Enclosure 1
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. 442024

Site Name Roxy Cleaners

Site Address: Main Avenue (Route 66 at Route 150) Zip Code: 12198
City/Town: North Greenbush
County: Rensselaer
Site Acreage: 0.5

Reporting Period: January 2010 to March 2010

	YES	NO
1. Is the information above correct?	☒	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☒
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☒
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☒
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☒

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below?	☒	☐
7. Are all ICs/ECs in place and functioning as designed?	☐	☒

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

27 July 2011
Date

Periodic Review Report
Roxy Cleaners (4-42-024)
North Greenbush, New York

Prepared for

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

Prepared by

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

July 2011
Revision: DRAFT
EA Project No.: 14474.21

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Christopher J. Canonica, P.E., Program Manager — Date
EA Engineering, P.C.

Jim Hayward, P.E., Project Manager — Date
EA Engineering, P.C.

Joe Von Uderitz, P.G., Site Manager — Date
EA Science and Technology

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ES. EXECUTIVE SUMMARY

EA Engineering, P.C. and its affiliate EA Science and Technology (EA) have prepared this Periodic Review Report for the Roxy Cleaners site in the town of North Greenbush, Rensselaer County, New York. This work was performed for the New York State Department of Environmental Conservation (NYSDEC) under Work Assignment D004441-21 of EA's Superfund Standby Contract with NYSDEC. The NYSDEC has assigned the site ID No. 4-42-024. An active groundwater extraction and treatment system is in operation. This report describes activities and results at the site from January 2010 to March 2011.

In March 1994, a Record of Decision was completed for the site. According to the Record of Decision, the remedy includes a groundwater extraction system consisting of three pumping wells. The primary goals of the groundwater extraction and treatment system are:

- Reduce the mass and concentration of contaminants in the groundwater
- Control migration of the groundwater contamination.

Comparative analysis of historical and recent groundwater data suggest that the overall mass concentrations of chlorinated volatile organic compounds in the groundwater plume at the vicinity of the site are being reduced. However, recent tetrachloroethene concentrations at a downgradient sentinel well indicate that migration of the groundwater contaminants is not being controlled. A possible reason for this was a reduced flow rate observed from April 2008 to May 2009 (previous reporting period), January 2010 to May 2010, and August 2010 to December 2010. One of the groundwater treatment system extraction wells was running below its designed flow rate and experienced significant downtime. The extraction well was evaluated and optimized to reestablish its capture zone and a monitoring plan was implemented to observe how the optimized well is performing. Prior to certifying the site, this corrective action must demonstrate that downgradient migration is being controlled. Therefore, the Roxy Cleaners site cannot be certified at this time.

It is recommended that a desktop review of the Periodic Review Report be conducted annually to evaluate the performance, effectiveness, and protectiveness of the pump and treat system at the site.

1. SITE OVERVIEW

This Periodic Review Report (PRR) has been prepared to document the ongoing performance, effectiveness, and protectiveness of the selected remedy at the Roxy Cleaners site as required by 6 New York Code of Rules and Regulations Part 375. The Roxy Cleaners site (New York State Department of Environmental Conservation [NYSDEC] Site No. 4-42-024) is located in a suburban portion of Rensselaer County, in East Greenbush, New York (Figure 1). Roxy Cleaners, Inc. operated a dry cleaning establishment at this site and allegedly spilled dry cleaning solvents, resulting in contamination of the site's soil and groundwater. Contaminants were found to be tetrachloroethene (PCE), trichloroethene (TCE), and 1,2-dichloroethene (DCE).

1.1 OBJECTIVES OF THE PERIODIC REVIEW

The periodic review process is used for determining if a remedy continues to be properly managed, as set forth in the Site Management Plan (SMP). The objectives of the periodic review for sites in the State Superfund Program are as follows:

- Determine if the remedy remains in place, is performing properly and effectively, and is protective of public health and the environment.
- Evaluate compliance with the decision document(s) and, if available, the SMP.
- Evaluate all treatment units, and recommend repairs or changes, if necessary.
- Evaluate the condition of the remedy.
- Certify, if appropriate, that the intent of institutional controls (IC) continues to be met and that engineering controls (EC) remain in place, and are effective and protective of public health and the environment.
- Evaluate costs.

1.2 REMEDIAL HISTORY

From 1959 to 1998, Roxy Cleaners, Inc. operated a dry cleaning establishment at this site and allegedly spilled dry cleaning solvents, which resulted in contamination of the site's soil and groundwater. In 1990, NYSDEC initiated a Remedial Investigation/Feasibility Study to determine the extent of the contamination. Contaminants were found to be PCE, TCE, and DCE. In January 1992, a vacuum extraction system was installed at the site as an interim remedial measure. Approximately 350 lbs of PCE were extracted from the soil above the groundwater using this system.

In March 1994, a Record of Decision (ROD) was issued for the site. The ROD called for:

- Installation of on-site overburden and bedrock extraction wells. Installation of off-site overburden extraction wells.

- Operation and maintenance of a groundwater treatment system onsite and offsite.

- Discharge of treated wastewater to Wynantskill Creek.

- Extend the existing public water supply system to service the effected private water supply wells.

- Institute a long-term monitoring program for the site.

In June 1995, a Long-Term Monitoring Plan (LTMP) was prepared for the site and was subsequently updated in December 2004. Groundwater samples have been collected during 13 sampling events from October 1989 to August 2009 by several contractors.

A vapor intrusion evaluation investigation was completed in April 2006 to assess whether or not soil vapor contamination existed in the vicinity of the site. The assessment evaluated the extent to which the vapors, if detected, posed a threat to human health or the environment. From October 2007 to present, Aztech Environmental has performed weekly operation and maintenance visits. Influent and effluent samples are collected on a monthly basis to determine system efficiency and mass removal of contaminants. During that same period, EA has performed oversight and quarterly reporting of operation and maintenance activities.

2. REMEDY PERFORMANCE, EFFECTIVENESS, AND PROTECTIVENESS

Based on the site visit and a review of the January 1998 Operation, Monitoring, and Maintenance (OM&M) Plan[1], this treatment system consists of the following primary elements:

- Three extraction wells
- Treatment equipment building
- Water treatment system equipment
- Groundwater discharge system.

2.1 OPERATION, MONITORING, AND MAINTENANCE PLAN COMPLIANCE REPORT

The following summarizes the current OM&M program:

- The treatment system is currently operated and maintained by technicians from Aztech Environmental's Ballston Spa, New York office.

- Weekly visits are typically required to maintain the system. The system is not equipped with remote monitoring capabilities.

- Groundwater treatment system sampling (influent and effluent) is performed monthly for volatile organic compounds (VOCs), metals, total suspended solids (TSS), and total dissolved solids.

- Twenty-three monitoring wells are currently sampled on a 15-month basis and analyzed for VOCs.

- Inspection of three sub-slab depressurization systems (SSDS) performed by Yu & Associates.

2.1.1 Operation, Monitoring, and Maintenance Plan Compliance Report

From January 2010 to March 2011, the State Pollutant Discharge Elimination System values for the effluent samples were below the stated discharge limitations during the reporting period for VOCs, metals, and total dissolved solids (TDS); the only exception was TSS. The discharge limitation for TSS is 20 mg/L and was exceeded in samples collected on 21 May 2010 (25 mg/L) and 11 June 2010 (20.5 mg/L). The increases of TSS results observed during the two sampling events were believed to be caused by clogged sediment filters. Typically sediment filters are changed when there is an increase in influent pressure.

1. Malcolm Pirnie. 1998. Operation, Monitoring, and Maintenance Plan Report. January.

During the 15-month period from January 2010 to March 2011, the following OM&M compliance activities were accomplished as described in the table below.

CONFIRM COMPLIANCE WITH OM&M ACTIVITIES						
Activity	Required Frequency (X)					Compliance Dates
	Weekly	Monthly	Quarterly	Five-Quarter	As Needed	
Preventative Maintenance	X					2008-Present
Groundwater (influent & effluent) Sampling		X				2008-Present
Water Level Monitoring			X			2008-2010
Monitoring Well Sampling				X		2008-Present
Air Stripper and Pump Cleaning					X	2008-Present
Sediment Filters					X	2008-Present

2.1.2 Evaluation of Operation, Monitoring, and Maintenance Activities

2.1.2.1 Flow Rates

During the 15-month period of January 2010 to March 2011, the groundwater extraction and treatment system treated 7,064,150 gal of groundwater. The individual pumping rates varied from well to well. During the period, RW-1 averaged a flow rate of approximately 0.05 gal per minute (gpm) and RW-3 averaged a flow rate of approximately 10 gpm[2]. RW-2 experienced significant downtime from 15 January 2010 to 28 May 2010, and from 6 August 2010 to 3 December 2010 due to faulty water level transducers in the well. During the period that RW-2 was operational, the average flow rate was approximately 2 gpm. The average flow rates are calculated using the total operational time for the period, divided by the total gallons pumped during that time period. Therefore, actual operational flow rates may be higher, due to treatment system down time.

2.1.2.2 Groundwater Levels

During the groundwater sampling event completed in November 2010, groundwater elevations were monitored from the well network to ensure that the cones of influence created by the recovery wells were maintained (Figure 2). Recovery wells RW-2 and RW-3 are overburden wells. As shown in Figure 3A (interpolated overburden groundwater contour map), when RW-3 averages approximately 10 gpm, there is a cone of influence created by the well. A cone of influence was not maintained by RW-1 or RW-2, and is likely due to the low average flow rate for RW-1 and the downtime experienced by RW-2. Figure 3B (interpolated bedrock groundwater contour map) shows a slight influence on the bedrock groundwater table created from RW-3. The

2. Based on the Final Operations and Maintenance Manual Dated December 1998, the designed flow rates are as follows: 0.5 gpm for RW-01, 5 gpm for RW-02, and 16 gpm for RW-03.

slight cone of depression created by RW-3 in the bedrock water table suggests that the overburden and bedrock groundwater aquifers are connected. Water levels here suggest upwardly vertical hydraulic gradient from bedrock to overburden at this location and others, and downward in the vicinity of Roxy Cleaners.

On 26 January 2010, 6 April 2010, 20 July 2010, and 22 November 2010 each of the monitoring wells were gauged with an oil water interface probe to determine depth to water. Tables 1A through 1D show the depth to groundwater observed at each monitoring well location during the gauging events.

2.1.2.3 Influent Analytical

Monthly samples were collected from the influent lines from each of the three extraction wells in conjunction with the treatment system effluent samples. These samples provide a basis for determining the mass of contaminants recovered from the groundwater at the three wells and are also used in determining the removal efficiency of the air stripper system. The results of these analyses are summarized in Table 2.

2.1.2.4 Effluent Analytical

The treatment system effluent met the discharge criteria throughout the period, with the exception of TSS for the samples collected on 21 May 2010 (25 mg/L) and 11 June 2010 (20.5 mg/L).

2.1.2.5 System Maintenance

From October 2007 to March 2008, Aztech Environmental, the Investigation and Response contractor onsite, performed weekly operation and maintenance visits. In March 2008, EA began to provide oversight of Aztech Environmental. Representatives from EA were onsite periodically to discuss system operation and performance, as well as any recurring issues. From January 2010 to March 2011, the system ran continuously and upgrades were needed as described below.

- On 8 January 2010, the pump in RW-2 was inoperable. RW-2 was turned off until additional troubleshooting could take place.
- On 5 March 2010, the pump and controls in RW-2 were replaced. The RW-2 transducer was inoperable at that time. All gaskets were replaced on the air stripper unit.
- On 28 May 2010, the transducer in RW-2 was repaired.
- On 11 June 2010, the transducer in RW-1 was removed and reinstalled in RW-2.
- On 6 August 2010, RW-2 was turned off due to a faulty transducer.
- On 3 December 2010 the transducer in RW-2 was replaced and adjusted.

- On 10 December 2010, RW-2 was down upon arrival and the controller displays were inoperable. The fuse was replaced and the pump and controls were restarted.

- On 11 February 2011, the system was shut down due to leaking gaskets on the air stripper unit. On 18 February 2011, new gaskets were installed and the system was restarted.

Between January 2010 and March 2011, the groundwater treatment system removed 7,440,146 gal of contaminated water. During the quarterly operation and maintenance reports, mass removal was calculated for the three COCs (PCE, TCE, and DCE). During this 15-month period, the treatment system removed 0.39 lbs of PCE, TCE, and DCE in the process. Total operating costs over this reporting period (15 months) were approximately $63,800. The cost breakdown is as follows:

- EA $41,000
- Aztech $15,000
- Adirondack Laboratories $7,800.

The average contaminant removal during the reporting period was 0.026 lbs/month and the average monthly cost for system operations is approximately $4,253. For this reporting period, the average contaminant removal cost per pound is approximately $163,576.

A treatment system remedial site optimization (RSO) study and report are in progress at this time. The RSO report will include current system efficiency and improvements or upgrades necessary to optimize treatment system performance.

2.2 MONITORING PLAN COMPLIANCE REPORT

The 1995 LTMP, 1998 OM&M Plan[1], and updated LTMP (2004) are the available elements of the SMP for the site. The 1995 LTMP required initial monthly samples for selected wells, followed by quarterly sampling. Other selected wells required sampling on a semi-annual and/or annual basis. The OM&M manual required quarterly groundwater sampling from the monitoring well network, shown in Tables 1A though 1D, for the first year of operation. The 2004 updated LTMP required annual sampling for 2 years. Following the 2 years of sampling, the sampling frequency could be reduced as directed by the NYSDEC. Currently, as directed by the NYSDEC, the monitoring wells are sampled on a five-quarter basis (every 15 months) as directed under DER-10. The most recent event was completed in November 2010. Therefore, the monitoring plan compliance section of this PRR assesses whether the site has been managed accordingly.

2.2.1 Groundwater Sampling

The site includes a network of 23 groundwater monitoring wells that are currently used to monitor plume migration and provide a line of evidence necessary to demonstrate the effectiveness of the groundwater remediation. A total of 29 groundwater monitoring wells were originally included in the groundwater sampling program; however, MW-101A, and MW-110B could no longer be

located. Additionally, MW-5B and MW-107 were obstructed at ground level, MW-104A did not contain sufficient water to collect a sample, and MW-102 was covered with concrete. In order to provide the data for compliance monitoring, groundwater sampling is performed on a five-quarter basis (every 15 months) to capture seasonal changes in groundwater elevation. Depth to groundwater measurements were collected at each well on a quarterly basis until November 2010 to verify groundwater flow direction and to determine the capture zone of the extraction wells.

The monitoring well network consists of overburden and bedrock monitoring wells. Interpreted overburden and bedrock groundwater monitoring well elevation maps illustrating the direction of groundwater flow for the November 2010 gauging events are shown in Figures 3a and 3b. Hydraulic groundwater gradient across the site was determined to be 0.010 in the overburden wells and 0.010 in the bedrock wells. The observed groundwater flow direction in the overburden and bedrock wells was is in a westerly direction, which follows the same general direction as topography.

During the November 2010 sampling event, 24 monitoring wells were found and inspected. Six monitoring wells were not sampled: MW-102 was not sampled due to concrete covering the well casing, there was not enough water in well MW-104A to collect a sample, MW-107 had an obstruction in the well riser, and MW-5B was blocked with debris. MW-101A and MW-110B could not be located.

During the November 2010 gauging event, the following well conditions were noted:

- MW-1 had a broken flushmount cover and the monitoring well needed a new compression plug.
- MW-101 needed a new compression plug.
- MW-111 had no well cap and no bolts for the flushmount.
- MW-108A had a broken casing cover.
- MW-104A had a broken lock and the casing cover does not close.
- MW-109 needed a new compression plug.
- MW-2B did not have a lock.
- MW-106 had a broken casing cover, the polyvinyl chloride riser was broken, and there was no well cap.
- MW-106A had a broken casing cover.
- MW-107A had a cracked well cap and the flushmount bolts were stripped.

- MW-4 and MW-4B did not have locks.
- TW-5 had a loose flushmount and needs a new compression plug.
- MW-3B needs a new compression plug.

Currently, groundwater samples are analyzed for VOCs by United States Environmental Protection Agency (USEPA) Method 8260B. The following sections detail analytical results for the overburden and bedrock monitoring wells.

2.2.2 Overburden Monitoring Wells

Historically, five overburden monitoring wells (MW-2, MW-101A, MW-103A, MW-107A, and MW-111) have had concentrations of PCE, TCE, and DCE above the Ambient Water Quality Standard (AWQS) of 5 μg/L. Since initial sampling in October 1989, the general concentrations of these analytes have decreased in these monitoring wells. A sixth well, TW-5, has also had concentrations exceeding 5 μg/L.

In November 2010, five overburden monitoring wells (MW-2, MW-103A, MW-105A, MW-107A, and MW-111) and TW-5 had detections of PCE over the AWQS and ranged from 5.02 μg/L to 437 μg/L. A concentration of PCE exceeding the AWQS was first detected in MW-105A during the May 2008 sampling event and remained present during the November 2010 sampling event at a concentration of 7.98 μg/L. MW-105A is the furthest downgradient well from the site and is hydraulically downgradient of RW-3.

Groundwater analytical data for the November 2010 sampling event are summarized in Table 3 and shown on Figure 4. Isopleths for PCE in the overburden wells are depicted on Figure 5. The available historical data for the contaminants of concern (TCE, PCE, and DCE) are presented in Table 4. These data include 13 groundwater sampling events completed from October 1989 to May 2008. Trend graphs for available historical analytical data are provided in Figures 6A through 6J.

2.2.3 Bedrock Monitoring Wells

Three bedrock monitoring wells (MW-101, MW-103, and MW-107) have historically had concentrations of one or more analyte (PCE, TCE, and DCE) over the AWQS. In November 2010, MW-101 was the only bedrock monitoring well with detections of PCE over the AWQS. MW-101 had a PCE detection of 15.7 μg/L and is located in the source area.

2.2.4 Confirm Compliance with Monitoring Plan

During the 15-month period from January 2010 to March 2011, the following monitoring plan compliance activities were accomplished:

Activity	Required Frequency (X)					Compliance Dates
	Semi-Annual	Monthly	Quarterly	Five-Quarter	As Needed	
Groundwater Sampling				X		2008-Present
Water Level Monitoring			X			2008-2010

2.2.5 Confirm Performance Standards Are Being Met

Both present and available historical data (Table 4) were reviewed to determine if there are any notable trends in the data concentrations. Previous investigations at this site indicate that the primary contaminants of concern are PCE, TCE, and DCE. Historical data reveal that eight monitoring wells (MW-2, MW-101, MW-101A, MW-103, MW-103A, MW-107, MW-107A, and MW-111) have had concentrations of one or more analyte (PCE, TCE, and DCE) over the AWQS standard of 5 μg/L. Based on historical trend graphs (Figures 6A-6J), the general concentrations of these analytes have decreased in these monitoring wells since initial sampling in October 1989. Historical analytical data reveal that several wells have been non-detect for chlorinated VOC analytes since initial sampling in October 1989: MW-1, MW-1B, MW-3, MW-4, MW-4B, MW-104A, MW-106A, and MW-109.

PCE was detected at a concentration above the AWQS of 5 μg/L in monitoring well MW-105A (21 μg/L) beginning in the May 2008 sampling event. Concentrations of PCE in MW-105A (7.98 μg/L) decreased but remained above the AWQS during the November 2010 sampling event. MW-105A is the furthest downgradient well from the site, and is hydraulically downgradient of RW-3.

Three monitoring wells (MW-102, MW-5B, and MW-107) currently have obstructions and cannot be sampled. MW-102 and MW-5B historically have been non-detect for chlorinated VOCs. During the October 2005 sampling event, MW-107 revealed concentrations of PCE, TCE, and DCE over their respective AWQS standards.

2.3 SUB-SLAB DEPRESSURIZATION SYSTEM

As a result of the vapor intrusion investigation, three SSDSs were installed in January 2008 (Figure 7). In November 2009, an initial inspection was complete on the three SSDSs and determined to be in working order. Following the initial inspection, the NYSDEC sends out annual letters to the owners reminding them to, and how, to check their systems and to call in if they suspect any problems. If they report a problem, the NYSDEC will have a contractor inspection and complete any repairs that are needed. As of late, there have not been any issues reported with the SSDS systems.

2.4 INSTITUTIONAL CONTROL/ENGINEERING CONTROL CERTIFICATION PLAN REPORT

IC/ECs at the site currently consist of:

- Operation and maintenance of groundwater extraction and treatment system.
- Environmental monitoring to determine effectiveness of the remedy.
- Operation of three SSDSs.
- Maintaining restricted access and posted warning notifications.

2.4.1 Institutional Control/Engineering Control Requirements and Compliance

Determination of compliance with the IC/EC at the site is made based on the following criteria:

- The IC/EC(s) applied at the site are in place and unchanged from the previous certification (presented in the OM&M manual).

- Nothing has occurred that would impair the ability of such controls to protect the public health and the environment, or constitute a violation or failure to comply with any element of the OM&M plan for such controls.

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

- Future access cannot be guaranteed, but access for maintenance and inspections has not been an issue to date and is not anticipated to change.

2.4.2 Institutional Control/Engineering Control Certification Forms

The completed IC/EC Certification Form is provided as Appendix A to this report. However, the form indicates that the site cannot be certified at this time as discussed in Section 4 of this PRR.

3. COST EVALUATION

3.1 SUMMARY OF COSTS

The costs incurred between January 2010 and March 2011 were for the site management field activities, which included, but were not limited to, the following:

- One groundwater sampling event occurred on 22-23 November 2010 at 23 monitoring wells. Two duplicate samples were collected at MW-103A and MW-105A. Groundwater samples were analyzed for VOCs by USEPA Method 8260B. Historically, groundwater samples were analyzed by USEPA Method 624.

- Quarterly groundwater gauging and monitoring well inspections were completed on 26 January 2010, 6 April 2010, 20 July 2010, and 22 November 2010. Wells in the monitoring well network were gauged, and the integrity of each well was inspected and recorded on a monitoring well inspection list.

- Weekly system inspections were completed by Aztech Environmental between January 2010 and March 2011. Aztech Environmental completed weekly site visits to perform system operation checks and routine equipment maintenance. Monthly treatment system sampling was completed by Aztech Environmental.

- One annual summary report describing laboratory analytical results were prepared and submitted to the NYSDEC. All reported data and analysis were in tabular form and graphical form (e.g., figures with interpretive isopleths and temporal line graphs of contaminants of concern) characterizing the site. Reporting included Category A deliverables for laboratory data with an internal quality assurance/quality control report from the laboratory.

- The results of the quarterly gauging activities were included in the quarterly operations and maintenance reports.

- Site management also included preparation of this PRR. At a minimum, the PRR will be used to verify that IC/ECs are still in effect and performing as designed.

The total costs incurred at the site from January 2010 to March 2011 are tabulated below.

TASK	TOTALS
Task 1—Work Plan	$1,754.24
Task 2—O & M	$147.32
Task 3—Long-Term Monitoring	$10,106.79
Task 4—Remedial Site Optimization	$4,349.20
Task 5—Reporting	$24,629.18
Total	**$40,986.73**

Annual costs ($41,000) are anticipated to remain generally the same for the overall management of the site during 2011 and 2012.

4. CONCLUSIONS / RECOMMENDATIONS

4.1 CONCLUSIONS

As described in the March 1994 ROD, the primary goals of the groundwater pump and treat system are:

- Reduce the mass and concentration of contaminants in the groundwater;
- Control migration of the groundwater contamination.

Based on historical analytical trend graphs (Figure 6), analytical data suggest that the overall mass concentrations of chlorinated VOCs in the groundwater at the vicinity of the site are being reduced.

However, based on the trend in PCE concentrations at MW-105A, it appears that downgradient migration of the groundwater contaminants is not being controlled; MW-105A is located hydraulically downgradient of RW-3 and is the furthest well downgradient of the source area. A decreasing trend in PCE concentrations from August 2009 to November 2010 were observed at MW-105A and may be attributed to the increased pumping rate in RW-3. Additional monitoring is necessary to confirm that RW-3 is reducing the contaminate mass and maintaining hydraulic control at the downgradient edge of the plume.

Historical analytical data revealed no detections of PCE greater than the AWQS of 5 μg/L in samples collected from October 1989 to July 1999. During the May 2005 and October 2005 sampling events, PCE was detected in MW-105A at estimated concentrations of 1.1 μg/L and 1.4 μg/L, respectively. Concentrations of PCE in MW-105A during the November 2010 sampling event was 7.98 μg/L; over the AWQS of 5 μg/L.

Although a decreasing trend in PCE concentrations at MW-105A were observed during this reporting period, the Roxy Cleaners site cannot be certified due to the apparent migration of groundwater contamination along the downgradient edge of the plume. Prior to certifying the site, certain corrective action measures will need to be implemented to demonstrate that downgradient migration is being controlled, as discussed in Section 4.2.

4.2 RECOMMENDATIONS

Based on the activities completed during this period, the following are recommended:

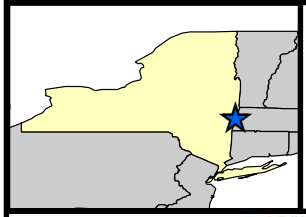
- **Install additional wells**: Install two monitoring wells downgradient of MW-105A to further delineate the extent of the dissolved-phase plume. PCE was detected at a concentration above the AWQS of 5 μg/L in monitoring well MW-105A in May 2008, August 2009, and November 2010 (21 μg/L, 15.3 μg/L, and 7.98 μg/L, respectively). MW-105A is the furthest downgradient well from the site and is hydraulically

downgradient of RW-3. EA has solicited cost for the installation of the additional monitoring wells and is prepared to write a scope of work for the well installation once directed by the NYSDEC.

- **Remove select wells from the sampling schedule**: Based on the historical data, the following wells have been non-detect for chlorinated VOCs and can be removed from the sampling schedule: MW-3, MW-4, MW-4B, MW-106A, and MW-109. These monitoring wells should continue to be gauged during each sampling event and used in the determination of groundwater flow.

- **Well Abandonment**: Two monitoring wells, MW-5B and MW-102, have obstructions and cannot be sampled. Historical data have shown no concentrations above the AWQS; therefore, these wells can be properly abandoned.

- **Well replacement**: Monitoring well MW-107 currently has an obstruction and has historically had concentrations of PCE, TCE, and DCE over the AWQS. MW-107 should be properly abandoned and replaced.



LEGEND

★ Site Location

Miles

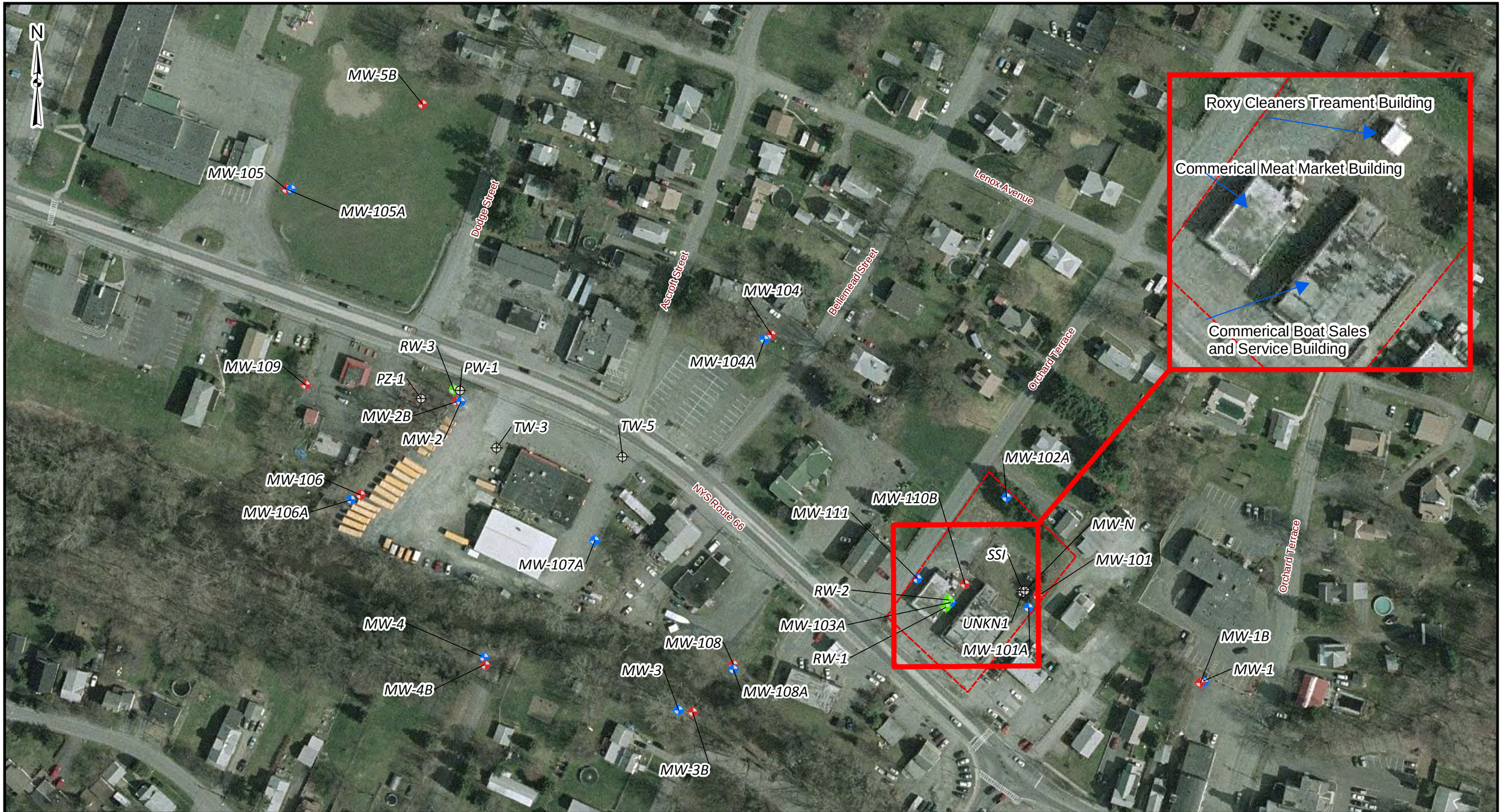
0 0.125 0.25 0.5

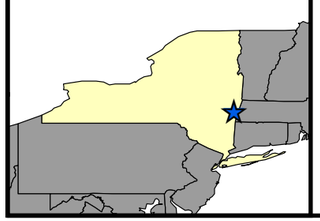
Source: ESRI Streets 2010

ROXY CLEANERS SITE (Site No. 4-42-024)
PERIODIC REVIEW REPORT
(JANUARY 2010 - MARCH 2011)
NORTH GREENBUSH, NEW YORK

FIGURE 1
SITE LOCATION MAP

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
JCH	JCP	JCP	JAV	AS SHOWN	JUNE 2011	14474.21	GIS/PROJECTS/ FIGURE1.MXD





Legend

- Overburden Monitoring Well
- Bedrock Monitoring Well
- Recovery Well
- Other Monitoring Well
- Roxy Cleaners

Source: NYS GIS Clearing House

ROXY CLEANERS SITE (Site No. 4-42-024)
PERIODIC REVIEW REPORT
(JANUARY 2010 - MARCH 2011)
NORTH GREENBUSH, NEW YORK

FIGURE 2
MONITORING WELL
LOCATIONS

0 150 300
Feet

1 inch = 125 feet

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
JCH	JCP	JCP	JAV	AS SHOWN	JUNE 2011	1447421	GIS/PROJECTS/ FIGURE2.MXD

N

MW-105A
338.78

MW-2
338.68

PZ-1
341.66

MW-104A

MW-106A
340.73

MW-107A
343.30

MW-4
341.35

MW-108A
344.05

MW-3
342.58

MW-111
346.89

MW-103A
347.04

MW-101A

MW-102A
345.18

MW-1
350.97

338
339
340
341
342
343
344
345
346
347
348
349
350

Dodge Street
Ascroft Street
Bellemead Street
Lenox Avenue
Orchard Terrace
Orchard Terrace
NYS Route 66

Legend

- Overburden Monitoring Well
- Recovery Well
- Groundwater Contour 1-ft Interval Above Mean Sea Level (AMSL)
- Interpreted Groundwater Flow Direction
- Roxy Cleaners
- 999 Groundwater Elevation Ft Above Mean Level (AMSL)

Source: NYS GIS Clearinghouse/ USGS DEM
*Not used in interpolation of groundwater contours

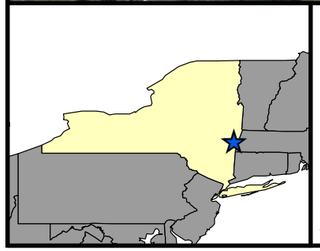
ROXY CLEANERS SITE (Site No. 4-42-024)
PERIODIC REVIEW REPORT
(JANUARY 2010 - MARCH 2011)
NORTH GREENBUSH, NEW YORK

FIGURE 3A
INTERPOLATED OVERBURDEN
GROUNDWATER CONTOUR MAP
22 NOVEMBER 2010

0 150 300
Feet

1 inch = 130 feet

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
JCH	JCP	JCP	JAV	AS SHOWN	JUNE 2011	1447421	GIS/PROJECTS/ FIGURE3A.MXD



Legend

- Bedrock Monitoring Well
- Recovery Well
- Groundwater Contour 1-ft Interval Above Mean Sea Level (AMSL)
- Interpreted Groundwater Flow Direction
- Roxy Cleaners
- 999 Groundwater Elevation Ft Above Mean Level (AMSL)

Source: NYS GIS Clearinghouse/ USGS DEM

**Not used in interpolation of groundwater contours*

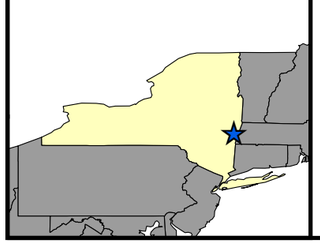
ROXY CLEANERS SITE (Site No. 4-42-024)
PERIODIC REVIEW REPORT
(JANUARY 2010 - MARCH 2011)
NORTH GREENBUSH, NEW YORK

FIGURE 3B
INTERPOLATED BEDROCK GROUNDWATER CONTOUR MAP
22 NOVEMBER 2010

0 150 300
Feet

1 inch = 130 feet

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
JCH	JCP	JCP	JAV	AS SHOWN	JUNE 2011	1447421	GIS/PROJECTS/ FIGURE3B.MXD



Legend

- Overburden Monitoring Well
- Bedrock Monitoring Well
- Recovery Well
- Other Monitoring Well
- Roxy Cleaners

PCE = Tetrachloroethene
TCE = Trichloroethene
DCE = cis-1,2 Dichloroethene

Source: NYS GIS Clearing House

ROXY CLEANERS SITE (Site No. 4-42-024)
PERIODIC REVIEW REPORT
(JANUARY 2010 - MARCH 2011)
NORTH GREENBUSH, NEW YORK

FIGURE 4
CHLORINATED VOLATILE ORGANIC COMPOUND CONCENTRATIONS
NOVEMBER 2010

0 150 300
Feet

1 inch = 125 feet

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
JCH	JCP	JCP	JAV	AS SHOWN	JUNE 2011	1447421	GIS/PROJECTS/ FIGURE4.MXD

Legend

- Overburden Monitoring Well
- Recovery Well
- Other Monitoring Well
- Roxy Cleaners
- CVOC Isopleth

MW-99
PCE 999

----- Well ID

----- Tetrachloroethene (µg/L)

Source: NYS GIS Clearinghouse/ USGS DEM

**Not used in interpolation of groundwater contours*

ROXY CLEANERS SITE (Site No. 4-42-024)
PERIODIC REVIEW REPORT
(JANUARY 2010 - MARCH 2011)
NORTH GREENBUSH, NEW YORK

FIGURE 5
OVERBURDEN
TETRACHLOROETHENE
ISOPLETH MAP
NOVEMBER 2010

0 150 300
Feet

1 inch = 130 feet

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
JCH	JCP	JCP	JAV	AS SHOWN	JUNE 2011	1447421	GIS/PROJECTS/ FIGURE5.MXD

TABLE 1A SUMMARY OF GROUNDWATER TABLE ELEVATIONS
(26 JANUARY 2010)

Well Number	TOIC Elevation (ft AMSL)	Depth to Water Level (ft)	Groundwater Table Elevation (ft AMSL)
OVERBURDEN MONITORING WELLS			
MW-1	363.51	11.42	352.09
MW-2	352.41	12.76	339.65
MW-3	350.93	7.05	343.88
MW-4	348.77	6.07	342.70
MW-101A	357.41	WELL NOT LOCATED	
MW-102A	355.94	WELL NOT LOCATED	
MW-103A	356.61	8.53	348.08
MW-104A	368.47	23.43	345.04
MW-105A	346.12	6.55	339.57
MW-106A	351.68	9.63	342.05
MW-107A	352.74	8.11	344.63
MW-108A	351.19	5.95	345.24
MW-111	356.15	8.23	347.92
BEDROCK MONITORING WELLS			
MW-1B	363.77	11.65	352.12
MW-2B	352.21	11.93	340.28
MW-3B	349.92	5.82	344.10
MW-4B	348.75	6.01	342.74
MW-5B	349.91	NOT GAUGED, WELL OBSTRUCTED	
MW-101	356.75	6.74	350.01
MW-102	356.44	NOT GAUGED, WELL OBSTRUCTED	
MW-104	368.12	23.49	344.63
MW-105	346.94	7.08	339.86
MW-106	351.91	10.23	341.68
MW-107	353.43	NOT GAUGED, WELL OBSTRUCTED	
MW-108	351.02	5.83	345.19
MW-109	345.80	6.08	339.72
MW-110B	354.09	WELL NOT LOCATED	
RECOVERY WELLS			
RW-01	351.58	RECOVERY WELL - NOT GAUGED	
RW-02	348.75	RECOVERY WELL - NOT GAUGED	
RW-03	348.03	RECOVERY WELL - NOT GAUGED	
TW, PIEZOMETER, AND UNKNOWN WELLS			
TW-01	---	WELL NOT LOCATED	
TW-02	---	WELL NOT LOCATED	
TW-03	---	WELL NOT LOCATED	
TW-04	356.39	WELL NOT LOCATED	
TW-05	---	9.10	---
PZ-01	352.17	9.38	342.79
PZ-02	361.96	WELL NOT LOCATED	
PZ-03	---	WELL NOT LOCATED	
PZ-04	---	WELL NOT LOCATED	
PW-01	---	WELL NOT LOCATED	
SSI	---	WELL NOT LOCATED	
MW-N	---	WELL NOT LOCATED	
UNKN-1	---	WELL NOT LOCATED	

NOTE: TOIC = Top of Inner Casing
AMSL = Above Mean Sea Level

TABLE 1B SUMMARY OF GROUNDWATER TABLE ELEVATIONS
(6 APRIL 2010)

Well Number	TOIC Elevation (ft AMSL)	Depth to Water Level (ft)	Groundwater Table Elevation (ft AMSL)
OVERBURDEN MONITORING WELLS			
MW-1	363.51	11.84	351.67
MW-2	352.41	13.44	338.97
MW-3	350.93	8.21	342.72
MW-4	348.77	7.28	341.49
MW-101A	357.41	WELL NOT LOCATED	
MW-102A	355.94	10.30	345.64
MW-103A	356.61	9.20	347.41
MW-104A	368.47	WELL DRY	
MW-105A	346.12	6.89	339.23
MW-106A	351.68	10.74	340.94
MW-107A	352.74	9.24	343.50
MW-108A	351.19	6.95	344.24
MW-111	356.15	8.73	347.42
BEDROCK MONITORING WELLS			
MW-1B	363.77	12.02	351.75
MW-2B	352.21	12.49	339.72
MW-3B	349.92	6.87	343.05
MW-4B	348.75	7.16	341.59
MW-5B	349.91	NOT GAUGED, WELL OBSTRUCTED	
MW-101	356.75	7.37	349.38
MW-102	356.44	NOT GAUGED, WELL OBSTRUCTED	
MW-104	368.12	23.19	344.93
MW-105	346.94	7.22	339.72
MW-106	351.91	11.11	340.80
MW-107	353.43	NOT GAUGED, WELL OBSTRUCTED	
MW-108	351.02	6.81	344.21
MW-109	345.80	6.78	339.02
MW-110B	354.09	WELL NOT LOCATED	
RECOVERY WELLS			
RW-01	351.58	RECOVERY WELL - NOT GAUGED	
RW-02	348.75	RECOVERY WELL - NOT GAUGED	
RW-03	348.03	RECOVERY WELL - NOT GAUGED	
TW, PIEZOMETER, AND UNKNOWN WELLS			
TW-01	---	WELL NOT LOCATED	
TW-02	---	WELL NOT LOCATED	
TW-03	---	WELL NOT LOCATED	
TW-04	356.39	WELL NOT LOCATED	
TW-05	---	9.89	---
PZ-01	352.17	9.97	342.20
PZ-02	361.96	WELL NOT LOCATED	
PZ-03	---	WELL NOT LOCATED	
PZ-04	---	WELL NOT LOCATED	
PW-01	---	WELL NOT LOCATED	
SSI	---	WELL NOT LOCATED	
MW-N	---	WELL NOT LOCATED	
UNKN-1	---	WELL NOT LOCATED	

NOTE: TOIC = Top of Inner Casing
AMSL = Above Mean Sea Level

TABLE 1C SUMMARY OF GROUNDWATER TABLE ELEVATIONS
(20 JULY 2010)

Well Number	TOIC Elevation (ft AMSL)	Depth to Water Level (ft)	Groundwater Table Elevation (ft AMSL)
OVERBURDEN MONITORING WELLS			
MW-1	363.51	12.87	350.64
MW-2	352.41	14.24	338.17
MW-3	350.93	8.76	342.17
MW-4	348.77	7.87	340.90
MW-101A	357.41	WELL NOT LOCATED	
MW-102A	355.94	WELL NOT LOCATED	
MW-103A	356.61	9.93	346.68
MW-104A	368.47	23.66	344.81
MW-105A	346.12	7.75	338.37
MW-106A	351.68	11.34	340.34
MW-107A	352.74	9.85	342.89
MW-108A	351.19	7.53	343.66
MW-111	356.15	9.56	346.59
BEDROCK MONITORING WELLS			
MW-1B	363.77	13.14	350.63
MW-2B	352.21	13.29	338.92
MW-3B	349.92	7.49	342.43
MW-4B	348.75	7.95	340.80
MW-5B	349.91	NOT GAUGED, WELL OBSTRUCTED	
MW-101	356.75	8.11	348.64
MW-102	356.44	NOT GAUGED, WELL OBSTRUCTED	
MW-104	368.12	24.02	344.10
MW-105	346.94	8.15	338.79
MW-106	351.91	11.83	340.08
MW-107	353.43	NOT GAUGED, WELL OBSTRUCTED	
MW-108	351.02	7.48	343.54
MW-109	345.80	7.49	338.31
MW-110B	354.09	WELL NOT LOCATED	
RECOVERY WELLS			
RW-01	351.58	RECOVERY WELL - NOT GAUGED	
RW-02	348.75	RECOVERY WELL - NOT GAUGED	
RW-03	348.03	RECOVERY WELL - NOT GAUGED	
TW, PIEZOMETER, AND UNKNOWN WELLS			
TW-01	---	WELL NOT LOCATED	
TW-02	---	WELL NOT LOCATED	
TW-03	---	WELL NOT LOCATED	
TW-04	356.39	WELL NOT LOCATED	
TW-05	---	10.44	---
PZ-01	352.17	10.76	341.41
PZ-02	361.96	WELL NOT LOCATED	
PZ-03	---	WELL NOT LOCATED	
PZ-04	---	WELL NOT LOCATED	
PW-01	---	WELL NOT LOCATED	
SSI	---	WELL NOT LOCATED	
MW-N	---	WELL NOT LOCATED	
UNKN-1	---	WELL NOT LOCATED	

NOTE: TOIC = Top of Inner Casing
AMSL = Above Mean Sea Level

TABLE 1D SUMMARY OF GROUNDWATER TABLE ELEVATIONS
(22 NOVEMBER 2010)

Well Number	TOIC Elevation (ft AMSL)	Depth to Water Level (ft)	Groundwater Table Elevation (ft AMSL)
OVERBURDEN MONITORING WELLS			
MW-1	363.51	12.54	350.97
MW-2	352.41	13.73	338.68
MW-3	350.93	8.35	342.58
MW-4	348.77	7.42	341.35
MW-101A	357.41	WELL NOT LOCATED	
MW-102A	355.94	10.76	345.18
MW-103A	356.61	9.57	347.04
MW-104A	368.47	23.48	344.99
MW-105A	346.12	7.34	338.78
MW-106A	351.68	10.95	340.73
MW-107A	352.74	9.44	343.30
MW-108A	351.19	7.14	344.05
MW-111	356.15	9.26	346.89
BEDROCK MONITORING WELLS			
MW-1B	363.77	12.67	351.10
MW-2B	352.21	12.79	339.42
MW-3B	349.92	7.08	342.84
MW-4B	348.75	7.89	340.86
MW-5B	349.91	NOT GAUGED, WELL OBSTRUCTED	
MW-101	356.75	7.72	349.03
MW-102	356.44	NOT GAUGED, WELL OBSTRUCTED	
MW-104	368.12	23.68	344.44
MW-105	346.94	7.6	339.34
MW-106	351.91	11.39	340.52
MW-107	353.43	NOT GAUGED, WELL OBSTRUCTED	
MW-108	351.02	7.12	343.90
MW-109	345.80	7.12	338.68
MW-110B	354.09	WELL NOT LOCATED	
RECOVERY WELLS			
RW-01	351.58	RECOVERY WELL - NOT GAUGED	
RW-02	348.75	RECOVERY WELL - NOT GAUGED	
RW-03	348.03	RECOVERY WELL - NOT GAUGED	
TW, PIEZOMETER, AND UNKNOWN WELLS			
TW-01	---	WELL NOT LOCATED	
TW-02	---	WELL NOT LOCATED	
TW-03	---	WELL NOT LOCATED	
TW-04	356.39	WELL NOT LOCATED	
TW-05	---	10.09	---
PZ-01	352.17	10.51	341.66
PZ-02	361.96	WELL NOT LOCATED	
PZ-03	---	WELL NOT LOCATED	
PZ-04	---	WELL NOT LOCATED	
PW-01	---	WELL NOT LOCATED	
SSI	---	WELL NOT LOCATED	
MW-N	---	WELL NOT LOCATED	
UNKN-1	---	WELL NOT LOCATED	

NOTE: TOIC = Top of Inner Casing
AMSL = Above Mean Sea Level

TABLE 2 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS FOR TREATMENT SYSTEM SAMPLES (JANUARY 2010 - MARCH 2011)

Parameter	RW-01										NYSDEC Ambient Water Quality Standard Values (µg/L)
	18-Dec-09[a]	22-Jan-10	26-Mar-10	16-Apr-10	21-May-10	11-Jun-10	23-Jul-10	20-Aug-10	17-Sep-10	22-Oct-10	
Tetrachloroethene (PCE)		**460**	**240**	**290**	**410** E	**480**	**500**	**500**	**320**	**320**	5
Trichloroethene (TCE)		**36**	**20**	**27**	**34**	**33**	**37**	**38**	**28**	ND	5
cis 1,2-dichloroethene (DCE)		**82**	**57**	**60**	**73**	**67**	**73**	**78**	**71**	**56**	5
Total Flow (gallons)	458,184	459,870	461,680	463,310	465,690	467,030	469,870	471,670	474,000	478,419	
Gallons Between Samples		1,686	1,810	1,630	2,380	1340	2,840	1,800	2,330	4,419	

Parameter	RW-02										NYSDEC Ambient Water Quality Standard Values (µg/L)
	18-Dec-09[a]	22-Jan-10	26-Mar-10	16-Apr-10	21-May-10	11-Jun-10	23-Jul-10	20-Aug-10	17-Sep-10	22-Oct-10	
Tetrachloroethene (PCE)		NS	NS	NS	NS	**420** E	**430** E	**760**	**660**	**440**	5
Trichloroethene (TCE)		NS	NS	NS	NS	ND	ND	ND	ND	ND	5
cis 1,2-dichloroethene (DCE)		NS	NS	NS	NS	**14**	**17**	ND	ND	ND	5
Total Flow (gallons)	5,342,365	5,342,365	5,342,365	5,342,365	5,342,365	5,454,060	5,566,460	5,566,840	5,566,860	5,566,915	
Gallons Between Samples		0	0	0	0	111,695	112,400	380	20	55	

Parameter	RW-03										NYSDEC Ambient Water Quality Standard Values (µg/L)
	18-Dec-09[a]	22-Jan-10	26-Mar-10	16-Apr-10	21-May-10	11-Jun-10	23-Jul-10	20-Aug-10	17-Sep-10	22-Oct-10	
Tetrachloroethene (PCE)		**18**	**170**	**190**	**230** E	**240**	**250**	**200**	**150**	**150**	5
Trichloroethene (TCE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	5
cis 1,2-dichloroethene (DCE)		**7.8**	**10**	**9.1**	**12**	**11**	**13**	**ND**	2	ND	5
Total Flow (gallons)	3,140,565	3,715,460	4,427,060	4,772,970	5,342,990	5,681,070	6,359,450	6,810,030	7,200,000	7,806,211	
Gallons Between Samples		574,895	711,600	345,910	570,020	338,080	678,380	450,580	389,970	606,211	

Parameter	SYSTEM EFFLUENT										Effluent Limitations Daily Max. Load [b]
	18-Dec-09[a]	22-Jan-10	26-Mar-10	16-Apr-10	21-May-10	11-Jun-10	23-Jul-10	20-Aug-10	17-Sep-10	22-Oct-10	
Tetrachloroethene (PCE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	10
Trichloroethene (TCE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	10
cis 1,2-dichloroethene (DCE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	10
Total Flow (gallons)	8,941,114	9,517,695	10,231,105	10,578,645	11,151,045	11,602,160	12,395,780	12,848,540	13,240,860	13,851,545	
Gallons Between Samples		576,581	713,410	347,540	572,400	451,115	793,620	452,760	392,320	610,685	

(a) Total flow values for 18 December 2009 are estimated

(b) Treatment effluent limitations and monitoring requirements set forth in the Treatment System Operations and Maintenance Manual Dated July 1997

NOTE: NYSDEC = New State Department of Environmental Conservation

E = Value exceeds the instrument calibration range

ND = Not Detected

NS = Not Sampled

All samples analyzed by U.S. Environmental Protection Agency Method 624

All samples are reported in micrograms per liter (µg/L)

Bold values indicate that the analyte was detected above the NYSDEC Ambient Water Quality Standards.

All analytical data results provided by NYSDEC Laboratories

Parameter	RW-01					NYSDEC Ambient Water Quality Standard Values (µg/L)
	19-Nov-10	**17-Dec-10**	**21-Jan-11**	**18-Feb-11**	**24-Mar-11**	
Tetrachloroethene (PCE)	**530**	**434**	**268**	**514**	**450**	5
Trichloroethene (TCE)	**59**	**40.8**	**32.6**	**44.6**	**38**	5
cis 1,2-dichloroethene (DCE)	**91**	**74**	**68**	**90.8**	**77**	5
Total Flow (gallons)	480,410	481,860	483,130	484,660	485,480	
Gallons Between Samples	1,991	1,450	1,270	1,530	820	

Parameter	RW-02					NYSDEC Ambient Water Quality Standard Values (µg/L)
	19-Nov-10	**17-Dec-10**	**21-Jan-11**	**18-Feb-11**	**24-Mar-11**	
Tetrachloroethene (PCE)	**360**	**418** **E**	**227**	**371**	**180**	5
Trichloroethene (TCE)	ND	**11.1**	ND	ND	ND	5
cis 1,2-dichloroethene (DCE)	ND	**19.7**	**10.6**	**14.5**	ND	5
Total Flow (gallons)	5,566,970	5,610,480	5,751,150	5,823,980	5,938,610	
Gallons Between Samples	55	43,510	140,670	72,830	114,630	

Parameter	RW-03					NYSDEC Ambient Water Quality Standard Values (µg/L)
	19-Nov-10	**17-Dec-10**	**21-Jan-11**	**18-Feb-11**	**24-Mar-11**	
Tetrachloroethene (PCE)	**220**	**200**	**159**	**224**	**220**	5
Trichloroethene (TCE)	ND	ND	ND	ND	ND	5
cis 1,2-dichloroethene (DCE)	**10**	ND	**8.2**	**11.2**	ND	5
Total Flow (gallons)	8,248,130	8,676,770	9,222,169	9,508,100	9,957,170	
Gallons Between Samples	441,919	428,640	545,399	285,931	449,070	

Parameter	SYSTEM EFFLUENT					Effluent Limitations Daily Max. Load [(1)]
	19-Nov-10	**17-Dec-10**	**21-Jan-11**	**18-Feb-11**	**24-Mar-11**	
Tetrachloroethene (PCE)	ND	ND	ND	ND	ND	10
Trichloroethene (TCE)	ND	ND	ND	ND	ND	10
cis 1,2-dichloroethene (DCE)	ND	ND	ND	ND	ND	10
Total Flow (gallons)	14,295,510	14,769,110	15,456,449	15,816,740	16,381,260	
Gallons Between Samples	443,965	473,600	687,339	360,291	564,520	

TABLE 3 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES COLLECTED 22-23 NOVEMBER 2010

Parameters List	MW-1		MW-1B		MW-2		MW-2B		MW-3		MW-3B		MW-4		MW-4B		NYSDEC AWQS (µg/L)
VOLATILE ORGANIC COMPUNDS BY U.S. ENVIRONMENTAL PROTECTION AGENCY METHOD 8260B (µg/L)																	
Acetone		U		U		J		U		U		U		U		U	50 (g)
Benzene		U		U		U		U		U		U		U	0.22	J	1
Bromodichloromethane		U		U		U		U		U		U		U		U	50 (g)
Chloroform	0.17	J		U		U		U		U		J		U		U	7
cis-1,2 Dichloroethene		U		U	1.94		4.44			U	0.68			U		U	5
trans-1,2 Dichloroethene		U		U		U	0.25	J		U		U		U		U	5
Methyl tert-butyl ether		U		U		J		U		U		U		U		U	10 (g)
Methylcyclohexane		U		U		U		U		U		U		U		U	
Tetrachloroethene		U		U	**22.9**			U		U		J		U		U	5
Toluene		U	0.1	J		U	0.12	J		U		U		U		U	5
Trichloroethene		U		U		U		U		U		U		U		U	5
Vinyl chloride		U		U		U	0.68	J		U	0.45			U		U	2

Parameters List	TW-5		MW-101		MW-102A		MW-103A		MW-104		MW-105		MW-105A		MW-106		NYSDEC AWQS (µg/L)
Acetone				U		U	41			U		U		U		U	50 (g)
Bromodichloromethane		U		U		U		U		U		U		U		U	50 (g)
Chloroform	0.2		0.2		1.6			U		U		U		U		U	7
cis-1,2 Dichloroethene	2.13	J				U	**16**			U		U	1.22			U	5
trans-1,2 Dichloroethene		U		U		U		U		U		U		U		U	5
Methyl tert-butyl ether		U		U		U		U	0.16	J		U	0.17	J		U	10 (g)
Methylene Chloride															0.19	J	5
Methylcyclohexane		U		U		U		U		U		U		U		U	
Tetrachloroethene	**39.4**		**15.7**		1.14		**437**			U		U	**7.98**			U	5
Toluene		U		U		U		U	0.39		0.11	J		U	0.19	U	5
Trichloroethene	3.02		0.13			U	**9.80**			U		U		U		U	5
1,1,1 Trichloroethene					0.1	J											5
Vinyl chloride		U		U		U		U		U		U		U		U	2

Parameters List	MW-106A		MW-107A		MW-108		MW-108A		MW-109		MW-111		DUPLICATE #1 [a]		DUPLICATE #2 [b]		NYSDEC AWQS (µg/L)
Acetone		U	10.7			U		U		U		U		U	19.4		50 (g)
Bromodichloromethane		U		U		U		U		U		U		U		U	50 (g)
2-Butone		U	1.65	J		U		U		U		U		U		U	
Chloroform		U		U	0.28	J	0.39	J		U	0.9			U	0.27	J	7
cis-1,2 Dichloroethene		U	**6.66**			U	0.17	J		U		U	1.2		**21.7**		5
trans-1,2 Dichloroethene		U	0.34	J		U		U		U		U		U		U	5
Methyl tert-butyl ether		U				U		U		U		U	0.17	J		U	10 (g)
Methylene Chloride	0.16	J													**6.4**	J	5
Methylcyclohexane		U		U		U		U		U		U		U		U	
Tetrachloroethene		U	**26.9**		1.25			U		U	**5.02**		**8.02**		**437**		5
Toluene		U	0.2	J		U		U	0.17	J		U		U		U	5
Trichloroethene		U	3.3			U		U		U	0.23	J		U	**11.6**		5
Vinyl chloride		U		U		U		U		U		U		U		U	2

Parameters List	PZ-01		NYSDEC AWQS (µg/L)
Acetone		U	50 (g)
Bromodichloromethane		U	50 (g)
2-Butone		U	
Chloroform		U	7
cis-1,2 Dichloroethene	0.38	J	5
trans-1,2 Dichloroethene		U	5
Methyl tert-butyl ether	0.4	J	10 (g)
Methylene Chloride		U	5
Methylcyclohexane		U	
Tetrachloroethene	4.04		5
Toluene		U	5
Trichloroethene		U	5
Vinyl chloride		U	2

(a) Duplicate sample was collected from MW-105A
(b) Duplicate sample was collected from MW-103A
NOTE: NYSDEC = New York State Department of Environmental Conservation
AWQS = Ambient Water Quality Standard
µg/L = Micrograms per liter
U = Analyte was analyzed for, but not detected below the laboratory reporting limit
J = Analyte detected below the PQL
(g) = NYSDEC Ambient Water Quality Standards guidance value
Analytical data results provided by Chemtech Consulting Group.
Bold values indicate that the analyte was detected greater than the NYSDEC Ambient Water Quality Standards.

TABLE 4 HISTORICAL GROUNDWATER ANALYTICAL RESULTS

	MW-1			MW-1B			MW-2			MW-2B			MW-3			MW-3B			MW-4			MW-4B		
DATE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE
October 1989																								
November 1991																								
February 1992	<1			<1			**610**			<1			<1			6			<1			<1		
June 1992																5								
17 July 1997							**160**	**5**	**5.6**	0	0	0	0	0	0	0	0	0						
4 November 1997							**140**	0	**9**	1	0	0	ns	ns	ns	ns	ns	ns						
14 July 1998							**170**	0	**9**	0	0	0.3	0	0	0	0.6	0	0						
4 November 1998							**57**	0	2.1	0	0	0	ns	ns	ns	ns	ns	ns						
14 July 1999							**32**	0	0	0	0	0	0	0	0	0	0	0						
8 December 1999							**66**	0	4	0	0	1	ns	ns	ns	ns	ns	ns						
May 2005							**8.3**		1.0J			1.7												
October 2005							**74**		**12**			1.2				0.3 J								
1 September 2008	ND	ND	ND	ND	ND	ND	**119**	0.42	**10.2**	ND	ND	3.85	ND	ND	ND	0.38	ND	ND	ND	ND	ND	ND	ND	ND
24 August 2009	ND	ND	ND	ND	ND	ND	**36.7**	ND	2.56	ND	ND	4.62	ND	ND	ND	0.22 J	ND	ND	ND	ND	ND	ND	ND	ND
22-23 November 2010	ND	ND	ND	ND	ND	ND	**22.9**	ND	1.4	ND	ND	4.44	ND	ND	ND	ND	ND	0.68	ND	ND	ND	ND	ND	ND

	MW-101			MW-101A			MW-102			MW-102A			MW-103			MW-103A			MW-104			MW-104A		
DATE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE
October 1989	**1,400**			**24**			<5			<5			**450**			**1,500**			<5			<5		
November 1991	**2,300**			**24**			<5			<5			**370**			**1,300**			<5			<5		
February 1992	**530**			**28**			<1			2			**610**			**13,000**			<1			<1		
June 1992	**1,200**			**20**									**800**			**5,000**								
17 July 1997																**3,200**	**24**	**18**	0	0	0			
4 November 1997																**560**	**7**	0	0	0	0			
14 July 1998																**1,200**	**8**	**12**	0	0	0			
4 November 1998																**160**	2.6	0	0	0	0			
14 July 1999																**690**	**6**	**6.1**	0	0	0			
8 December 1999																**250**	**10**	2	ns	ns	ns			
May 2005	**33**	1.1 J		4.7 J						0.83 J						**260 D**	**10**	**14**						
October 2005	**91**	4.4 J	4.4 J	**16**												**240 D**	**7.2**	**6.4**						
12 and 13 May 2008	**34.5**	0.81	0.54	**7.57**	ND	ND	1.65	ND	ND							**412**	**9.33**	**13.7**	ND	0.13	ND			
24 August 2009	**29.3**	0.37 J	0.40 J				NS	NS	NS	1.29	ND	ND				**397**	**8.00 J**	**14.8**	ND	ND	ND			
22-23 November 2010	**15.7**	0.13	ND	NS	NS	NS	N S	NS	NS	1.14	ND	ND	NS	NS	NS	**437**	**9.8**	**16**	ND	ND	ND	NS	NS	NS

	MW-105			MW-105A			MW-106			MW-106A			MW-107			MW-107A			MW-108			MW-108A		
DATE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE
October 1989	<5			<5			<5			<5			**43**			**750**			**9**			<5		
November 1991	<5			<5			<5			<5			**130**			**940**			<5			<5		
February 1992	<1			<1			<1			<1			**190**			**850**			4			<1		
June 1992																								
17 July 1997	0	0	0	0	0	0	0	0	0	0	0	0				**360**	**11**	**19.5**	0	0	0	0	0	0
4 November 1997	0	0	0	0	0	0	ns	ns	ns	ns	ns	ns				**440**	**12**	**30**	3	0	0	0	0	0
14 July 1998	0	0	0	0	0	0	0	0	0	0	0	0				**500**	**11**	**24**	5	0	0	0	0	0
4 November 1998	0	0	0	0	0	0	ns	ns	ns	ns	ns	ns				**340**	**11**	**18**	2	0	0	0	0	0
14 July 1999	0	0	0	0	0	0	0	0	0	0	0	0				**230**	**6.7**	**14**	2.2	0	0	0	0	0
8 December 1999	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns				**230**	**6.7**	**14**	3	0	0	0	0	0
May 2005			0.3 J	1.1 J									**11**	**6.4**	**26**	**10**	1.4 J	1.6 J	2.9					
October 2005				1.4 J		12							**36**	**9.3**	**21**	**16**		4.1 J	1.2					
12 and 13 May 2008	0.11	ND	0.29	**21**	0.15	4.08	ND	0.13	ND	ND	ND	ND				**42.8**	2.42	2.07	3.01	ND	ND	ND	ND	ND
24 August 2009	ND	ND	ND	**15.3**	0.14 J	3.02	ND	ND	ND	ND	ND	ND				**24.9**	2.23	3.94	1.58	ND	ND	ND	ND	0.19 J
22-23 November 2010	ND	ND	ND	**7.98**	ND	1.22	ND	ND	ND	ND	ND	ND				**26.9**	3.3	**6.66**	1.25	ND	ND	ND	ND	0.17 J

	MW-109			MW-111			TW-5			PZ-01		
DATE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE
October 1989												
November 1991												
February 1992												
June 1992												
17 July 1997	0	0	0	**8.9**	0.7	0.5						
4 November 1997	ns	ns	ns	**58**	4	**8**						
14 July 1998	0	0	0	**19**	2	1						
4 November 1998	ns	ns	ns	**57**	**5.2**	**5.3**						
14 July 1999	0	0	0	**22**	0	0						
8 December 1999	ns	ns	ns	**40**	4	4						
May 2005				1.4 J								
October 2005				**7.7**								
12 and 13 May 2008	ND	ND	ND	4.1	0.15	ND	**40.4**	2.73	1.5			
24 August 2009	ND	ND	ND	4.45	0.16 J	ND	**34.7**	2.88	1.68			
22-23 November 2010	ND	ND	ND	**5.02**	0.23 J	ND	**39.4**	3.02	2.13	4.04	ND	0.38

NOTE: PCE = Tetrachloroethene
TCE = Trichloroethene
DCE = cis 1,2-dichloroethene
ns = Monitoring well not sampled
ND = The analyte was analyzed for, but was not detected above the sample reporting limit.
J =
Samples are reported in micrograms per liter (µg/L)
Bold values indicate that the analyte was detected greater than the NYSDEC AWQS of 5 µg/L per each analyte .