/QC issue was noted:

- The following samples were diluted and reported with elevated reporting limits for all analytes: ESI-6-OCT15, PZ-5B-OCT15, MW-7-OCT15, and MW-7-OCT15-Q. There were instances where the elevated reporting limit exceeded the screening level; therefore, analyte concentrations may exceed the screening limit.
- Cis-1,2-dichloroethene and vinyl chloride were qualified “J” (estimated) because precision in the field duplicate of MPI-6S-OCT15 was poor.
- Acetone also was qualified “J” (estimated) in MPI-6S-OCT15 and MPI-6S-OCT15-Q because of elevated recovery in the associated laboratory control samples (LCSs).

Rinsate blanks were not collected from non-dedicated equipment.

5 General Status of Remedial Treatment Equipment and Replacement Program

5.4.1.3 2015 Long-term Groundwater Monitoring Results

Appendix C contains the iso-contour maps created to show the 2015 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 2015 versus 2014 is presented in the next section.

The results of the groundwater monitoring indicate the following:

- Seven VOCs (1,2-dichloroethane, 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.
- Five VOCs (1,1,1-trichloroethane, 1,1-dichloroethane, acetone, carbon disulfide and chloroform) 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 14 wells and three piezometers across the site. The highest concentration of PCE (2,300 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 non-detectable in 2015. TCE was detected above the groundwater standard for total VOCs (5 µg/L) in 10 wells and three piezometers across the site. The highest concentration of TCE, 190 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, 720 µg/L, was detected in a sample collected from monitoring well MPI-4I in 2015.
- trans-DCE was detected above the groundwater standard for total VOCs (5 µg/L) in one wells and one piezometer. The highest concentration of trans-DCE, 16 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 eight wells and one piezometer. Vinyl chloride has increased in concentration across the site since 2013. The highest concentration of vinyl chloride (180 µg/L) was detected in a sample collected from monitoring well MPI-4I.
- MTBE was detected in wells EE-2 (19 µg/L), EE-3 (22 µg/L), MPI-15B (1.1 µg/L), MPI-3S (35 µg/L), MPI-4I (310 µg/L), PW-4 (8.5 µg/L), PW-6 (1.4 µg/L), and PW-8 (2.7 µg/L). MTBE has not spread, nor have its concentra-

5 **General Status of Remedial Treatment Equipment and Replacement Program**

tions changed significantly since 2013. MTBE was also detected in piezometers PZ-6A (6.8 µg/L) and PZ-8C (26 µg/L). The guidance value for MTBE is 10 µg/L.

5.4.1.4 **Comparison of 2015 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, 2014, and 2015. The iso-contour maps are provided in the individual LTGM program reports (EEEPC 2004b, 2007, 2009, 2010, 2012, 2014, 2015b). The 2015 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 was non-detect in the October 2015 sample. The PCE level in well MPI-6S has decreased from the baseline concentration of 7,750 µg/L taken in November 2011 to non-detect in 2015. In 2015, the total VOC concentration in well MPI-6S (79.4 µg/L) was significantly lower than the 2013 concentration (1,500 µg/L).
- In 2015, the highest total cVOC concentration was detected in samples from piezometer PZ-5B, at 3,104 µg/L. In 2014, the total cVOC concentration in piezometer PZ-5B was 2,180 µg/L.

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 2016.

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 2014). 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

5 **General Status of Remedial** Treatment Equipment and Replacement Program

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 2015, 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 keeping PW-7 off 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 Record of Decision (ROD) (NYSDEC, 1997) and the Explanation of Significant Differences (ESD) (NYSDEC, 2000), 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 based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) (MPI 1995a, 1995b, and 1996) 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.

In 2015 NYSDEC requested that EEEPC prepare a remedial site optimization plan (RSO) to review alternatives for eventual site closure in a shorter time frame at lower cost than the current system expectations. Sections 6.1 and 6.2 discuss the existing systems at the site. Section 6.3 presents the RSO and how the existing systems would be incorporated into the site optimization.

6.1 Mr. C's Dry Cleaners Site Treatment System

Throughout 2015, the treatment system continued to collect groundwater and efficiently remove VOCs through air stripping. From January to September, PW-6 was down due to maintenance issues. PW-3 was down for similar issues from February to September. 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-7 continued to be locked-out and tagged-out to limit secondary impacts on the treatment system.

6.2 Subslab Depressurization

A second fan will be added to the system at 591 Main Street on the first floor. This fan was not installed with the rest of the system due to access issues. No other modifications to the SSDS units installed in and around the site are currently recommended. Nine sites have active subslab systems and should be inspected,

6 Actions to Support Eventual Site Closure

maintained, and monitored under the SMP. Inspections conducted in 2015 identified an issue with one of the fans in the system at 9 Paine Street. This fan was replaced and the system is now 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 2015 show 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 was implemented in 2015 to mitigate the concerns for vapor intrusion. Because of unfinished work at 591 Main Street and the analytical results from the Phase III SVII, it is recommended that additional SSDS units be installed at the following properties:

- 23 Paine Street (private residence), and
- 31 Paine Street (commercial property and private residence).

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.

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

- 541 Fillmore Avenue;
- 527 Main Street;
- 17 and 33 Elm Street;
- 32, 36, 39, and 42 Paine Street; and
- 45 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 2016 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 Remedial Site Optimization

Efforts to optimize the site's operation began in 2013 with the bioremediation pilot study and the SVII investigations. 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 treat-

ment system. This evaluation is discussed below in Section 6.3.3. 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 Evaluate the Feasibility and Relative Cost-Effectiveness of Enhanced Anaerobic Bioremediation to Meet Full-Scale Remedial Objectives

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, which, if it occurs, would limit the effectiveness of bioremediation.

Bioremediation technologies present an opportunity to optimize the site remedy. EEEPC has prepared a draft Remedial Site Optimization Report (EEEPC 2015c) that evaluates the cost and appropriateness of implementing a full-scale bioremediation project for the Mr. C's site. This and other alternatives covered in the report will be discussed with NYSDEC in the first quarter of 2016.

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. For example, 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.

With bioremediation, the long-term usefulness of the current pump-and-treat system is limited. The pumping and treatment system will likely face declines in groundwater pumping volumes and total cVOCs removed in line with current

6 *Actions to Support Eventual Site Closure*

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 operational 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. The decline in the pumping system's performance is due to biofilm buildup. In addition, the treatment system's removal efficiency and capacity has declined due to the increase in cis-1,2 DCE, which requires a longer retention time in the air stripper.

7

Annual Remedial Action Costs

The total 2015 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 \$361,290 (see Table 7-1).

Table 7-1 2015 Remedial Action Costs, Mr. C's Dry Cleaner Site

Task	Description	Cost
A. Site Management Plan - Updates and Revisions (Task 2)		
	Revised Site SMP 2015	\$9,800
	EEEEPC Admin and Reporting	\$2,690
	Subtotal A:	\$12,490
B. Operations, Maintenance and Monitoring Services (Tasks 3 & 7)		
	Subcontracted - OM&M Services	\$111,850
	Subcontracted - Analytical Services (O&M and SVII)	\$14,800
	Utilities - Electric, Gas, and Telephone	\$13,600
	Replacement Equipment – PLC, Pumps, Well Improvement)	\$20,000
	SSDS Unit(s) Inspection and Reporting (9 locations)	\$5,300
	SVII/SSDS Air Sampling, Oversight, and Reporting	\$49,500
	EEEEPC Admin and Reporting	\$20,450
	Subtotal B:	\$235,500
C. Groundwater Sampling and Reporting (Task 4)		
	Field Sampling Program	\$22,000
	Subcontracted - Analytical Services	\$3,100
	EEEEPC Admin and Reporting	\$6,800
	Subtotal C:	\$31,900
D. Annual Periodic Review Reporting (PRR) (Task 5)		
	2015 PRR Prep and Delivery	\$21,700
	Subtotal D:	\$21,700
E. Remedial System Optimization (RSO) Plan (Task 8)		
	Draft RSO Plan Development and Delivery	\$59,700
	Subtotal E:	\$59,700
	Grand Total (Items A-E)	\$361,290

8

Local Public Reporting in 2015

Local newspaper articles or information was identified by EEEPC during 2015 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:

- **The Sun.** Orchard Park and East Aurora's local newspaper reports opening of the East Aurora Co-op Market on 591 Main Street in early 2016.

9

References

- Ecology and Environment Engineering, P.C. (EEEEPC). 2015a. *Site Management Plan for the Mr. C's Dry Cleaners Site, East Aurora, Erie County, New York, NYSDEC Site No. 9-15-157*. February 2015.
- _____. 2015b. *Long-term Groundwater Monitoring Report*. Letter report to NYSDEC. December 21, 2015.
- _____. 2015c. *Remedial Site Optimization Report (Draft)*. Prepared for NYSDEC. December 8, 2015.
- _____. 2014. *Mr. C's Dry Cleaners Site, Contract # D007617, Site # 9-15-157, Bioremediation Pilot Progress Report 03*. Letter report to NYSDEC. June 2, 2014.
- _____. 2012a. *Site Management Plan for the Mr. C's Dry Cleaners Site, East Aurora, Erie County, New York, NYSDEC Site No. 9-15-157. Prepared for NYSDEC*. December 2012.
- _____. 2012b. *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*. Prepared for NYSDEC. July 2010.
- _____. 2009. *2009 Long-term Groundwater Sampling and Data Summary Report, Mr. C's Dry Cleaners Site, East Aurora, New York*. Prepared for NYSDEC. August 2009.
- _____. 2008. *Site Management Plan, Mr. C's Dry Cleaners Site, NYSDEC Site No. 9-15-157. Village of East Aurora, Erie County. Prepared for NYSDEC*. January 2008.

- _____. 2007. *2007 Long-term Groundwater Sampling and Data Summary Report, Mr. C's Dry Cleaners Site, East Aurora, New York*. Prepared for NYSDEC. December 2007.
- _____. 2004a. *Review for the Necessity of Granular Activated-Carbon Units on the Influent Air Stream, Mr. C's Dry Cleaner's Site*. Prepared for NYSDEC. September 2004.
- _____. 2004b. *Mr. C's Dry Cleaners 2004 Groundwater and Subsurface Soil Sampling Draft Data Summary Report*. Prepared for NYSDEC. 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.

Town of Aurora. 2015. *2015 Final Assessment Roll*. Town of Aurora Assessor Department. July 2015. Available at: http://www.townofaurora.com/files/9914/3629/2127/Aurora_2015_Final_Roll.pdf.

The Tyree Organization Limited (Tyree). 2003. *Mr. C's Dry Cleaners Site Operations and Maintenance Plan*. September 2003.