AECOM Environment

Prepared for:
SUPERFUND STANDBY PROGRAM
NYSDEC
625 Broadway
Albany, New York 12233

Prepared by:
AECOM
Latham, New York
March 2015

Three-Year Periodic Review Report
January 2011 – June 2013
Former NOW Corporation Facility
Site No. 3-14-008
Work Assignment No. D007626-25

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Engineering Certification

I, Scott A. Underhill, certify that I am currently a NYS registered professional engineer and that this Three-Year (2011 – 2013) Periodic Review Report for the Former NOW Corporation Facility (Site Number 3-14-008) was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Respectfully submitted,

AECOM Technical Services Northeast, Inc.

Scott Underhill
Registered Professional Engineer
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3-10-15
Date

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Executive Summary

The former NOW Corporation facility (Site) is located in the Town of Clinton, Dutchess County, New York (**Figure 1**). The Site (Site No. 3-14-008) is approximately 9 acres in size and is an active manufacturing facility (**Figure 2**).

The Site was added to the New York State Department of Environmental Conservation (NYSDEC) Registry of Hazardous Waste Sites in December 1983 as a Class 2a site, due to allegations of on-site disposal of tank rinsing solutions. A Record of Decision (ROD) was issued in March 1995 for impacted groundwater, denoted as Operable Unit (OU) 1, and in March 1996 for impacted soil, denoted as OU 2.

Due to the contamination of the overburden and underlying bedrock aquifer with volatile organic compounds (VOCs), the selected remedy consisted of: removal and on-site treatment of soil; installation of three groundwater/vapor recovery wells and a groundwater treatment system consisting of an air stripper, clarifier, sand filter and granular activated carbon (GAC) vessels, with most treated groundwater being discharged to Crum Elbow Creek, and the remaining groundwater being re-injected; two vapor extraction wells and a bedrock vapor extraction (VE) system consisting of a blower and GAC vessels; and implementation of site controls, including groundwater monitoring.

Regular monitoring is conducted on the groundwater treatment system, including daily remote system monitoring, monthly compliance sampling, and annual groundwater sampling. Residences with groundwater wells near the Site have been provided with bottled water or point-of-entry (POE) GAC treatment systems in order to eliminate the potential for the ingestion of contaminants of concern (COCs) from impacted groundwater. Based on AECOM's review of the existing historical data and information, the groundwater treatment system at the Site continues to function as designed, except the vapor recovery and groundwater re-infiltration systems were taken off-line circa 2005 and a replacement air stripper was installed in June 2012. Over the sixteen-year period of operation, the treatment system has removed approximately 1,110 pounds of total VOCs and the concentrations of VOCs have declined in recovery wells TW-1, TW-2A, and TW-3, with the greatest decline at TW-2A.

Existing POE carbon filters are maintained on impacted homeowner wells, and long-term monitoring of groundwater treatment system effluent and the groundwater monitoring well network continue to be performed at the required intervals. In addition, soil excavation and treatment were performed in accordance with the ROD for OU 2.

The three-year cost for operation of the treatment system and completion of all required monitoring and reporting was approximately $254,266 ($101,708 annually) based on costs incurred between 2011 and 2013.

Recommendations for the Site include: consideration of injection of a chemical oxidant into groundwater; continued monitoring of soil vapors at occupied buildings; and preparation of an annual, field oversight Periodic Review Report.

1.0 Site Overview

This periodic review report (PRR) covers the period of January 1, 2011 through June 30, 2013 and has been prepared to evaluate the continuing effectiveness of the remedies selected, and their implementation at the Site. AECOM services the Site for the NYSDEC under Work Assignment D007626-25 of the Superfund Standby Contract. The NYSDEC reclassified the former NOW Corporation facility (ID No. 3-14-008) as a Class 4 Site in 1999. A Class 4 Site has been properly closed, but requires continued site management consisting of operation, maintenance and monitoring (OM&M).

The former NOW Corporation site is located at an active manufacturing facility in the Town of Clinton, Dutchess County, New York (see **Figure 1**). The Site consists of approximately 9 acres of a 94.5–acre parcel, and is located in a primarily residential area at 2092 Route 9G, near the intersection of Route 9G and South Creek Road (**Figure 2**). The current tenant of the Site is UNIFUSE/B&R Specialties, Inc., which manufactures plastic containers. Crum Elbow Creek is present to the northwest of the Site, north of Route 9G.

The Site is located in a broad northeast-trending valley, with bedrock outcrops exposed along the eastern portion of the valley. Depth to bedrock ranges from 0 to approximately 35 feet below ground surface (bgs). The bedrock consists of dark gray phyllite and metamorphosed dark gray sandstone of the Austin Glen Formation. Published geologic maps and reports indicate that the rocks in the area have undergone extensive folding and faulting. Where observed, the phyllite appeared highly fractured with generally closely spaced fractures along bedding and cleavage planes (Engineering-Science, Inc. [ES] Draft Final Remedial Investigation and Feasibility Study [RI/FS] Report, 1995).

Locally, the unconsolidated materials are variable in thickness and composition. In the southern portion of the Site, a relatively thin brown silt and clay unit (5 to 10 feet thick) overlies approximately 20 feet of fine to coarse sand and gravel. Throughout the central and northern portions of the Site, a brown silt unit overlies a dense, gray till of variable thickness of 0 to 14 feet (ES RI/FS, 1995). According to the RI, all unconsolidated materials were observed to be unsaturated.

Groundwater flow at the Site occurs under semi-confined conditions along zones of secondary porosity in the fractured bedrock aquifer. The natural direction of groundwater flow is generally from the relatively high elevations and hillsides in the eastern portion of the Site to the lower western portion. Pumping test data indicated that the groundwater flow direction is strongly influenced by the occurrence and orientation of the fractures in the bedrock, especially under pumping/drawdown conditions.

A Conceptual Site Model (**Figure 3**) based on available data illustrates AECOM's understanding of current site conditions. The Conceptual Site Model indicates that the majority of groundwater contamination is present in the fractured bedrock beneath the Site. The horizontal and vertical extents of the VOC plume cannot be clearly defined.

The Site requires continued management including OM&M of the active groundwater pump and treat (P&T) system, which has been in operation since early 1998, and the POE GAC treatment systems. The P&T system's configuration is provided on **Figure 2**. The OM&M Plan (Earth Tech, May 2006),

Operation and Maintenance Manual (Earth Remediation Services), and a draft Site Management Plan (SMP) are available for the Site. The draft SMP was developed and provided to the NYSDEC for approval in August 2012.

1.1 Remedial History

The Site was added to the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in December 1983 as a Class 2a site, due to allegations of on-site disposal of tank rinsing solutions. A fire in a warehouse may have resulted in further contamination of the Site due to water runoff during firefighting efforts. Samples of runoff water and potable water from three nearby residences collected after the fire in February 1989 contained low levels of benzene, toluene, ethylbenzene, trichloroethene and 1,1,1-trichloroethane. Subsequent residential well sampling in April 1989 determined that VOCs were present in two wells. In October 1989, the NYSDEC began sending bottled water to House #1 and House #4, and in February 1990, GAC systems were installed on their water systems (refer to **Figure 2**). POE GAC systems were also installed for a residence on Route 9G farther southwest of the Site in the mid-1990s, for House #3 (located on South Creek Road) in 1996 and for House #2 in 2002.

In August 1990, the Site was reclassified to Class 2, signifying that the Site presents a significant threat to public health and/or the environment and action is required. A remedial investigation at the Site was conducted in two phases, beginning in July 1992. The first phase consisted of a review of historical documents, magnetic survey, site-wide soil gas survey, test pitting, soil boring program, monitoring well installation and sampling, sediment and surface water sampling, and nearby homeowner well sampling. This phase identified the primary COCs related to the Site, as well as their approximate concentrations. The second phase of the remedial investigation was initiated in April 1994, for the purpose of gathering information for the development of remedial alternatives. This work consisted of a treatability study for groundwater via GAC, and a separate treatability study involving a vapor extraction system for treating contamination in dewatered bedrock.

The Draft Final RI/FS Report was completed by ES in January 1995 under the State Superfund Program. A ROD was issued in March 1995 for impacted groundwater, denoted as OU 1, and in March 1996 for impacted soil, denoted as OU 2.

The selected remedy for groundwater contamination per the ROD for OU 1 consisted of:

- Groundwater extraction and treatment, and vapor recovery and treatment from impacted bedrock;
- Re-infiltration of a portion of the treated groundwater in order to prevent over-pumping of the potable wells of nearby homes and businesses;
- Institutional controls and restrictions on groundwater use;
- Maintenance of existing POE carbon filters on impacted homeowner wells; and
- Long-term monitoring.

VOCs have been identified as the primary COCs for the Site. The contaminants of concern listed in the ROD for OU 1 include:

- Benzene
- Chloroethane

- 1,1-Dichloroethene (1,1-DCE)
- 1,2-Dichloroethene (1,2-DCE)
- Tetrachloroethene (PCE)
- 1,1,1-Trichloroethane (1,1,1-TCA)
- Trichloroethene (TCE)
- Vinyl chloride.

The selected remedy for soil contamination per the ROD for OU 2 consisted of:

- Excavation of soil containing more than 700 parts per billion (ppb) of TCE located near the northeast corner of the building (Area A on **Figure 4**), along the drainage ditch near the northern corner of the building (Area B), and the south corner of the concrete pad (Area C);
- Excavation of weathered bedrock containing more than 700 ppb of TCE in Areas A and B; and
- On-site treatment of excavated soils and weathered bedrock by low temperature thermal desorption or comparable technology.

The COCs listed in the ROD for OU 2 include chlorinated compounds, specifically TCE and DCE. The results of soil sampling performed at the Site prior to issuance of the ROD for OU 2 and the locations of the areas of interest are presented on **Figure 4**.

The remediation of both operable units was implemented concurrently under a single set of contract documents. Earth Remediation Services (ERS) began construction of the groundwater remediation system in August 1997. In accordance with the ROD, highly impacted soils and weathered bedrock were removed from several areas and treated on-site via low temperature thermal desorption between September 1997 and January 1998. According to the Final Remediation Report (Rust Environment and Infrastructure, March 1999), a total of 1,013 tons of contaminated soil was excavated and treated on-site, not including test burns. Post-excavation soil samples were collected from the excavation floors and walls. All of the treated soil was used on-site as backfill. Remediation efforts in the area located southwest of the manufacturing building (Area D) were not considered to be cost-effective, as discussed in the ROD for OU 2.

In February 1998, a VE system and a groundwater recovery, treatment and injection system became operational. In 1999, the Site was reclassified to Class 4.

1.1.1 Groundwater Treatment System

The groundwater treatment system at the Site began operation in February 1998. The treatment system has run without significant downtime except for a ten-month period in 2001, a one-month period in 2011, and a separate seven-month period in 2011 to 2012. A standby submersible well pump, effluent sump pump and float switch are maintained in the treatment building so that if the equipment fails the spare unit is installed, minimizing interruptions.

The groundwater recovery system consists of three groundwater recovery wells (TW-1, TW-2A, and TW-3), from which contaminated groundwater is pumped to a treatment building containing an air stripper for removal of VOCs (refer to **Figure 2**). In January 2000, the air stripper discharge treatment train was modified to eliminate the carbon-polish by directing exhaust through an 8-inch PVC stack on

the roof of the building. The air stripper exhaust manifold is fitted with dual mist eliminators to prevent water from being drawn by vacuum into the exhaust system. The GAC adsorbers were taken off-line and the carbon was disposed off-site, leaving the empty carbon vessels in-place.

Treated groundwater is collected in a three-chamber precast concrete settling tank, which is located beneath metal grates in the floor of the treatment building. The pumping system utilizes a transfer pump, controlled by high and low level indicators in the third chamber of the settling tank. A sand filter was also utilized.

Prior to circa 2005, treated effluent was pumped to a distribution pit from which water flowed by gravity to two injection wells (IW-1 and IW-2). A portion of the treated groundwater was re-injected into the subsurface via the injection wells. When effluent flow exceeded the infiltration capacity of the two wells, water would rise to the distribution pit and overflow by gravity via subsurface piping to an outfall on Crum Elbow Creek (**Figure 2**). However, the reinjection system was shut down circa 2005 due to the accumulation of scale within the distribution pit and injection wells. The system was not repaired because homeowner wells were never drawn down significantly, and because the injection wells are within the approximate capture zone of the P&T system. There are no plans to repair or restart the reinjection system. Effluent from the groundwater treatment system currently flows through the distribution pit to the outfall.

1.1.2 Bedrock Vapor Extraction System

The locations of the four vapor extraction wells (VE-1, VE-2, TW-1 and TW-2A) are shown on **Figure 2**. Following initial system start-up in 1998, VOC removal generally occurred at an asymptotic rate. Extraction wells VE-1 and VE-2 have not been operational since February 2004, when the well screens were inundated by a high water table. On November 2, 2005, the VE system was completely shut down when the vapor blower motor ceased operation. The system was taken off-line permanently with NYSDEC approval, because the system was not significantly reducing VOC concentrations in bedrock beneath the Site. The carbon vessels associated with the VE system were also removed from the process in November 2005.

The VE system removed approximately 48 pounds of total VOCs from the subsurface over the eight-year period of operation. Historical VE system sampling data and trend figures can be found in the November 2010 PRR.

While no longer used for vapor extraction, TW-1 and TW-2A continue to act as groundwater extraction wells.

1.1.3 System Monitoring

System monitoring activities include daily remote system monitoring via computer link, monthly visits to collect influent and effluent water samples, and necessary preventive maintenance and repairs.

The groundwater treatment system has been performing effectively to date. As of June 2013, the groundwater treatment system has treated approximately 93 million gallons of groundwater. VOC concentrations in the influent are effectively treated by the system and are not detectable or are present at negligible concentrations in the system effluent. A steady decrease of VOC concentrations in groundwater has occurred from 1998 to the middle of 2008, with concentrations remaining relatively constant since (refer to **Figure 5** and **Appendix A**). Total mass removal via the groundwater treatment system was approximately 1,110 pounds of total VOCs over the sixteen-year period of operation (refer to **Table 1** and **Figure 6**). The groundwater treatment system continues to remove

VOCs from the bedrock beneath the Site. VOC removal rates declined from over 200 pounds per year in 1998 to 50 pounds per year following the first three years of system operation and have averaged greater than 40 pounds per year since.

1.1.4 Groundwater Monitoring

Groundwater sampling is performed annually in the spring to monitor the effectiveness of the groundwater remedy. A groundwater data summary is presented in **Appendix B**.

Groundwater sampling has been conducted annually since 1998, except for 2001, 2002 and 2006. Monitoring wells MW-2, MW-3S/3D, MW-4D, MW-5, MW-8, MW-9, MW-10 and MW-11 were not sampled during the last three groundwater sampling events (April 2011, May 2012, and April 2013) due to a reduction in scope of work by the NYSDEC. The wells demonstrated minimal or non-detect levels of VOCs since the late 1990s or earlier, and were last sampled in May 2008. MW-12S and MW-12D were installed in May 2008, and have been sampled annually since.

Total VOC concentrations from 2011 to 2013 ranged from not detected (MW-12S each event) to 113 micrograms per liter (µg/l), 283 µg/l, and 131 µg/l, respectively. The highest concentrations were detected in MW-7D in each of these sampling events.

1.1.5 Point-of-Entry Water Treatment Systems

Four contaminated water supply wells are present in the vicinity of the Site. AECOM continues to monitor groundwater quality at a commercial property (Business #1), located north of the Site on Route 9G, whose water supply has apparently been impacted by historic operations at the former NOW Corporation facility. The NYSDEC provides workers in the building with bottled water.

POE carbon filtration systems are currently installed on three private wells to prevent exposure of occupants to the contaminated groundwater. AECOM continues to maintain and monitor the systems under a separate work assignment with the NYSDEC.

In 1992, the NYSDEC requested that a POE water treatment system be installed on the water supply well at the residence on South Creek Road located immediately north of the Site (House #1 on **Figure 2**). Culligan Water Conditioning (Culligan) of Poughkeepsie, New York installed and maintained the system that consisted of two GAC tanks. The NYSDEC rented the unit from Culligan until July 1994, at which time Earth Tech replaced the Culligan system with larger capacity GAC tanks. Earth Tech installed a GAC system at another South Creek Road residence north of the others (House #3 - not shown on **Figure 2**) in June 1996. The installation included an Ideal Horizon UV treatment unit. Earth Tech also installed a GAC system at House #2 in July 2002. The system consists of two GAC tanks connected in series and a Trojan model 708 UV unit for bacterial disinfection.

To date, all POE treatment systems are in satisfactory working condition. The last sampling event and system check within this reporting period (January 1, 2011 to June 30, 2013) took place on June 26, 2013. Results of POE sampling conducted in 2011 to 2013 are located in **Appendix C** and **Appendix D**.

1.1.6 Soil Vapor Intrusion (SVI)

In response to results obtained in the 2008 and 2009 SVI studies, air samples were twice collected at House #2 (located adjacent to the site) during the winter months to monitor the presence or absence of soil vapors in and under the residence. **Appendix E** displays total VOC concentrations for the

samples collected in March 2011 and March 2012. Samples were collected and analyzed for VOCs via United States Environmental Protection Agency (US EPA) Method TO-15.

1.1.7 Sub-Slab Depressurization System

Based on the results of the 2008 and 2009 SVI studies, a sub-slab depressurization system (SSDS) was installed at House #4 on November 11, 2008 by GeoLogic NY, Inc. of Homer, New York in order to mitigate indoor VOC vapors. The system prevents vapors or gases from accumulating beneath the slab and possibly entering the home. The system is comprised of vapor collection piping connected to a small electric fan that directs exhaust outside of the building.

In June 2009, HDR, Inc. of Pearl River, New York was subcontracted by the NYSDEC to inspect and maintain the SSDS at House #4. A post-inspection letter from HDR to the residents of House #4 has been included as **Appendix F.** The letter instructs the residents to notify the NYSDEC if they observe operational issues.

2.0 Evaluate Remedy Performance, Effectiveness and Protectiveness

2.1 IC/EC Report

The former NOW Corporation site is located at 2092 Route 9G in the Town of Clinton, Dutchess County, New York and consists of approximately 9 acres of a 94.5–acre parcel in postal zone 12580 (**Figure 1**). The property is owned by Robert Fried and the current tenant of the Site is UNIFUSE/B&R Specialties, Inc.

Between 2011 and June 2013, the Site property was not sold, subdivided, merged, did not undergo a tax map amendment, and was not issued any federal, state, and/or local permits.

The engineering controls (ECs) reported in this 2013 PRR include:

- Groundwater treatment system at the Site;
- A SSDS at House #4, which is located on Route 9G; and
- Three off-site residential POE GAC water treatment systems.

Except for the vapor extraction system, which has been off-line since 2005, the ECs employed at the Site have been substantially unchanged since the date that the controls were implemented or approved by the NYSDEC. The ability of the controls to protect public health and the environment has not been impaired.

Although groundwater use restrictions should be in place for the Site property, a deed search conducted by AECOM on November 19, 2010 concluded that groundwater use restrictions associated with the Site are not referenced in the deed for the Site.

2.1.1 EC Requirements and Compliance

The following activities are completed to maintain compliance with EC requirements:

- Monthly inspection of the groundwater P&T system.
- Monthly P&T system compliance samples are collected in conjunction with the inspection of the P&T system.
- Semi-annual inspection and sampling of residential POE treatment systems.

2.1.2 IC/EC Certification Forms

The Institutional and Engineering Controls Certification Form for the Site is provided in **Appendix G**.

2.2 Monitoring Plan Compliance Report

2.2.1 Confirm Compliance with Monitoring Plan

Activity	Required Frequency (X)				Compliance Dates
	Monthly	Quarterly	Semi-Annual	Annual	
Influent/Effluent Sampling	X				1998-2013* (Monthly sampling occasionally not performed due to system downtime or administrative delays.)
Water Level Gauging		X			2002-2013
Groundwater Sampling				X (Spring)	1993-1994, 1998-2000, 2003-2005, 2007-2013
POE System Operation and Maintenance (O&M) Service Visits			X		Since system installation
Soil Vapor Intrusion Sampling				X (Winter)	2008-2009, 2011-2012

2.2.2 Confirm that Performance Standards are Being Met

Groundwater Elevations

Water levels were measured at 18 monitoring wells in June 2013 (**Table 2**). Depth-to-water measurements and transducer readings from TW-1, TW-2A, and TW-3 were converted to water table elevations and contoured as shown on **Figure 7**. The figure depicts the drawdown of the water table by the three groundwater recovery wells (TW-1, TW-2A, and TW-3). The overall direction of groundwater flow beneath the Site outside of the recovery well influence is predominantly to the southwest.

Based on the groundwater contour map (**Figure 7**), the groundwater extraction system has a capture zone that includes a majority of the impacted wells. The only well with exceedances of the June 1998 New York State Ambient Water Quality Standards (AWQS) and Guidance Values (GV) not presently within the capture zone is MW-12D, to the north of the Site (refer to **Figure 8**).

Groundwater Analytical

Annual groundwater sampling was conducted during the reporting period on April 19, 2011, May 8, 2012, and April 23, 2013. With NYSDEC approval, these monitoring events had fewer wells sampled. The wells that were eliminated from monitoring requirements (MW-2, MW-3S/3D, MW-4D, MW-5, MW-8, MW-9, MW-10 and MW-11) had contained minimal or non-detect levels of VOCs since 1999 or earlier.

Groundwater analytical results for the eight monitoring wells sampled during this reporting period (2011 to 2013) and historical results for all of the wells are presented in **Appendix B**. The

groundwater analytical results and VOC isoconcentration contours developed from the analytical results from the most recent sampling event (April 2013) are presented on **Figure 8. Figure 8** also contains the results of the influent (TW-1, TW-2A and TW-3) sampling of the groundwater treatment system on April 23, 2013.

Figure 9 displays the total VOC concentrations in selected wells between 1993 and 2013. As shown on **Figure 9**, MW-6S, MW-7D, MW-7S, MW-1, and MW-6D have historically contained the highest concentrations of VOCs.

Exceedances of AWQS and GV for monitoring wells and recovery wells sampled in April 2013 are displayed on **Figure 8**. Excluding the groundwater recovery wells, six wells (MW-1, MW-6S, MW-6D, MW-7S, MW-7D and MW-12D) exhibited impacts at levels exceeding the AWQS and GV. The dominant contaminant in four of these wells is TCE, with 1,1-dichloroethane (1,1-DCA) present at the highest concentrations in MW-6D and MW-12D. All monitoring wells and recovery wells are screened in the bedrock. Recovery wells TW-1, TW-2A, and TW-3 also contain elevated concentrations of several VOCs, as shown on **Figure 8**. Generally, TCE, 1,1,1-TCA and 1,1-DCA are present at the highest concentrations in the recovery wells.

Influent and Effluent

Approximately 11.76 million gallons of water were treated since 2010. As of June 30, 2013, 3.05 million gallons of water were treated this year, which equates to 8,400 gallons per day (gpd) or 5.8 gallons per minute (gpm). During 2010, the average discharge was 19,000 gpd or 13 gpm.

As of June 26, 2013, approximately 93 million gallons of groundwater had been recovered and treated by the remediation system since it became operational in February 1998.

Table 3 summarizes influent and effluent analytical data for water samples collected on June 26, 2013. Influent samples were collected from four locations: one from each recovery well (TW-1, TW-2A, and TW-3), and one combined influent sample. Additionally, a treatment system effluent sample was collected. An estimated concentration (0.33 µg/l) of TCE was detected in the effluent sample. However, there were no exceedances of effluent limitations for any of the analytes.

Table 4 summarizes selected operational data recorded on the sampling date. Influent data collected from 2011 to 2013 are presented in **Appendix A** and **Figure 5**.

Total VOC removal quantities were calculated for each sampling event during the lifetime of the P&T system (1998 through 2013), and are presented in **Table 1**. **Figure 6** displays the total annual and cumulative VOC removal from Site groundwater by the P&T system. The system has removed approximately 1,110 pounds of VOCs from groundwater since February 1998.

Monitoring of Surrounding Properties

POE Systems

Periodic sampling and maintenance is conducted on the residential POE water treatment systems for House #1, House #2, and House #3, which are all located on South Creek Road.

Sampling points at the residential POE water treatment systems include raw, intermediate (between the carbon vessels), and final (treated) sample ports. All final samples are collected at kitchen taps. Only a raw sample is collected at Business #1, since there is no GAC system in the building. Bacterial sampling of the treated water is conducted after VOC sampling. Sampling protocol requires

decontamination of the water sampling port by heating with an open flame for one minute prior to sampling. Summaries of the VOC analytical results for water samples collected from these residences and from Business #1 from 2011 to 2013 are presented in **Appendix C** and **Appendix D**. Business #1 was not sampled in December 2011 or December 2012 because the building is unoccupied during the winter months.

The carbon in the vessels is changed out when Site contaminants are reported at 1 µg/L or higher in the intermediate water samples. No Site contaminants were reported at 1 µg/L or higher in the intermediate water samples collected from 2011 to 2013; therefore, the carbon was not replaced in any of the POE vessels.

Soil Vapor Intrusion (SVI) Sampling

The results of the air samples collected during the March 2011 and March 2012 SVI studies were compared to mean outdoor air concentrations from a study of VOCs in air of fuel oil heated homes (Final New York State Department of Health [NYSDOH] CEH BEEI Soil Vapor Intrusion Guidance, Appendix C, October 2006). VOC concentrations in all of the sub-slab samples were less than 100 micrograms per cubic meter (µg/m^3) for site-related compounds.

Outdoor air sample results contained several chlorinated compounds at concentrations greater than the NYSDOH Background Concentrations. All of the elevated concentrations were within one order of magnitude of the New York State Background Concentration for that analyte.

In 2011 and 2012, all air data was within acceptable NYSDOH Soil Vapor/Indoor Air Matrices and NYSDEC regulatory limits. Based on the data and information collected during the SVI study, the installation of additional sub-slab depressurization systems is not necessary at this time.

No additional SVI samples were collected in 2013.

Refer to the November 2010 PRR for historical data related to SVI sampling initially conducted under IIWA D004436-16.

SSDS Monitoring

During the 2011 SVI study, AECOM inspected the SSDS at House #4 and the system was operating normally. The basement is unoccupied, the heating/ventilation system had not been modified, piping and seals were in good condition, and cracks were not observed in the floor or walls. An inspection form was filled out and included in the O&M report submitted to the NYSDEC in April 2011.

2.3 Operation and Maintenance Plan Compliance Report

The current O&M program involves operation and maintenance of the groundwater treatment system, specifically:

- Remote system monitoring via computer link;
- Performing system maintenance; and
- Collection of influent and effluent VOC samples.

2.3.1 O&M Plan Compliance Report

Activity	Required Frequency (X)			Compliance Dates
	Daily	Monthly	Quarterly	
Remote System Monitoring	X			1998 - present
System Maintenance	As Necessary			1998 - present
Influent and Effluent Sampling		X		1998 - present (with rare exceptions)

2.3.2 Evaluation of O&M Activities

2.3.2.1 Evaluation of Treatment Units

Monthly influent VOC concentrations are plotted versus time in **Figure 5** and **Figures 10 through 12**. Note the variable vertical scales on each figure. **Figure 5** presents concentrations in the total influent, whereas **Figures 10, 11** and **12** depict concentrations specific to recovery wells TW-1, TW-2A, and TW-3, respectively. From February through September 1998, total influent was sampled at a frequency of three to five times per month. To simplify the display in **Figure 5** (and to make it easily comparable to **Figures 10 through 12**), a single value representing the average concentration is plotted for each of those heavily sampled, early months of system operation. Several features of these figures are noteworthy:

- Absence of a data point indicates that either a sampling event was missed, or that sampling was not performed because the groundwater P&T system was inoperative. Only successive data points (i.e., at monthly intervals) are joined by a line segment on the charts.
- Large fluctuations in influent groundwater quality have occurred at each recovery well, which appears to be influenced by groundwater elevation:
    - Based on data collected between 2009 and 2013, the TVOC concentrations in TW-2A entering the P&T system demonstrate an inverse relationship with groundwater elevation (i.e., concentrations are lower when groundwater levels are higher, and vice versa). See **Figure 13**. This may be due to a dilution effect when a greater volume of groundwater is present beneath the Site.
    - TVOC concentrations in TW-1 and TW-3 appeared to have a direct relationship with groundwater elevation and concentration increase with increased head above the transducer (i.e., shallower water levels). See **Figures 14 and 15**.
- The concentrations of VOCs have declined in recovery wells TW-1, TW-2A and TW-3 since 1998. This data is presented in **Figures 10**, **11** and **12**, respectively, with a best-fit, second-order polynomial curve through each set of data points.
- The greatest decline in VOC concentrations has been at TW-2A; however, the groundwater remains heavily impacted within portions of the capture zone of the well (**Figure 11**).

Table 1 presents the mass removal of total VOCs from the P&T system since treatment began in 1998. Approximately 1,110 pounds of VOCs were removed from groundwater beneath the Site between 1998 and 2013. Mass removal rates during the period covered by this PRR are:

- 23 pounds in 2011 (10 months of operation)
- 31 pounds in 2012 (seven months of operation)
- 14 pounds in 2013 (six months of operation through June)

2.3.2.2 Treatment System Maintenance

The system was down for a significant amount of time (i.e., greater than five business days) for two intervals (August 13, 2011 to August 22, 2011 and October 22, 2011 to June 12, 2012) during this reporting period. Both incidences of system downtime were related to structural failure of the air stripper. The system was reactivated upon completing all activities associated with installation of a replacement air stripper and has been running as intended. The replacement air stripper was brought in from another NYSEDC site.

Routine maintenance is conducted as necessary. All system maintenance activities since 2002 have been provided to the NYSDEC in Earth Tech/AECOM's Monthly Operation, Maintenance and Monitoring Reports (2002-2013) and will not be fully reiterated herein. Representative repairs and/or enhancements to the treatment system between 2011 and 2013 include:

- March 30, 2011 – Replaced TW-2A pump with a higher capacity pump (30 gpm) reusing existing motor.
- March 31, 2011 –TW-2A pump motor failed; turned off until new motor could be purchased.
- April 4, 2011 – Motor on the TW-2A pump was replaced and pump put back online.
- April 20, 2011 – Removed TW-3 pump from well because motor failed.
- May 3, 2011 – Replaced failed effluent pump with clean spare pump; restarted system.
- May 18, 2011 – Installed new motor to TW-3 pump. Cleaned air stripper. Restarted air stripper and all well pumps.
- June 14, 2011 – Incapable of dialing into the system to remotely monitor performance since June 7. Phone line to the treatment building had been severed due to on-site construction activity. NYSDEC contacted Frontier Telephone, who repaired the line on June 16, restoring remote communication with the treatment system.
- August 16, 2011 – Site visit in response to auto-shutdown of system on 13 August. Observed seam on the Carbtrol stripper unit had failed. The released water flowed into the building sump, creating the alarm condition. Disassembled unit and began repair process. The system was left offline to allow the blown seams to dry.
- August 18, 2011 – Returned to site to glue stripper seam using Devcon adhesive cartridge (plastic welder). Assembled Carbtrol unit; left system off to allow adhesive to cure.
- August 22, 2011 – Remotely started the three submersible pumps and the stripper blower; shut down after an hour; the effluent pump couldn't keep up with the influent flow rate.
- August 23, 2011 – Started system remotely, but allowed only TW-2A pump to provide influent to the stripper.
- August 25, 2011 – Started pump in TW-3. TW-1 remained off in advance of the test sampling.
- August 31, 2011 – Site visit in response to auto-shutdown of system on the 29th due to a high-level alarm in the sump. The sump pump had tripped the breaker. The breaker was reset during the site visit, restoring proper operation of the pump (confirmed by testing). Effluent line

check ball was cleaned of mineral deposits. The effluent pump was replaced by a spare effluent pump. Only TW-2A was restarted and other well pumps remained off. Groundwater levels were extremely high as a result of rains from Tropical Storms Lee (August 28) and Irene (September 6 & 7). Limited influent to avoid overwhelming stripper and effluent pump.

- September 2, 2011 – The pump in TW-3 was activated.
- September 15, 2011 – TW-1 was turned on, in response to August 26 analytical results.
- September 29, 2011 – Measured groundwater levels at monitoring wells. Observed another seam in the Carbtrol air stripper had split. High level sump alarm was successfully tested. Only the pump TW-2A was enabled upon departure due to leaking.
- October 11& 13, 2011 – Onsite to repair the leaking air stripper seams. Air stripper seams were glued successfully, and the system remained off for the glue to dry. Observed the phone line was down, disabling remote access and system data fax sheets. The phone line was spliced, wrapped, and put back on the ground to establish connection until the phone company can make a permanent repair.
- October 18, 2011 – Pumped down the settling tank and noted that the sump float needed replacement. System was turned on at 1-1:30 PM. Recent air stripper repairs appeared to be in good condition.
- October 21, 2011 – Replaced floor sump float. Flow rate of the pump in TW-2A was reduced to 12 gpm. Air stripper was still leaking, but all repairs were intact. The effluent sample was collected at the air stripper discharge, rather than at the sink, during this sampling event.
- October 22, 2011 – The stripper seams failed at another location. The release initiated a system shutdown.
- April 9, 2012 – Inspected the delivered air stripper, air blower, and other delivered equipment and determined necessary materials and system modifications for proper system operation.
- April 23-25, 2012 – Completed necessary air stripper maintenance, including cleaning, installing new felt gaskets for the door and trays, and other preparation activities.
- June 6, 2012 – Completed initial system preparation and took influent and effluent samples. Veith Electric was onsite to install the VFD and an 110V outlet, and to disconnect hot wires.
- June 12, 2012 – Completed final system repairs and run system.
- June 18, 2012 – Onsite with Veith Electric. Veith re-wired the VFD to have auto-start capability and over-current protection. The damper which partially controls air blower function had slid down, causing frequent shut downs due to system pressure drops. Adjusted the damper and observed normal system operation.
- July 18, 2012 – Onsite in response to an alarm condition that was associated with the air stripper blower. Inspected and cleaned the blower flow switch and observed proper system operation. Increased the blower speed to 60 Hz from 55 Hz.
- September 17, 2012 – Onsite in response to an alarm condition for an effluent storage tank high level that occurred on September 13, 2012. Upon arrival, the system was down and the effluent pump electrical conduit box was inspected. The conduit box showed oil stains in and around the box. The effluent pump was replaced with a spare and the system was reset. Normal operation and tank drawdown was achieved.

- December 5, 2012 – Onsite to replace the 4” air stripper effluent pipe with a 2” pipe. The objective was to lower the VFD speed from its maximum setting, 60 HZ, to a lower speed while still achieving the air flow and stripper pressure values required for adequate stripper performance. Adequate stripper performance requirements were met at 55 Hz. Kept the system at 55 Hz to monitor its removal effectiveness for the upcoming sampling event.
- January 30, 2013 – The VFD speed reduced from 60 to 55 Hz.
- May 28, 2013 – System down upon arrival. Removed failed effluent pump; installed spare pump on standby in the treatment building. Restarted system. Blower operating at 55 Hz. An apparent problem with pilot ignition on the building propane heater noted.

3.0 Evaluate Costs

3.1 Summary of Costs

The total cost for operation of the treatment system and completion of required monitoring and reporting was approximately $254,266 between 2011 and 2013, which equates to $101,708 annually. Major cost components are allocated as follows:

Description	Jan. 2011 – June 2013 Cost ($)	Average Annual Cost ($)
	Operation Maintenance and Monitoring:	
AECOM Labor & Travel	$ 105,499	$ 42,200
Subcontractors	$ 0	$ 0
Laboratory Fees	$ 21,532	$ 8,613
Equipment, Repairs, Supplies & Shipping	$ 13,587	$ 5,435
Subtotal:	**$ 140,618**	**$ 56,248**
Project Management, Program Management and OM&M Reporting:		
AECOM Labor	$ 53,953	$ 21,581
Subtotal:	**$ 53,953**	**$ 21,581**
Periodic Review Report and Site Management Plan:		
AECOM Labor	$ 34,549	$ 13,820
Subtotal:	**$ 34,549**	**$ 13,820**
Total:	**$ 229,120**	**$ 91,649**

Description	Jan. 2011 – June 2013 Cost ($)	Average Annual Cost ($)
POE GAC Treatment System O&M:		
AECOM Labor & Travel	$ 19,037	$ 7,615
Bottled Water (Business #1)	$ 1,870	$ 748
oratory Fees	3,749	$ 1,500
Field Supplies and Shipping	$ 490	$ 196
Total:	**$ 25,146**	**$ 10,059**

The figures include all costs associated with the completion of each individual task. Utility costs, which are direct-billed to NYSDEC, are not included.

4.0 Conclusions and Recommendations

The periodic review process is used for determining if the selected remedy continues to be properly managed (as set forth in the ROD, OM&M Plan, Operation and Maintenance Manual, and SMP), and if the remedy continues to be protective of human health and the environment.

4.1 Conclusions

Several elements of the Site remedy have been completed in the past, including: (1) excavation of soil containing more than 700 ppb of TCE located near the northeast corner of the building (Area A on **Figure 4**), along the drainage ditch near the northern corner of the building (Area B), and the south corner of the concrete pad (Area C); (2) excavation of weathered bedrock containing more than 700 ppb of TCE in Areas A and B; and (3) on-site treatment of excavated soils and weathered bedrock by low temperature thermal desorption. These activities took place between September 1997 and January 1998.

Conversely, technologies such as vapor recovery and treatment from impacted bedrock proved to be inefficient and costly while having little impact on bedrock VOC concentrations. The VE system operated from 1998 through 2005. Additionally, the groundwater reinjection system was shut down circa 2005 due to the accumulation of scale within the distribution pit and injection wells, and remained off because excessive drawdown of homeowner wells was not an issue.

The following conclusions discuss the effectiveness of the remaining elements of the Site remedy in comparison to the applicable Site remedial goals derived from the RODs for OU 1 and OU 2:

1. **Groundwater extraction and treatment from impacted bedrock.**

   The groundwater P&T system has generally been operating continuously since 1998. Groundwater treatment removes essentially all VOC contamination in recovered groundwater, resulting in values less than the method detection limit or negligible concentrations of VOCs in the treated water, which is discharged to Crum Elbow Creek to the northwest of the Site. Approximately 1,110 pounds of VOCs were removed from groundwater by the P&T system between 1998 and 2013.

   Operation of the groundwater P&T system results in a zone of influence within which groundwater flow is directed toward the recovery wells. The P&T system capture zone includes most of the impacted monitoring wells, with the exception of one well to the north (MW-12D). Refer to **Figure 7**. However, the amount of contamination that may have entered the deep bedrock or flowed off-site prior to treatment system start-up is unknown. As a result, overburden and/or bedrock may be continuing sources of contamination.

2. **Institutional controls and restrictions on groundwater use.**

   The IC/EC document indicates groundwater use restrictions are present for the former NOW Corporation facility property and House #4. On November 19, 2010, AECOM conducted a deed search at the Office of the Dutchess County Clerk in order to determine whether institutional controls exist for each of the properties. Available public records did not reference

restrictions on groundwater use or any other environmental constraints for either property. Therefore, AECOM cannot confirm the presence of institutional controls.

3. **Maintenance of existing POE carbon filters on impacted homeowner wells.**

   The well water of House #1, House #2, House #3 and Business #1 continues to be monitored regularly. Potable water which has exhibited elevated VOC concentrations is treated with a POE GAC system, or property owners are supplied with bottled water by the NYSDEC. This prevents the ingestion of impacted groundwater from private wells.

   Inhalation and contact with impacted vapors has been minimized by the installation of water treatment systems or by providing bottled water. Groundwater impacts continue to be evaluated annually via the sampling of monitoring wells in the vicinity of the Site.

4. **Long-term groundwater monitoring.**

   Historical annual groundwater sampling results indicate that, in general, VOC concentrations in groundwater beneath the Site are decreasing. The AWQS have not yet been achieved at wells MW-1, MW-6S, MW-6D, MW-7S, MW-7D, or MW-12D (refer to **Appendix B** and **Figure 8**). The wells located at the periphery of the Site (MW-2, MW-3S, MW-3D, MW-4D, MW-8, MW-9, MW-10, and MW-11) are no longer sampled. These wells demonstrated minimal or non-detect levels of VOCs since the late 1990s or earlier, and were last sampled in May 2008. Annual groundwater monitoring will continue until such a time as the NYSDEC determines that adequate treatment of contamination has been achieved at the Site and in surrounding areas.

5. **Prevent contact with or inhalation of volatiles from contaminated sub-slab vapor.**

   In 2008 and 2009, a vapor intrusion study was performed for several homes and businesses in the area, as part of the Immediate Investigation Work Assignment (IIWA) for the former NOW Corporation facility. A SSDS was installed at House #4 in November 2008 as a result of the detection of elevated levels of TCE and other VOCs beneath the residence during the IIWA. The SSDS removes impacted vapors from beneath the building, minimizing the potential for inhalation of and contact with impacted vapors in the home.

   Based on the results of the 2008 and 2009 vapor intrusion studies, House #2 has been monitored at the interval requested by the NYSDEC, which is typically annually during the heating season. Results from the 2011 and 2012 vapor intrusion studies indicate that while monitoring of soil vapors at House #2 may be warranted, the installation of additional sub-slab depressurization systems is unnecessary at this time

4.2 Recommendations

The following recommendations are made for the former NOW Corporation facility:

1. Treatment of mineralization (scale) in piping and other groundwater treatment system appurtenances, including the settling tanks within the treatment building, should be evaluated and implemented to reduce mineral build-up within the system components and reduce system operational capacity.

2. Consider the injection of a chemical oxidant into some of the monitoring wells while the groundwater P&T system is operating to treat VOCs in the fractured bedrock.

3. Continue to monitor for the presence or absence of soil vapors below the slab, in the basement air, living space air (i.e., first floor), and outside air at House #2 during the heating season on an annual basis.

4. Application and enforcement of an environmental easement/notice for the site.

5. An annual, field oversight PRR is recommended for this Site because the remedy includes a treatment system with an Operation and Maintenance Plan as a component of the SMP.

Tables

Table 1
Mass Removal of VOCs from Groundwater (1998 - 2013)
Former NOW Corporation Facility
Town of Clinton, New York

Date	1/8/98	2/8/98	3/98*	4/98*	5/98*	6/98*	7/98*	8/98*	9/98*	10/16/98	11/13/98	12/11/98	Yearly Removal
Influent VOC Concentration (µg/l)	-	-	1703	3507	2378	4138	4575	5059	2834	4619	2540	2172	
Quantity Treated (gallons)	-	-	2,385,618	1,258,782	815,600	723,458	616,842	728,000	711,900	536,000	522,600	411,300	8,710,100
VOCs Removed in the Period (lbs)	-	-	33.88	36.83	16.18	24.97	23.54	30.73	16.83	20.65	11.07	7.45	222.13
Total VOCs Removed (lbs)	-	-	33.88	70.71	86.89	111.86	135.40	166.13	182.96	203.61	214.68	222.13	
Cumulative Water Treated (gallons)	-	-	2,385,618	3,644,400	4,460,000	5,183,458	5,800,300	6,528,300	7,240,200	7,776,200	8,298,800	8,710,100	

Date	1/8/99	2/5/99	3/5/99	4/2/99	4/30/99	5/28/99	7/2/99	7/30/99	8/27/99	10/1/99	10/28/99	12/6/99	Yearly Removal
Influent VOC Concentration (µg/l)	3,713	2,576	1,930	1,778	3,096	2,640	4,936	4,287	1,606	3,691	5,050	3,310	
Quantity Treated (gallons)	496,100	523,400	550,700	855,700	760,900	644,600	531,200	402,000	396,000	457,600	541,340	320,660	6,480,200
VOCs Removed in the Period (lbs)	15.37	11.25	8.87	12.69	19.65	14.20	21.87	14.38	5.31	14.09	22.81	8.85	169.33
Total VOCs Removed (lbs)	237.50	248.75	257.61	270.31	289.96	304.15	326.03	340.40	345.71	359.80	382.60	391.46	
Cumulative Water Treated (gallons)	9,206,200	9,729,600	11,134,222	11,136,000	11,897,200	12,541,800	13,073,000	13,475,000	13,871,000	14,328,600	14,869,940	15,190,600	

Date	1/3/00	2/7/00	3/6/00	3/31/00	4/28/00	5/30/00	7/14/00	8/4/00	9/4/00	10/4/00	11/4/00	12/4/00	Yearly Removal
Influent VOC Concentration (µg/l)	6008	3721	1540	1367	1101	2080	2370	2100	-	-	-	-	
Quantity Treated (gallons)	735,100	777,200	772,600	773,900	885,100	1,092,494	1,536,319	580,387	-	-	-	-	7,153,100
VOCs Removed in the Period (lbs)	36.84	24.13	9.93	8.83	8.13	18.96	30.37	10.17	-	-	-	-	147.35
Total VOCs Removed (lbs)	428.30	452.43	462.35	471.18	479.31	498.26	528.64	538.81	-	-	-	-	
Cumulative Water Treated (gallons)	15,925,700	16,702,900	17,475,500	18,249,400	19,134,500	20,226,994	21,763,313	22,343,700	-	-	-	-	

Date	1/20/01	2/17/01	3/14/01	4/5/01	5/15/01	6/18/01	7/18/01	8/15/01	10/1/01	10/31/01	11/28/01	12/26/01	Yearly Removal
Influent VOC Concentration (µg/l)	-	-	-	-	-	-	2503	1678	496	1146	1570	415	
Quantity Treated (gallons)	-	-	-	-	-	-	366,600	532,600	353,500	280,000	366,600	229,400	2,128,700
VOCs Removed in the Period (lbs)	-	-	-	-	-	-	7.65	7.46	1.46	2.68	4.80	0.79	24.85
Total VOCs Removed (lbs)	-	-	-	-	-	-	546.46	553.92	555.38	558.06	562.86	563.65	
Cumulative Water Treated (gallons)	-	-	-	-	-	-	22,710,300	23,242,900	23,596,400	23,876,400	24,243,000	24,472,400	

Date	1/20/02	2/17/02	3/14/02	4/5/02	5/15/02	6/18/02	7/26/02	8/19/02	9/17/02	10/3/02	11/22/02	12/20/02	Yearly Removal
Influent VOC Concentration (µg/l)	-	-	-	3697	2301	2529	3733	-	-	4165	1060	1010.2	
Quantity Treated (gallons)	-	-	-	382,000	267,599	141,100	242,700	-	-	186,400	521,300	465,100	2,206,199
VOCs Removed in the Period (lbs)	-	-	-	11.78	5.14	2.98	7.56	-	-	6.48	4.61	3.92	42.46
Total VOCs Removed (lbs)	-	-	-	575.43	580.57	583.55	591.10	-	-	597.58	602.19	606.11	
Cumulative Water Treated (gallons)	-	-	-	24,854,400	25,236,400	25,377,500	25,620,200	-	-	25,806,600	26,327,900	26,793,000	

Date	1/20/03	2/17/03	3/14/03	4/11/03	5/13/03	6/5/03	7/19/03	8/19/03	9/17/03	10/14/03	11/11/03	12/11/03	Yearly Removal
Influent VOC Concentration (µg/l)	913	1339.9	419.5	676.9	1110	1364.6	-	744.1	1420	730.8	921	468	
Quantity Treated (gallons)	923,600	662,200	752,000	778,000	665,000	1,064,600	-	1,151,900	635,000	715,000	691,000	1,021,000	9,059,300
VOCs Removed in the Period (lbs)	7.03	7.40	2.63	4.39	6.16	12.12	-	7.15	7.52	4.36	5.31	3.99	68.06
Total VOCs Removed (lbs)	613.14	620.55	623.18	627.57	633.73	645.85	-	653.00	660.52	664.88	670.19	674.17	
Cumulative Water Treated (gallons)	27,716,600	28,379,000	29,131,000	29,909,000	30,574,000	31,638,000	-	32,790,000	33,425,000	34,140,000	34,831,000	35,852,000	

Date	1/15/04	2/11/04	3/10/04	4/7/04	5/20/04	6/17/04	7/19/04	8/19/04	9/16/04	10/14/04	11/22/04	12/20/04	Yearly Removal
Influent VOC Concentration (µg/l)	527.8	2770	1386	887	755	1510	1808	2070	1191.1	699.2	915	640	
Quantity Treated (gallons)	906,000	452,000	570,000	1,004,000	631,300	455,700	382,000	338,200	524,000	632,100	678,700	771,000	7,345,000
VOCs Removed in the Period (lbs)	3.99	10.44	6.59	7.43	3.98	5.74	5.76	5.84	5.21	3.69	5.18	4.12	67.96
Total VOCs Removed (lbs)	678.16	688.61	695.20	702.63	706.60	712.34	718.11	723.95	729.15	732.84	738.02	742.14	
Cumulative Water Treated (gallons)	36,758,000	37,210,000	37,780,000	38,784,000	39,415,300	39,871,000	40,253,000	40,591,000	41,115,000	41,747,300	42,426,000	43,197,000	

Table 1
Mass Removal of VOCs from Groundwater (1998 - 2013)
Former NOW Corporation Facility
Town of Clinton, New York

Date	1/26/05	2/23/05	3/23/05	4/20/05	5/18/05	6/15/05	7/27/05	8/22/05	9/20/05	10/19/05	11/15/05	12/13/05	Yearly Removal
Influent VOC Concentration (µg/l)	602	534	540	554.1	1287.2	1799	2342	2315	1838	643	1107	516	
Quantity Treated (gallons)	906,000	600,100	597,500	773,900	506,300	348,900	291,400	325,300	205,500	462,800	615,600	659,000	6,292,300
VOCs Removed in the Period (lbs)	4.55	2.67	2.69	3.58	5.44	5.24	5.69	6.28	3.15	2.48	5.68	2.84	50.30
Total VOCs Removed (lbs)	746.69	749.36	752.05	755.63	761.06	766.30	771.99	778.28	781.43	783.91	789.59	792.43	
Cumulative Water Treated (gallons)	44,103,000	44,703,100	45,300,600	46,074,500	46,580,800	46,929,700	47,221,100	47,546,000	47,751,900	48,214,700	48,830,300	49,489,300	

Date	1/23/06	2/21/06	3/21/06	4/18/06	5/7/06	6/21/06	7/27/06	8/22/06	9/19/06	10/24/06	11/16/06	12/14/06	Yearly Removal
Influent VOC Concentration (µg/l)	532	852	1537	1235	-	726.45	970	1721	790	1263	753	698	
Quantity Treated (gallons)	596,000	691,500	518,100	401,700	-	1,128,300	780,100	190,000	452,000	769,700	405,400	627,800	6,560,600
VOCs Removed in the Period (lbs)	2.65	4.91	6.64	4.14	-	6.84	6.31	2.73	2.98	8.11	2.55	3.66	51.51
Total VOCs Removed (lbs)	795.08	799.99	806.63	810.77	-	817.61	823.92	826.65	829.63	837.74	840.29	843.94	
Cumulative Water Treated (gallons)	50,085,300	50,776,700	51,294,800	51,696,500	-	52,824,800	53,604,900	53,794,900	54,246,900	55,016,600	55,422,000	56,049,800	

Date	1/17/07	2/13/07	3/13/07	4/9/07	5/7/07	6/7/07	7/12/07	8/14/07	9/11/07	10/9/07	11/15/07	12/13/07	Yearly Removal
Influent VOC Concentration (µg/l)	915	960.5	836	528.5	517.3	1450	1233	1067	1393	1832	2243	1018	
Quantity Treated (gallons)	580,300	605,800	499,300	856,500	652,000	555,700	360,000	308,200	314,000	281,000	260,000	404,600	5,677,400
VOCs Removed in the Period (lbs)	4.43	4.85	3.48	3.78	2.81	6.72	3.70	2.74	3.65	4.29	4.86	3.44	48.77
Total VOCs Removed (lbs)	848.37	853.22	856.71	860.48	863.30	870.02	873.72	876.46	880.11	884.41	889.27	892.71	
Cumulative Water Treated (gallons)	56,630,100	57,235,900	57,735,200	58,591,700	59,243,700	59,799,400	60,159,400	60,467,600	60,781,600	61,062,600	61,322,600	61,727,200	

Date	1/17/08	2/14/08	3/13/08	4/21/08	5/28/08	6/24/08	7/22/08	8/19/08	9/28/08	10/22/08	11/20/08	12/22/08	Yearly Removal
Influent VOC Concentration (µg/l)	887	517.2	530.7	775.8	858.3	1128.5	941.2	1701	-	-	664.9	522.5	
Quantity Treated (gallons)	720,000	714,000	786,400	823,900	902,000	440,000	213,000	530,000	-	-	503,000	573,000	6,205,300
VOCs Removed in the Period (lbs)	5.33	3.08	3.48	5.33	6.46	4.14	1.67	7.52	-	-	2.79	2.50	42.30
Total VOCs Removed (lbs)	898.04	901.12	904.60	909.93	916.39	920.53	922.20	929.72	-	-	932.51	935.01	
Cumulative Water Treated (gallons)	62,447,200	63,161,200	63,947,600	64,771,500	65,673,500	66,113,500	66,326,500	66,856,500	-	-	67,359,500	67,932,500	

Date	1/19/09	2/23/09	3/23/09	4/20/09	5/19/09	6/17/09	7/16/09	8/17/09	9/28/09	10/22/09	11/20/09	12/22/09	Yearly Removal
Influent VOC Concentration (µg/l)	659.00	591.20	767.00	625.70	568.04	1,013.58	538.50	89.30	2,163.00	2,456.00	2,069.00	1,621.00	
Quantity Treated (gallons)	656,000	830,000	758,000	798,000	773,000	798,400	840,000	258,000	598,000	319,100	531,000	505,000	7,664,500
VOCs Removed in the Period (lbs)	3.61	4.09	4.85	4.17	3.66	6.75	3.77	0.19	10.79	6.54	9.17	6.83	64.42
Total VOCs Removed (lbs)	938.62	942.71	947.56	951.73	955.39	962.14	965.91	966.11	976.90	983.43	992.60	999.43	
Cumulative Water Treated (gallons)	68,588,500	69,418,500	70,176,500	70,974,500	71,747,500	72,545,900	73,385,900	73,643,900	74,241,900	74,561,000	75,092,000	75,597,000	

Date	1/26/10	2/25/10	3/24/10	4/20/10	5/24/10	6/22/10	7/26/10	8/26/10	9/24/10	10/20/10	11/18/10	12/28/10	Yearly Removal
Influent VOC Concentration (µg/l)	748	730	485	495	567	1,066	634	746	1,594	989	1,670	774	
Quantity Treated (gallons)	1,034,000	895,100	844,800	838,300	918,900	342,900	434,500	241,000	233,400	259,500	266,600	627,000	6,936,000
VOCs Removed in the Period (lbs)	6.45	5.45	3.42	3.46	4.35	3.05	2.30	1.50	3.10	2.14	3.71	4.05	42.98
Total VOCs Removed (lbs)	1,005.88	1,011.33	1,014.75	1,018.21	1,022.56	1,025.61	1,027.90	1,029.40	1,032.51	1,034.65	1,038.36	1,042.41	
Cumulative Water Treated (gallons)	76,631,000	76,890,450	77,149,900	77,988,200	78,907,100	79,250,000	79,684,500	79,925,500	80,158,900	80,418,400	80,685,000	81,312,000	

Date	1/26/11	2/25/11	3/29/11	4/20/11	5/27/11	6/28/11	7/28/11	8/26/11	9/29/11	10/21/11	11/18/11	12/28/11	Yearly Removal
Influent VOC Concentration (µg/l)	730	667	510	636	490	600	51	739	272	590	-	-	
Quantity Treated (gallons)	567,300	598,900	836,900	373,300	570,300	702,200	632,100	268,300	632,800	265,500	-	-	5,447,600
VOCs Removed in the Period (lbs)	3.45	3.33	3.56	1.98	2.33	3.51	0.27	1.65	1.44	1.31	-	-	22.84
Total VOCs Removed (lbs)	1,045.87	1,049.20	1,052.76	1,054.74	1,057.07	1,060.59	1,060.86	1,062.51	1,063.95	1,065.25	-	-	
Cumulative Water Treated (gallons)	81,879,300	82,478,200	83,315,100	83,688,400	84,258,700	84,960,900	85,593,000	85,861,300	86,494,100	86,759,600	-	-	

Table 1
Mass Removal of VOCs from Groundwater (1998 - 2013)
Former NOW Corporation Facility
Town of Clinton, New York

Date	1/26/12	2/25/12	3/29/12	4/20/12	5/27/12	6/12/12	7/18/12	8/22/12	9/20/12	10/26/12	11/28/12	12/27/12	Yearly Removal
Influent VOC Concentration (µg/l)	-	-	-	-	-	747	1,208	2,162	120	1,058	1,296	766	
Quantity Treated (gallons)	-	-	-	-	-	216,300	560,800	442,400	278,100	604,400	607,900	550,500	3,260,400
VOCs Removed in the Period (lbs)	-	-	-	-	-	1.35	5.65	7.98	0.28	5.33	6.57	3.52	30.68
Total VOCs Removed (lbs)	-	-	-	-	-	1,066.60	1,072.25	1,080.23	1,080.51	1,085.85	1,092.42	1,095.94	
Cumulative Water Treated (gallons)	-	-	-	-	-	86,975,900	87,536,700	87,979,100	88,257,200	88,861,600	89,469,500	90,020,000	

Date	1/30/13	2/27/13	3/27/13	4/23/13	5/28/13	6/26/13							Yearly Removal
Influent VOC Concentration (µg/l)	605	540	531	538	694	526							
Quantity Treated (gallons)	877,400	691,700	544,600	182,570	267,830	490,300							3,054,400
VOCs Removed in the Period (lbs)	4.43	3.12	2.41	0.82	1.55	2.15							14.48
Total VOCs Removed (lbs)	1,100.36	1,103.48	1,105.89	1,106.71	1,108.26	1,110.41							
Cumulative Water Treated (gallons)	90,897,400	91,589,100	92,133,700	92,316,270	92,584,100	93,074,400							

Total Water Treated to June 30, 2013	**93,074,400**	**gallons**
Total VOCs Removed	**1,110**	**lbs**

Table 2
Groundwater Elevation Table
NOW Corporation Site
NYSDEC Site No. 3-14-008
Town of Clinton, New York

Well ID	MP Elevation	6/26/13	
		Depth to Water (Ft below MP)	GW Elevation
MW-1	289.50	9.66	279.84
MW-2	332.51	26.19	306.32
MW-3D	312.83	24.40	288.43
MW-3S	312.51	22.31	290.20
MW-4S	298.29	21.03	277.26
MW-4D	298.16	28.40	269.76
MW-5	285.48	18.68	266.80
MW-6S	287.90	4.02	283.88
MW-6D	287.25	6.35	280.90
MW-7S	292.12	15.62	276.50
MW-7D	292.54	41.23	251.31
MW-12S	NA	8.90	NA
MW-12D	NA	13.23	NA
OW-1	307.75	45.83	261.92
OW-2	305.96	69.22	236.74
OW-6	294.81	5.05	289.76
IW-1	312.46	26.65	285.81
IW-2	304.56	36.75	267.81

Note: NA indicates data are not available.
MP denotes measuring point.

Table 3
Summary of Influent and Effluent Data
Sampling Date: June 26, 2013
NOW Corporation Site
NYSDEC Site No. 3-14-008
Town of Clinton, New York

Analytes/ Parameters	Total Influent	Effluent	Recovery Wells TW-1	Recovery Wells TW-2A	Recovery Wells TW-3	Effluent Limitations	(units)
Quantity treated, per day		16,907				Monitor	gallons
pH	6.8	6.9				6.5 to 8.5	standard units
Oil and Grease	<5.0	<5.0	NA	NA	NA	15	mg/L
Total Cyanide	<10	<10	NA	NA	NA	10	ug/L
TDS	**300**	**290**	NA	NA	NA	1000	mg/L
TSS	<10	<10	NA	NA	NA	50	mg/L
Aluminum, Total	<200	<200	NA	NA	NA	Monitor	ug/L
Arsenic, Total	<20	<20	NA	NA	NA	100	ug/L
Barium, Total	**67 J**	**70 J**	NA	NA	NA	Monitor	ug/L
Chromium	<20	<20	NA	NA	NA	400	ug/L
Copper	<25	<25	NA	NA	NA	24	ug/L
Iron	<200	<200	NA	NA	NA	600	ug/L
Mercury	<0.20	<0.20	NA	NA	NA	0.8	ug/L
Manganese	**78**	**40 J**	NA	NA	NA	Monitor	ug/L
Nickel	**2.1 BJ**	**1.7 BJ**	NA	NA	NA	200	ug/L
Zinc	**8.3 BJ**	**7.5 BJ**	NA	NA	NA	150	ug/L
1,1,1-Trichloroethane	**170**	<0.50	**2.5**	**310**	**2.1**	10	ug/L
1,1,2-Trichloroethane	<5.0	<0.50	<2.0	<10	<0.50	1.2	ug/L
1,1-Dichloroethane	**96**	<0.50	**26**	**150**	**12**	10	ug/L
1,1-Dichloroethene	**11**	<0.50	**8.0**	**17**	**1.6**	0.5	ug/L
1,2-Dichloroethane	<5.0	<0.50	<2.0	<10	<0.50	1.6	ug/L
Benzene	<5.0	<0.50	<2.0	<10	<0.50	1.4	ug/L
Chlorobenzene	<5.0	<0.50	<2.0	<10	<0.50	10	ug/L
Chloroethane	<5.0	<0.50	<2.0	<10	<0.50	10	ug/L
cis -1,2-Dichloroethene	**9.2**	<0.50	**2.7**	**18**	**0.30 J**	5	ug/L
Ethylbenzene	<5.0	<0.50	<2.0	<10	<0.50	10	ug/L
o-Xylene	<5.0	<0.50	<2.0	<10	<0.50	5	ug/L
m,p-Xylene	<5.0	<0.50	<2.0	<10	<0.50	10	ug/L
Tetrachloroethene	<5.0	<0.50	<2.0	<10	<0.50	1.4	ug/L
Toluene	<5.0	<0.50	<2.0	<10	<0.50	10	ug/L
trans -1,2-Dichloroethene	<5.0	<0.50	<2.0	<10	<0.50	5	ug/L
Trichloroethene	**240**	**0.33 J**	**44**	**400**	**12**	6	ug/L
Vinyl Chloride	<5.0	<0.50	<2.0	<10	<0.50	0.6	ug/L

Notes:

1) Detected concentrations are presented in ***bold*** *typeface, and are expressed in the units shown in far right column.*

2) Effluent concentration boxed in ***bold*** *denotes exceedance of effluent limitations.*

3) NA indicates not analyzed.

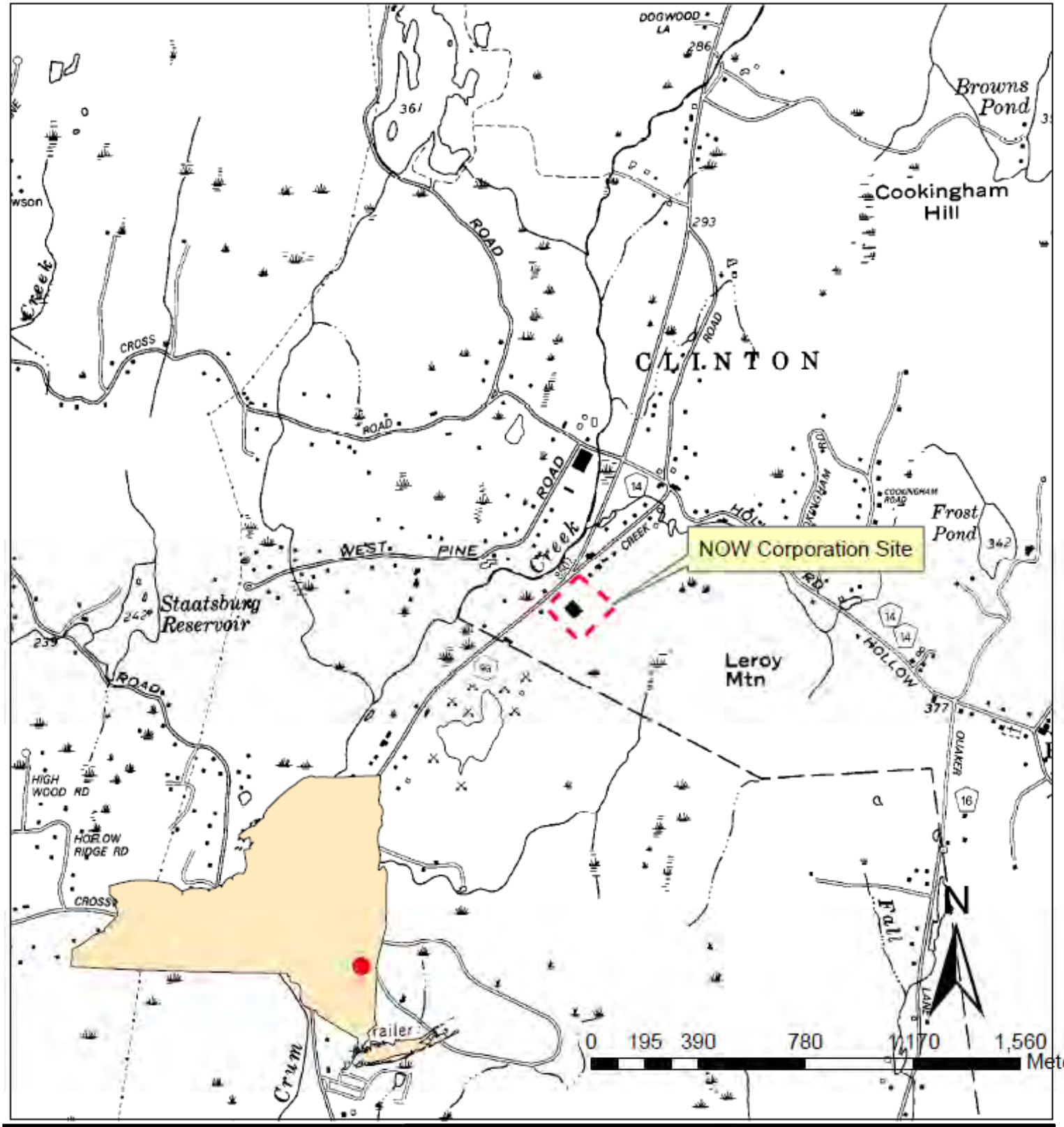
*4) "**J**" indicates an estimated concentration below the reporting limit (RL).*

*5) "**B**" denotes metal detected in method blank at concentration below the RL, but above the method detection limit.*

Table 4
Summary of June 2013 O&M Data
Sampling Date: June 26, 2013
NOW Corporation Site
NYSDEC Site No. 3-14-008
Town of Clinton, New York

Instrumentation/Readings:		**6/26/13**	**Units**
TW-1			
	Pumping Rate	NA	GPM
	Water Level Above Transducer	36.41	feet
	Flow Meter Reading	6,679,372	gallons
	Pump Pressure	8	psi
TW-2A			
	Pumping Rate	NA	GPM
	Water Level Above Transducer	38.14	feet
	Flow Meter Reading	0	gallons
	Pump Pressure	6	psi
TW-3			
	Pumping Rate	5	GPM
	Water Level Above Transducer	38.19	feet
	Flow Meter Reading	0	gallons
	Pump Pressure	70	psi
VFD Setting	Arrival	55	Hz
	Departure	55	Hz
Air Stripper			
	Stripper Blower Pressure	17	inches H_2O
	Air Temperature in Stripper	NA	°F
Effluent Flow			
	Effluent Flow this period (calculated)	490,300	gallons
	Total Effluent Flow (calculated)	93,074,400	gallons

Figures



N
W E
S

Source: NYSGIS Clearinghouse

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FIGURE 1
SITE LOCATION MAP

Former NOW Corporation Facility
Site No. 3-14-008

NOVEMBER 2013

60276639

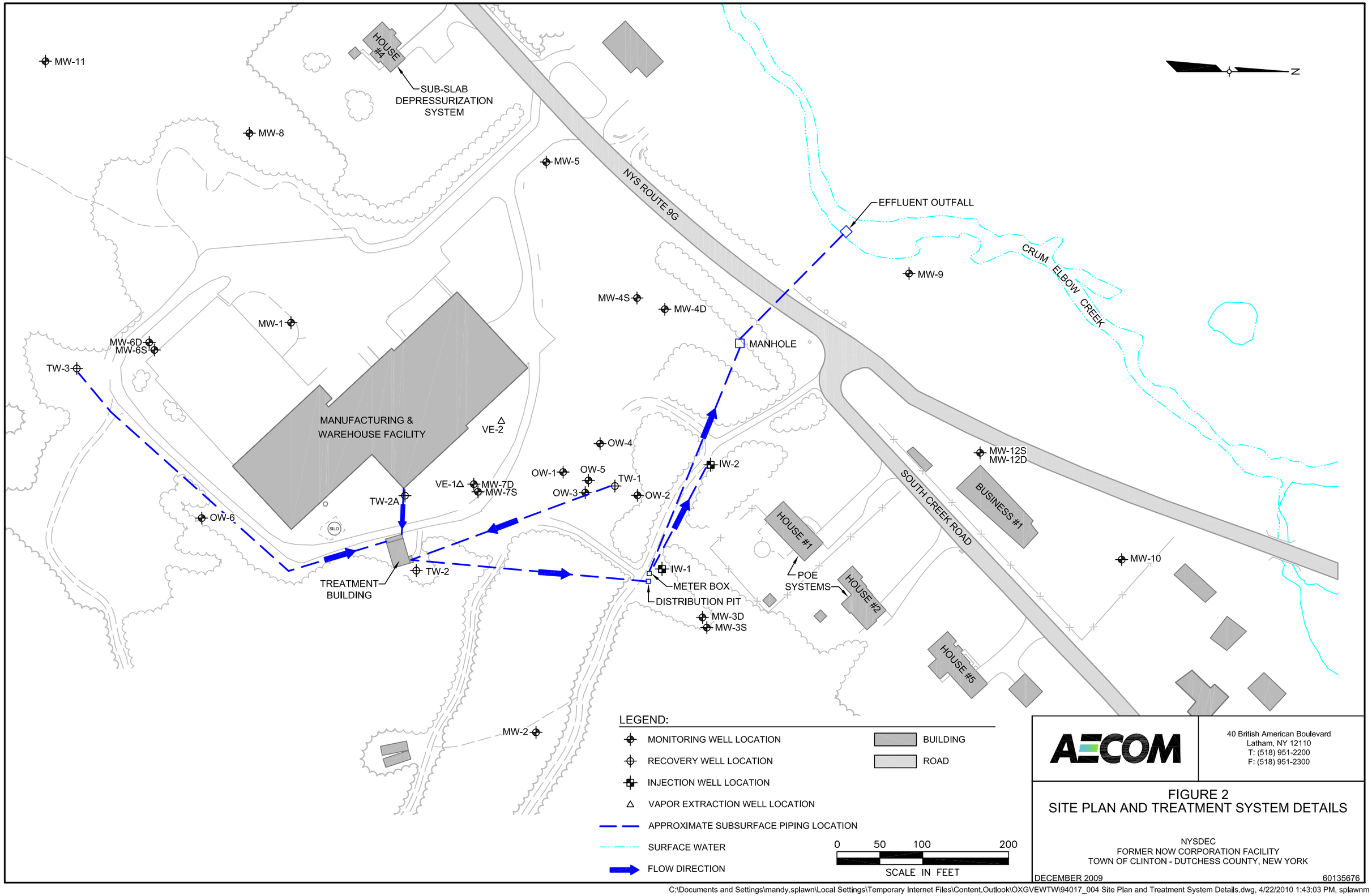

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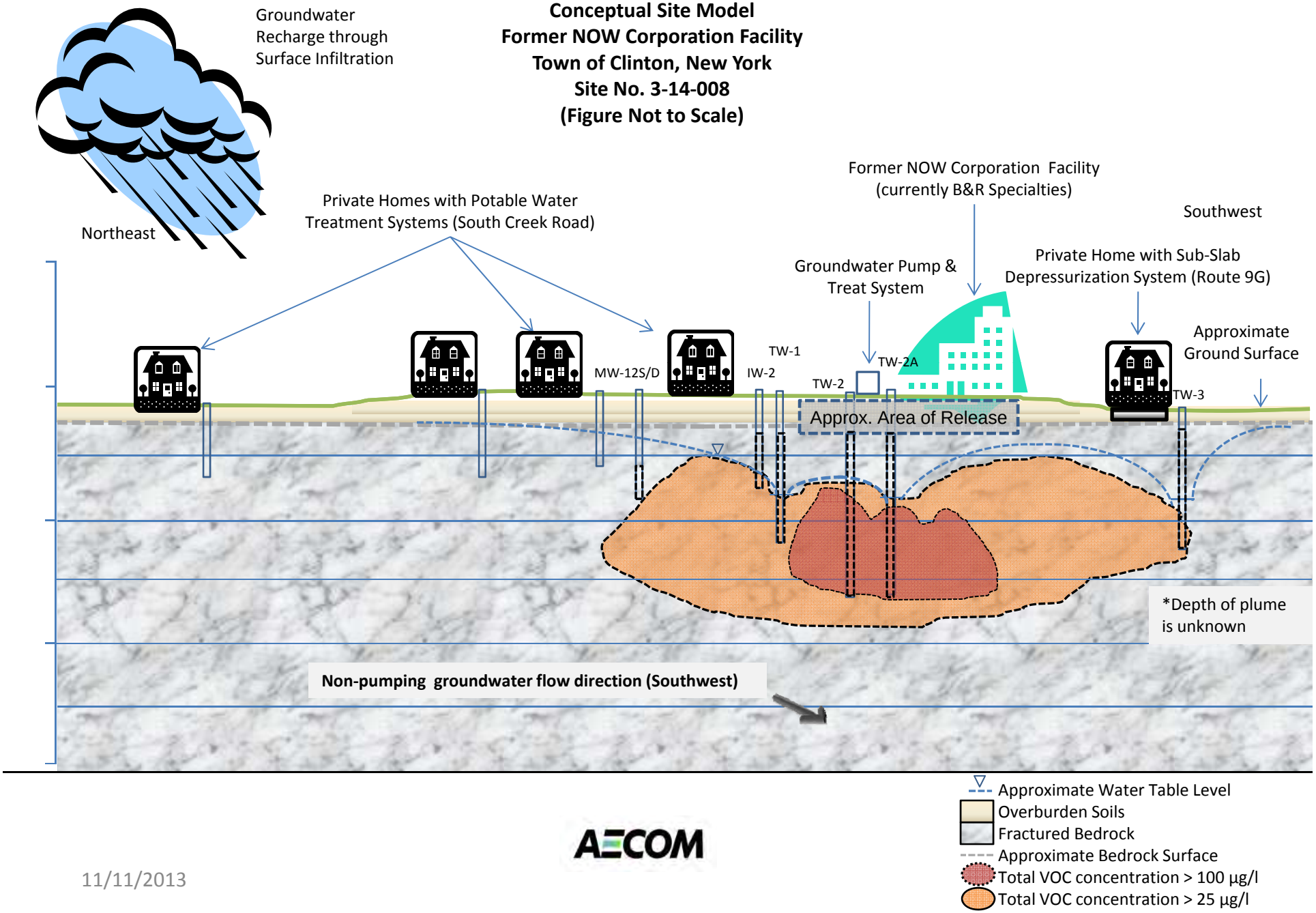
FIGURE 2
SITE PLAN AND TREATMENT SYSTEM DETAILS

NYSDEC
FORMER NOW CORPORATION FACILITY
TOWN OF CLINTON - DUTCHESS COUNTY, NEW YORK

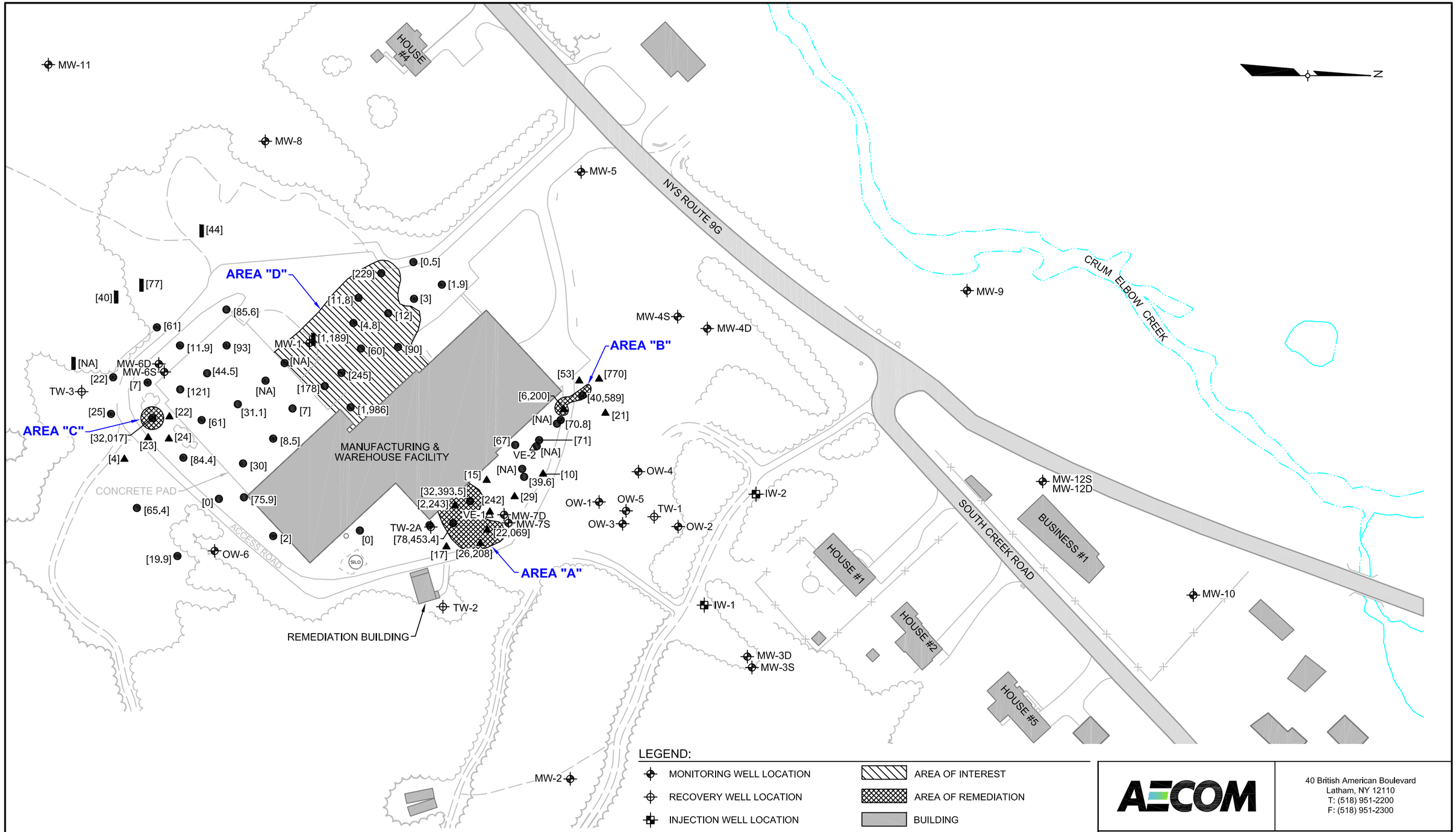
DECEMBER 2009 60135676

C:\Documents and Settings\mandy.splawn\Local Settings\Temporary Internet Files\Content.Outlook\OXGVEWTW\94017_004 Site Plan and Treatment System Details.dwg, 4/22/2010 1:43:03 PM, splawnm

Figure 3
Conceptual Site Model
Former NOW Corporation Facility
Town of Clinton, New York
Site No. 3-14-008
(Figure Not to Scale)



AECOM



0 50 100 200

SCALE IN FEET

NOTE:

1. SOIL SAMPLE RESULTS BASED ON ENGINEERING-SCIENCE FIGURE "SUBSURFACE SOIL ANALYTICAL DATA TOTAL VOC CONCENTRATIONS (ppb)".

LEGEND:

- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- INJECTION WELL LOCATION
- VAPOR EXTRACTION WELL LOCATION
- SOIL BORING LOCATION
- SOIL BORING LOCATION (JUNE 1995)
- TEST PIT LOCATION
- AREA OF INTEREST
- AREA OF REMEDIATION
- BUILDING
- ROAD
- SURFACE WATER
- [0.5] VOC CONCENTRATION (ppb)
- NA NOT ANALYZED

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FIGURE 4
SUBSURFACE SOIL ANALYTICAL DATA TOTAL VOC CONCENTRATIONS (1998)

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TOWN OF CLINTON - DUTCHESS COUNTY, NEW YORK

NOVEMBER 2013 60276639

L:\Group\earth\Latham NY Work\NOW Corporation\60276639_002 Subsurface Soil Analytical Data Total VOC Conc 1998.dwg, 11/21/2013 9:12:57 AM, Splawnm

Figure 5
Combined Influent Sampling Results (1998-2013)

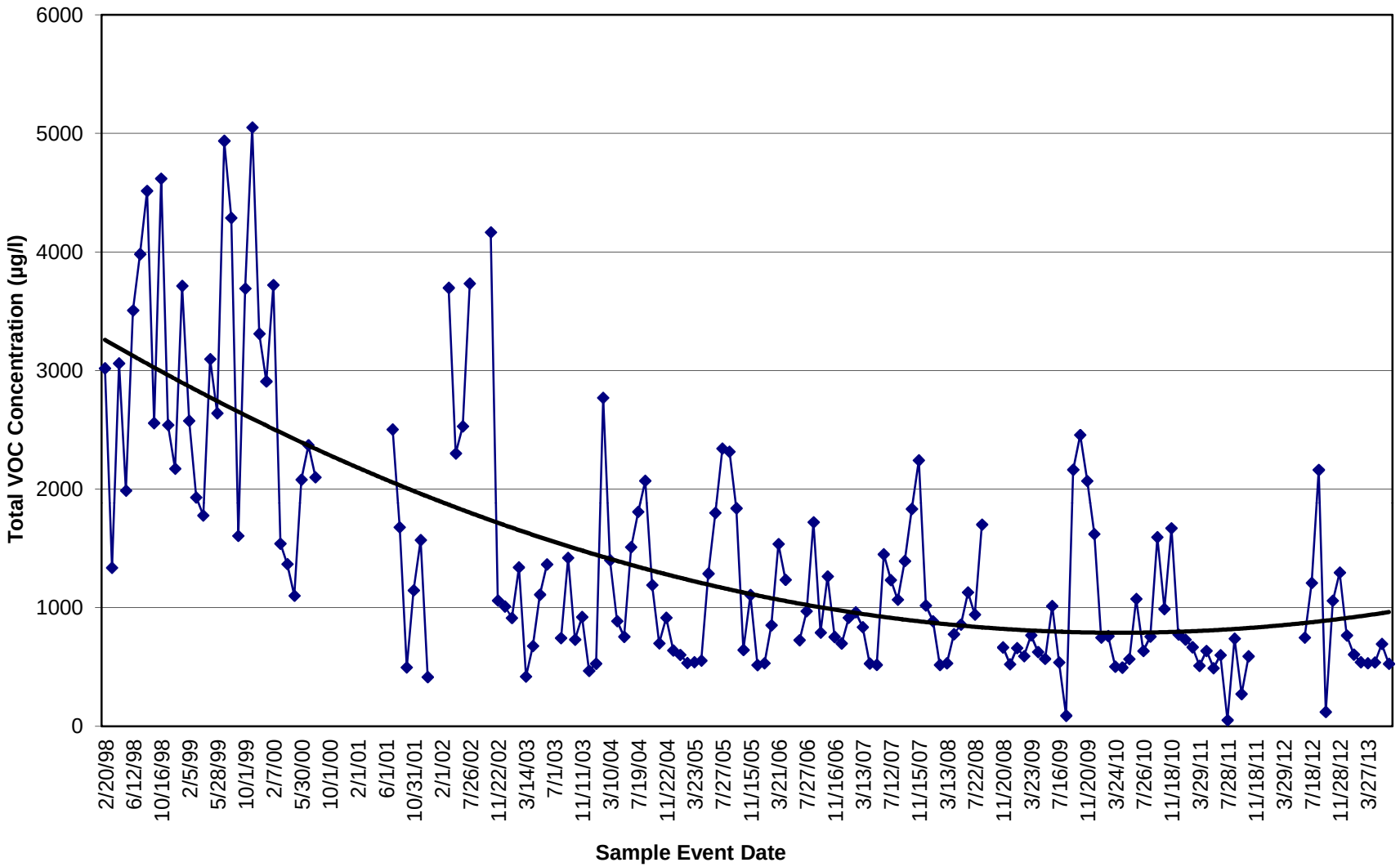
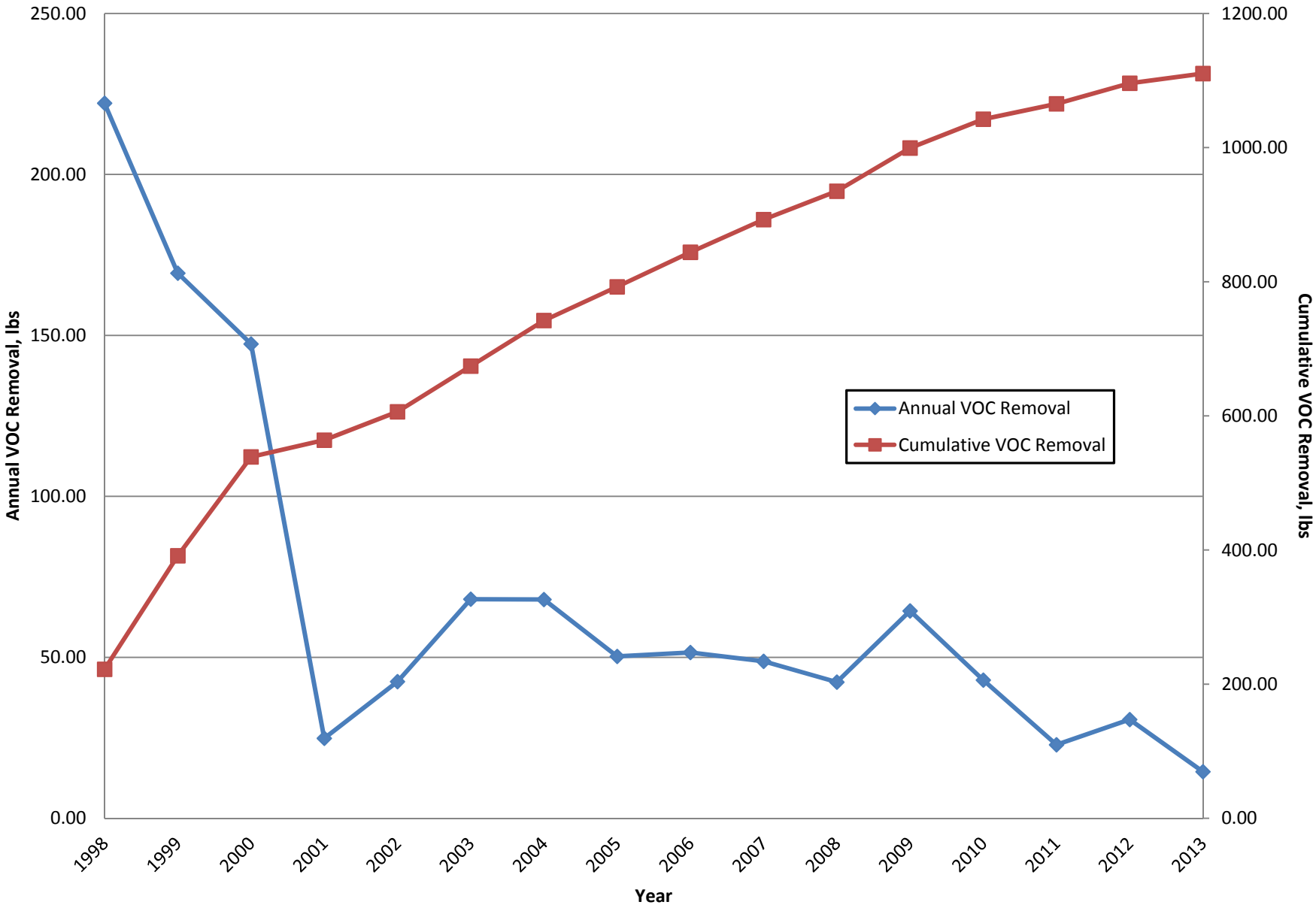


Figure 6 - Annual and Cumulative VOC Removal from Groundwater (1998-2013)



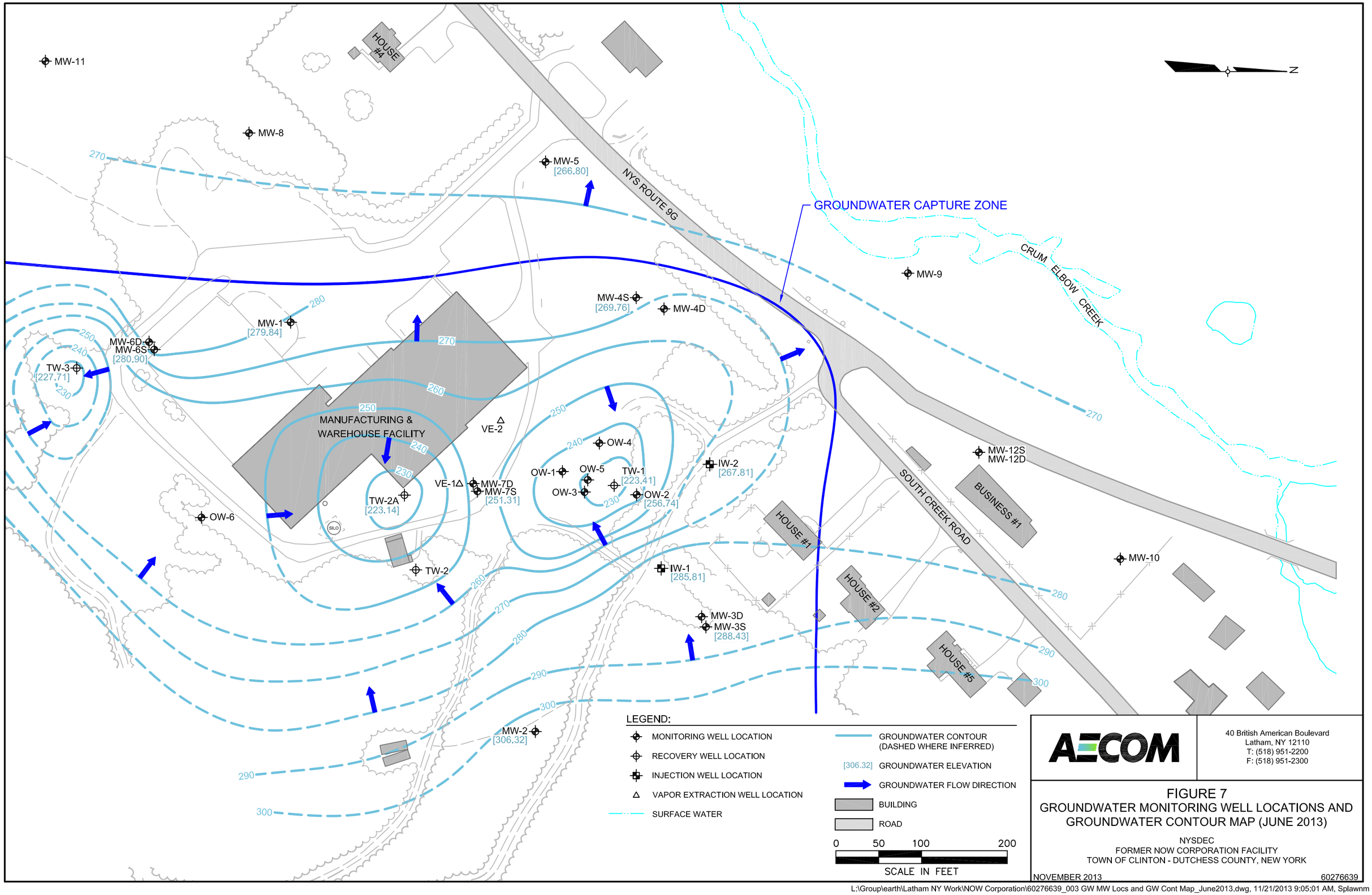


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FIGURE 7
GROUNDWATER MONITORING WELL LOCATIONS AND GROUNDWATER CONTOUR MAP (JUNE 2013)

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TOWN OF CLINTON - DUTCHESS COUNTY, NEW YORK

NOVEMBER 2013 60276639

L:\Group\earth\Latham NY Work\NOW Corporation\60276639_003 GW MW Locs and GW Cont Map_June2013.dwg, 11/21/2013 9:05:01 AM, Splawnm

MW-11
ND (05/28/2008)

MW-8
ND (05/28/2008)

HOUSE #4

MW-6S	Sample Date:	4/23/13
1,1,1-Trichloroethane	ND	
1,1-Dichloroethane	0.85	µg/L
1,1-Dichloroethene	ND	
Chloroethane	ND	
cis-1,2-Dichloroethene	0.32 J	µg/L
Trichloroethene	17	µg/L

MW-6D	Sample Date:	4/23/13
1,1,1-Trichloroethane	1.9	µg/L
1,1-Dichloroethane	12	µg/L
1,1-Dichloroethene	0.90	µg/L
Chloroethane	0.61	µg/L
cis-1,2-Dichloroethene	1.2	µg/L
Trichloroethene	7.8	µg/L

MW-6D
MW-6S

TW-3

TW-3	Sample Date:	4/23/13
1,1,1-Trichloroethane	2.3	µg/L
1,1-Dichloroethane	11	µg/L
1,1-Dichloroethene	1	µg/L
Chloroethane	ND	
cis-1,2-Dichloroethene	ND	
Trichloroethene	10	µg/L

MW-1

MW-1	Sample Date:	4/23/13
1,1,1-Trichloroethane	8.2	µg/L
1,1-Dichloroethane	15	µg/L
1,1-Dichloroethene	3.8	µg/L
Chloroethane	ND	
cis-1,2-Dichloroethene	12	µg/L
Trichloroethene	67 D	µg/L

MW-5	Sample Date:	05/29/2008
1,1,1-Trichloroethar	ND	
1,1-Dichloroethane	0.38 J	µg/L
1,1-Dichloroethene	ND	
Chloroethane	ND	
cis-1,2-Dichloroethe	ND	
Trichloroethene	ND	

MW-5

MW-4S	Sample Date:	4/23/13
1,1,1-Trichloroethane	ND	
1,1-Dichloroethane	1.9	µg/L
1,1-Dichloroethene	ND	
Chloroethane	0.85	µg/L
cis-1,2-Dichloroethene	ND	
Trichloroethene	ND	

MW-4S
MW-4D
ND (05/29/2008)

TW-1	Sample Date:	4/23/13
1,1,1-Trichloroethane	ND	
1,1-Dichloroethane	34	µg/L
1,1-Dichloroethene	7.3	µg/L
Chloroethane	ND	
cis-1,2-Dichloroethene	3.5	µg/L
Trichloroethene	45	µg/L

CRUM ELBOW CREEK

MW-9
ND (05/29/2008)

25
50
100
500

VE-2
VE-1
OW-1
OW-4
OW-5
OW-3
TW-1
OW-2
IW-2
IW-1
MW-7D
MW-7S
TW-2A
TW-2

TW-2A	Sample Date:	4/23/13
1,1,1-Trichloroethane	250	µg/L
1,1-Dichloroethane	120	µg/L
1,1-Dichloroethene	10 J	µg/L
Chloroethane	ND	
cis-1,2-Dichloroethene	12	µg/L
Trichloroethene	310	µg/L

MW-7D	Sample Date:	4/23/13
1,1,1-Trichloroethane	2.5/2.4*	µg/L
1,1-Dichloroethane	2.7/2.4*	µg/L
1,1-Dichloroethene	ND/ND	
Chloroethane	ND/ND	
cis-1,2-Dichloroethene	5.7/5.3*	µg/L
Trichloroethene	120 D/120 D	µg/L

MW-7S	Sample Date:	4/23/13
1,1,1-Trichloroethane	ND	
1,1-Dichloroethane	0.38 J	µg/L
1,1-Dichloroethene	ND	
Chloroethane	ND	
cis-1,2-Dichloroethene	3.4	µg/L
Trichloroethene	50 D	µg/L

ND (05/29/2008) MW-2

MW-12S ND (04/23/2013)
MW-12D

MW-12D	Sample Date:	4/23/13
1,1,1-Trichloroethane	ND	
1,1-Dichloroethane	12	µg/L
1,1-Dichloroethene	0.72	µg/L
Chloroethane	1.4	µg/L
cis-1,2-Dichloroethene	0.24 J	µg/L
Trichloroethene	1.4	µg/L

SOUTH CREEK ROAD

HOUSE #1
HOUSE #2
HOUSE #5

MW-10
ND (05/29/2008)

MW-3D ND (05/28/2008)
MW-3S ND (05/28/2008)

N

LEGEND:

- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- INJECTION WELL LOCATION
- VAPOR EXTRACTION WELL LOCATION
- BUILDING
- ROAD
- VOC ISOCONCENTRATION CONTOUR
- SURFACE WATER

0 50 100 200
SCALE IN FEET

MW-7S	Sample Date:	4/23/13
1,1,1-Trichloroethane	ND	
1,1-Dichloroethane	0.38 J	µg/L
1,1-Dichloroethene	ND	
Chloroethane	ND	
cis-1,2-Dichloroethene	3.4	µg/L
Trichloroethene	50 D	µg/L

VOC EXCEEDANCES IN GROUNDWATER
RED - EXCEEDANCE OF THE AMBIENT WATER QUALITY STANDARDS (AWQS)
GREEN - VOLATILE ORGANIC COMPOUNDS (VOCs) ARE DETECTED BUT DO NOT EXCEED THE AWQS
ND - VOCs WERE NOT DETECTED
J - DENOTES ANALYTICAL RESULT IS AN ESTIMATE

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FIGURE 8
GROUNDWATER RESULTS BY WELL (MAY 2008 AND APRIL 2013)

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TOWN OF CLINTON - DUTCHESS COUNTY, NEW YORK

NOVEMBER 2013 60276639

L:\Group\earth\Latham NY Work\NOW Corporation\60276639_004 GW Exceedances by Well_April2013.dwg, 11/20/2013 4:16:05 PM, Splawnm

Figure 9
Total VOC Concentrations by Well (1993-2013)

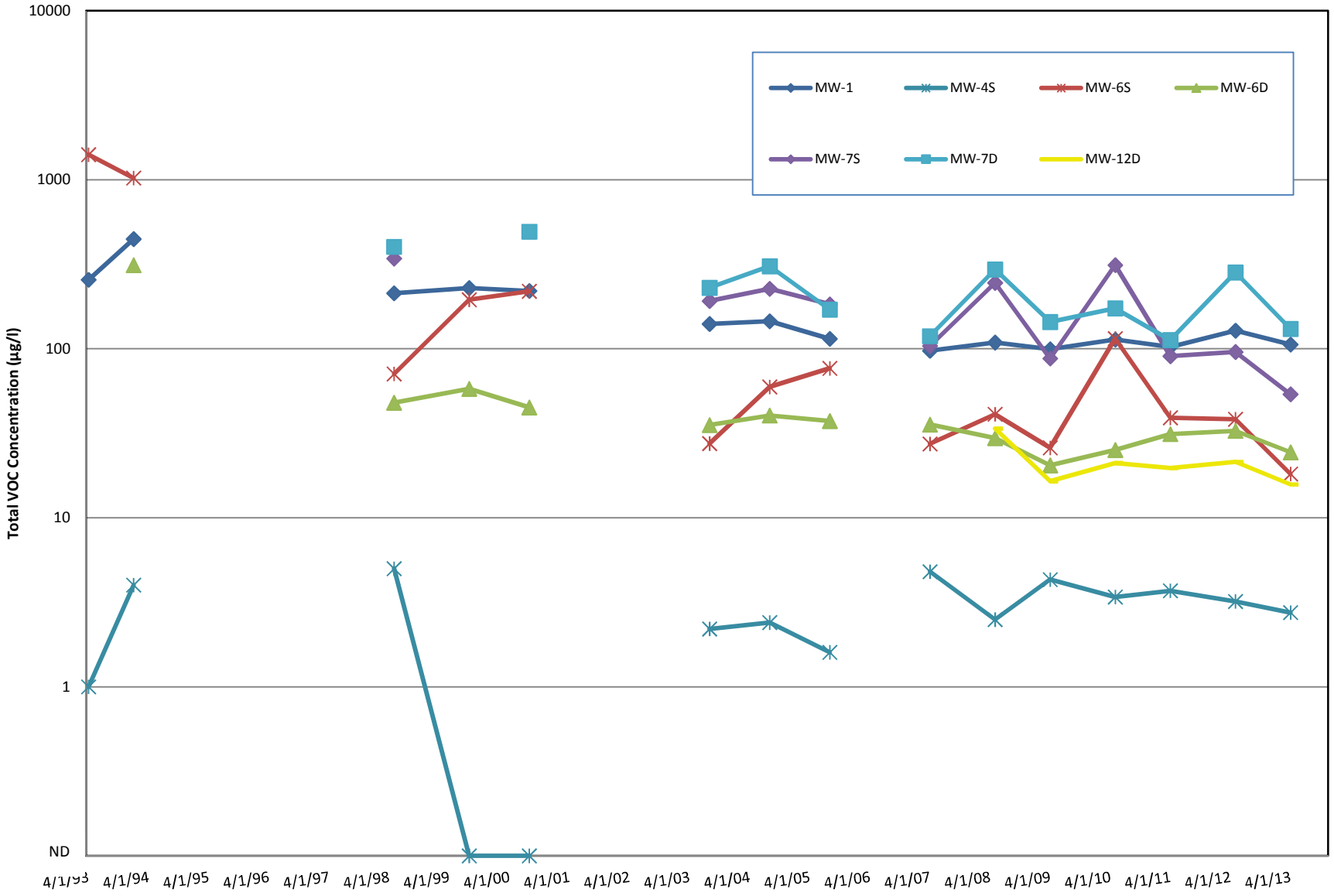


Figure 10
TW-1 Influent Sampling Results (1998-2013)

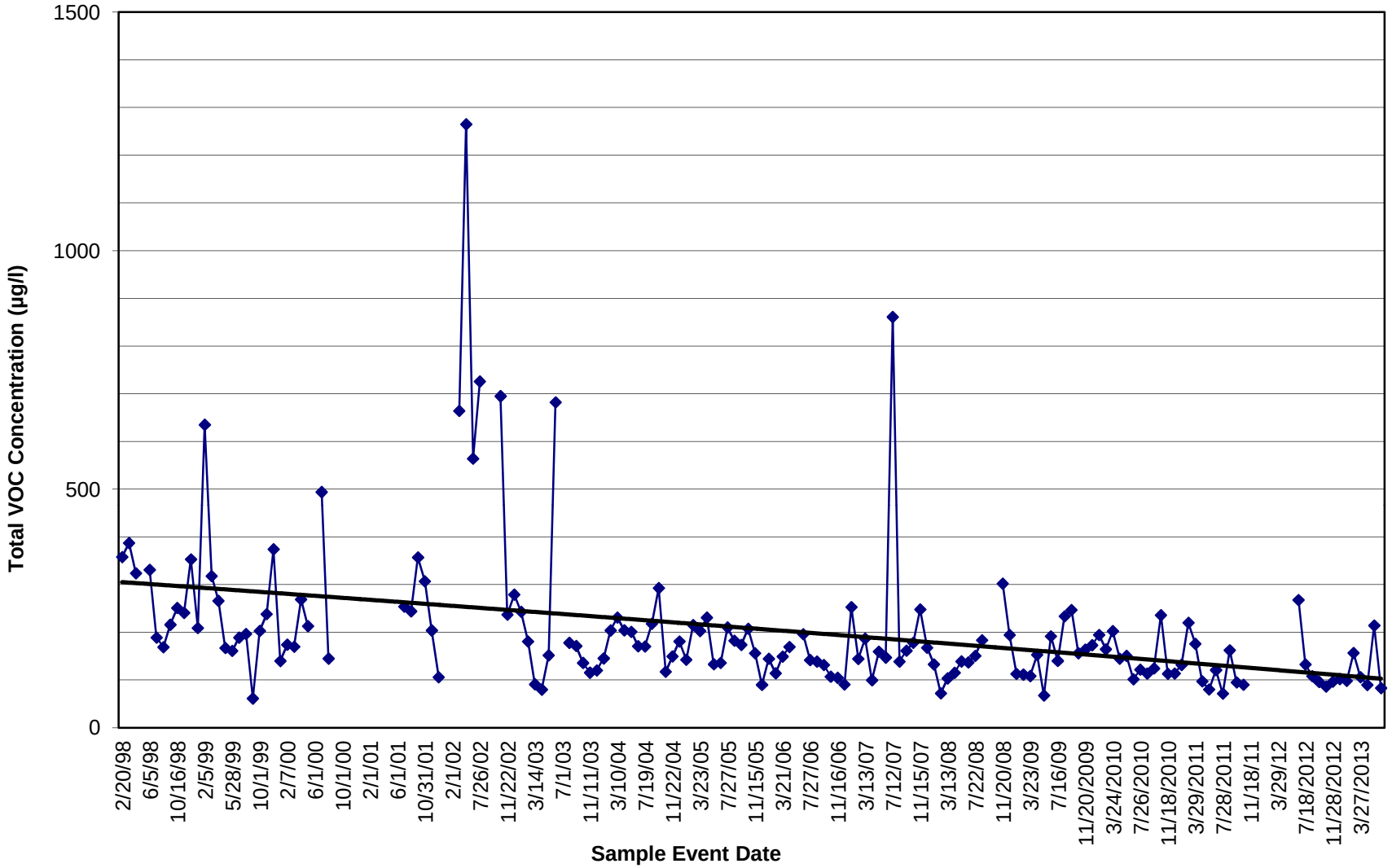


Figure 11
TW-2A Influent Sampling Results (1998-2013)

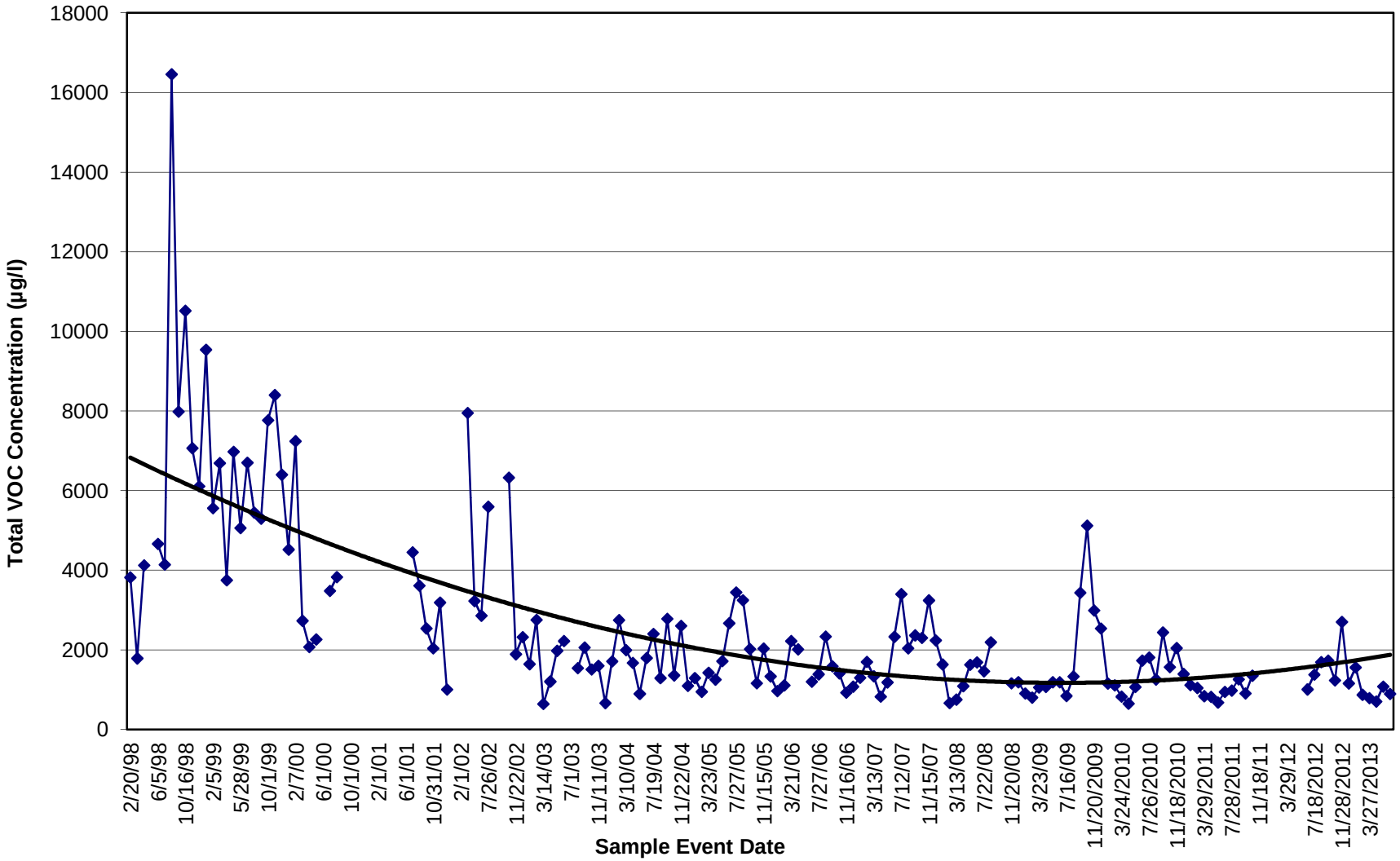


Figure 12
TW-3 Influent Sampling Results (1998-2013)

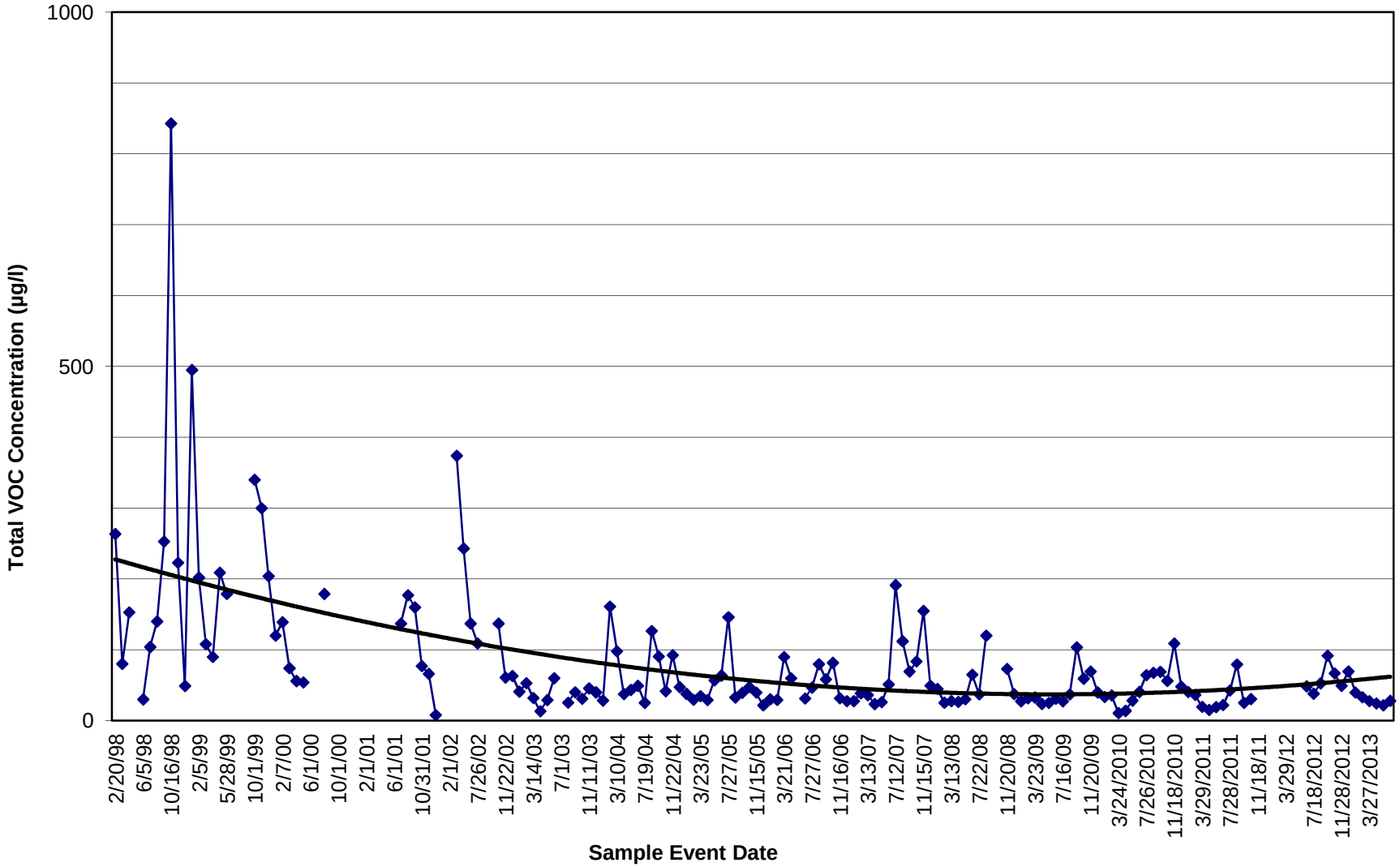


Figure 13
Total VOC Concentration vs. Transducer Head
TW-1

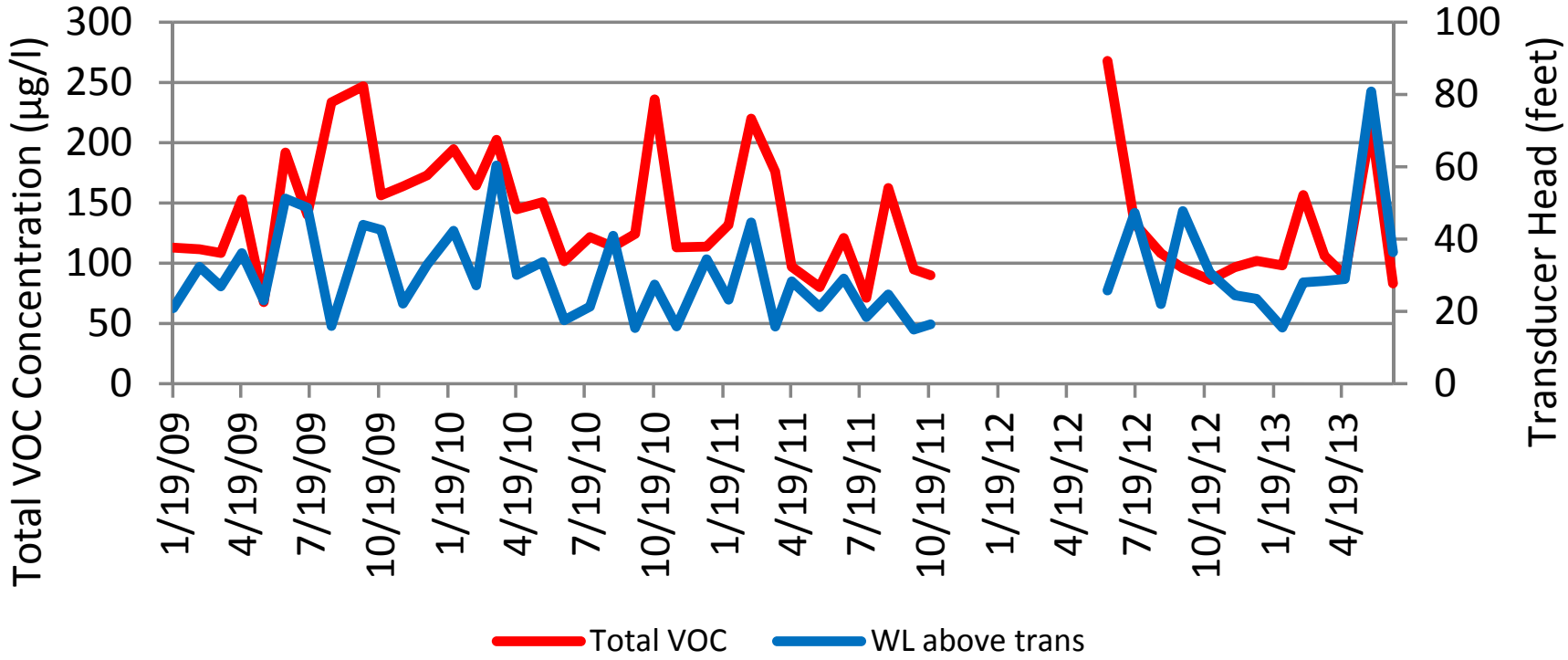


Figure 14
Total VOC Concentration vs. Transducer Head
TW-2A

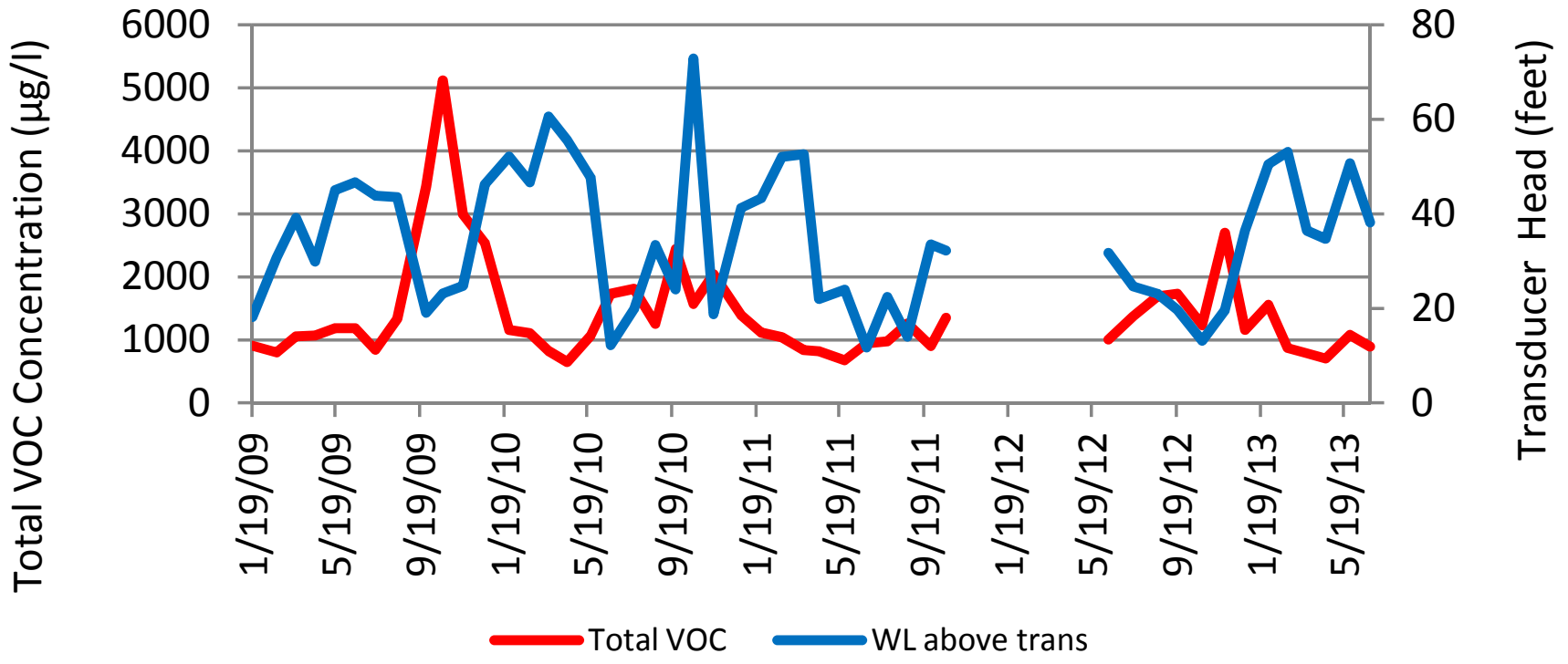
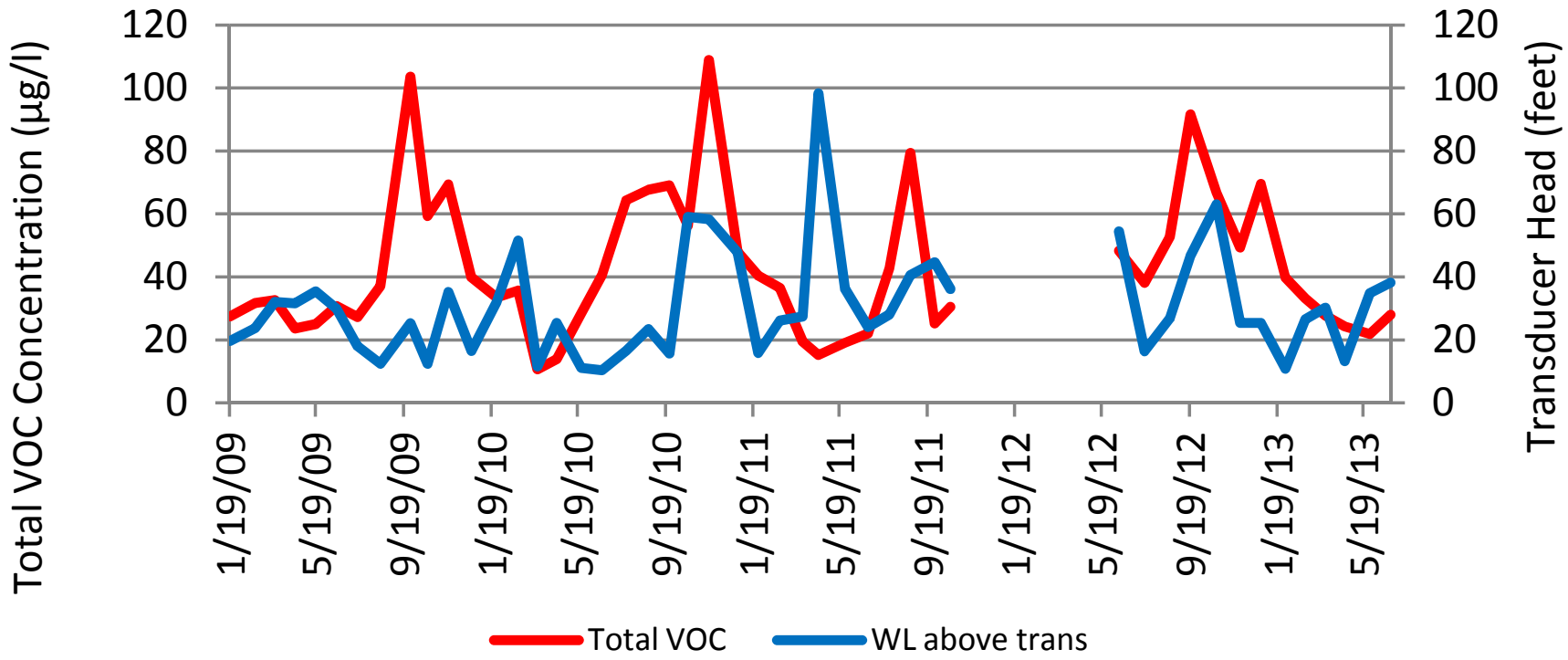


Figure 15
Total VOC Concentration vs. Transducer Head
TW-3



Appendix A

Summary of Total Influent Data (2011-2013)

Appendix A
Summary of Total Influent Data (2011-2013)
Former NOW Corporation Facility
Town of Clinton, New York

Sample ID Date	Influent 1/26/11	Influent 2/25/11	Influent 3/29/11	Influent 4/20/11	Influent 5/27/11	Influent 6/28/11	Influent 7/28/11	Influent 8/26/11	Influent 9/29/11	Influent 10/21/11	Influent 11/18/11	Influent 12/28/11
Analyte												
1,1,1-Trichloroethane	**310**	**260**	**190**	**230**	**190**	**240**	**4.7**	**280**	**100**	**210**	NS	NS
1,1,2-Trichloroethane	<8	<8	<8	<8	**<5**	<5	<0.50	<10	<8.0	<5.0	NS	NS
1,1-Dichloroethane	**110**	**110**	**83**	**100**	**81**	**98**	**19**	**130**	**52**	**100**	NS	NS
1,1-Dichloroethene	**<8**	**15**	**19**	**13**	**11**	**13**	**4.4**	**17**	**<8.0**	**9**	NS	NS
1,2-Dichloroethane	<8	<8	<8	<8	<5	<5	<0.50	<10	<8.0	<5.0	NS	NS
Benzene	<8	<8	<8	<8	<5	<5	<0.50	<10	<8.0	<5.0	NS	NS
Chlorobenzene	<8	<8	<8	<8	<5	<5	<0.50	<10	<8.0	<5.0	NS	NS
Chloroethane	<8	<8	<8	<8	<5	<5	<0.50	<10	<8.0	<5.0	NS	NS
cis-1,2-Dichloroethene	**10.0**	**12.0**	**8**	**13**	**8**	**9**	**1**	**12**	**<8.0**	**11**	NS	NS
Ethylbenzene	<8	<8	<8	<8	<5	<5	<0.50	<10	<8.0	<5.0	NS	NS
Methyl tert-butyl ether	<8	<8	<8	<8	<5	<5	<0.50	<10	NA	NA	NS	NS
o-Xylene	<8	<8	<8	<8	<5	<5	<0.50	<10	<8.0	<5.0	NS	NS
p&m-Xylene	<8	<8	<8	<8	<5	<5	<0.50	<10	<8.0	<5.0	NS	NS
Tetrachloroethene	<8	<8	<8	<8	<5	<5	<0.50	<10	<8.0	<5.0	NS	NS
Toluene	<8	<8	<8	<8	<5	<5	<0.50	<10	<8.0	<5.0	NS	NS
trans-1,2-Dichloroethene	<8	<8	<8	<8	<5	<5	<0.50	<10	<8.0	<5.0	NS	NS
Trichloroethene	**300**	**270**	**210**	**280**	**200**	**240**	**22**	**300**	**120**	**260**	NS	NS
Vinyl Chloride	<8	<8	<8	<8	<5	**<5**	<0.50	<10	<8.0	<5.0	NS	NS

Sample ID Date	Influent 1/26/12	Influent 2/25/12	Influent 3/29/12	Influent 4/20/12	Influent 5/27/12	Influent 6/12/12	Influent 7/18/12	Influent 8/22/12	Influent 9/20/12	Influent 10/26/12	Influent 11/28/12	Influent 12/27/12	Influent 1/30/13	Influent 2/27/13	Influent 3/27/13	Influent 4/23/13	Influent 5/28/13	Influent 6/26/13
Analyte																		
1,1,1-Trichloroethane	NS	NS	NS	NS	NS	**260**	**490**	**1,100**	**19**	**410**	**610**	**280**	**210**	**170**	**180**	**200**	**240**	**170**
1,1,2-Trichloroethane	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
1,1-Dichloroethane	NS	NS	NS	NS	NS	**160**	**230**	**380**	**46**	**190**	**230**	**140**	**120**	**97**	**100**	**92**	**140**	**96**
1,1-Dichloroethene	NS	NS	NS	NS	NS	**35**	**22**	**32**	<1	**33**	**21**	**19**	<10	**11**	<0.5	**6.3**	**11**	**11**
1,2-Dichloroethane	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
Benzene	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
Chlorobenzene	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
Chloroethane	NS	NS	NS	NS	NS	<4	**<10**	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
cis-1,2-Dichloroethene	NS	NS	NS	NS	NS	**12**	**16**	**<20**	**2.4**	**15**	**15**	**17**	**15**	**12**	**11**	**9.3**	**13**	**9.2**
Ethylbenzene	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
Methyl tert-butyl ether	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
p&m-Xylene	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
Tetrachloroethene	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
Toluene	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
trans-1,2-Dichloroethene	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0
Trichloroethene	NS	NS	NS	NS	NS	**280**	**450**	**650**	**53**	**410**	**420**	**310**	**260**	**250**	**240**	**230**	**290**	**240**
Vinyl Chloride	NS	NS	NS	NS	NS	<4	<10	<20	<1	<10	<10	<10	<10	<10	<0.5	<5	<5	<5.0

Notes:

1) Detected Concentrations are in **bold**, in units of micrograms per liter (µg/L).

2) ND = Not Detected

3) NA = Not analyzed

4) "**J**" indicates an estimated concentration.

5) NS = Not Sampled

Appendix B

Groundwater Analytical Data Summary (1993-2013)

Appendix B

Groundwater Analytical Data Summary
NOW Corporation
NYSDEC Site No. 3-14-008
Town of Clinton, New York

	MW-1															MW-2									
Analytes/Standards**	**4/27/93**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/28/08**	**4/27/09**	**5/27/10**	**4/19/11**	**5/8/12**	**4/23/13**	**4/27/93**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/29/08**
1,1,1-Trichloroethane/5	**75**	**150**	**57**	**33**	**40**	**24**	**19**	**8.3**	**11**	**9**	**8.1**	**8.5**	**8.2**	**28/25 ***	**8.2**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane/1	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane/5	**50**	**50**	**30**	**66**	**31**	**17**	**22**	**25**	**13**	**16**	**10**	**16**	**13**	**16/15 ***	**15**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene/5	**6**	**6**	**5**	ND	ND	**3**	**4.5**	**6.1**	**2.9**	**2.8**	**1.4 J**	**2.9**	**2.4**	**3.1/2.8 ***	**3.8**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane/0.6	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Benzene/1	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane/5	**8**	**6**	ND	ND	ND	**1.3**	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene/5	**27**	**32**	**20**	ND	**29**	**15**	**20**	**18**	**13**	**14**	**12**	**12**	**11**	**9.0/8.9 ***	**12**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene/5	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	**3**	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene/5	**2**	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	**3**	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	**0.22 J**	ND	ND	ND	ND/ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene/5	**88**	**200**	**100**	**130**	**120**	**80**	**79**	**56**	**56 D**	**67**	**68**	**74 D**	**68**	**72/67 ***	**67 D**	ND	**2**	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride/2	*N/A*	**2**	**1**	ND	ND	ND	**1**	**1.1**	**1.4**	ND	ND	ND	ND	ND/ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VOCs	256	446	213	229	220	140.3	145.5	114.5	97.3	109.02	99.5	113.4	102.6	128.1/118.7 *	106.0	6	2	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
1) Detected concentrations are shown in **bold typeface**, in units of ug/L.
2) ND = Not Detected
3) *N/A* = Not Analyzed (either well was effectively dry on date shown, or indicated analyte was not reported)
4) * = Duplicate sample result.
5) MW-6S, 7S & 7D were dry on 8/25/05. They were sampled on the date shown at the top of the columns.
6) D = denotes analytical result for a diluted sample.
7) J = denotes analytical result is an estimate.
8) ** = Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1), ug/L
9) Shaded cell indicates exceedance of Ambient Water Quality Standard
10) May 2012 Sampling Event - groundwater recovery wells had been inactive since October 2011.

Appendix B

Groundwater Analytical Data Summary
NOW Corporation
NYSDEC Site No. 3-14-008
Town of Clinton, New York

	MW-3D										MW-3S									
Analytes/Standards**	**4/27/93**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/28/08**	**1/12/94**	**5/8/98**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/28/08**
1,1,1-Trichloroethane/5	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane/1	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND/ND*	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane/5	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane/0.6	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND/ND*	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene/1	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND/ND*	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND/ND*	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane/5	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND/ND*	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene/5	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND/ND*	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND/ND*	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene/5	**1**	*N/A*	ND	ND	ND	ND	ND	ND	ND/ND*	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND/ND*	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene/5	**0.7**	**3**	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride/2	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VOCs	1.7	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
1) Detected concentrations are shown in **bold typeface**, in units of ug/L.
2) ND = Not Detected
3) *N/A* = Not Analyzed (either well was effectively dry on date shown, or indicated analyte was not reported)
4) * = Duplicate sample result.
5) MW-6S, 7S & 7D were dry on 8/25/05. They were sampled on the date shown at the top of the columns.
6) D = denotes analytical result for a diluted sample.
7) J = denotes analytical result is an estimate.
8) ** = Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1), ug/L
9) Shaded cell indicates exceedance of Ambient Water Quality Standard
10) May 2012 Sampling Event - groundwater recovery wells had been inactive since October 2011.

Appendix B

Groundwater Analytical Data Summary
NOW Corporation
NYSDEC Site No. 3-14-008
Town of Clinton, New York

	MW-4S															MW-4D								
Analytes/Standards**	**4/27/93**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/29/08**	**4/27/09**	**5/27/10**	**4/19/11**	**5/8/12**	**4/23/13**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/29/08**
1,1,1-Trichloroethane/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	**27**	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane/1	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane/5	ND	**4**	**5**	ND	ND	**2.2**	**1.6**	**1**	**2.3**	**2.5**	**2.5/2.4***	**2**	**2.2**	**2.0**	**1.9**	ND	ND	**68**	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane/0.6	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Benzene/1	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane/5	ND	ND	ND	ND	ND	ND	**0.8**	**0.6**	**2.5**	ND	**1.5/1.4***	**1.4**	**1.5**	**1.2**	**0.85**	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene/5	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene/5	**1**	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.31 J**/ND*	ND	ND	ND	ND	ND	ND	**100**	ND	ND	ND	ND	ND	ND
Vinyl Chloride/2	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VOCs	1	4	5	ND	ND	2.2	2.4	1.6	4.8	2.5	4.05	3.4	3.7	3.2	2.75	ND	ND	195	ND	ND	ND	ND	ND	ND

Notes:
1) Detected concentrations are shown in **bold typeface**, in units of ug/L.
2) ND = Not Detected
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9) Shaded cell indicates exceedance of Ambient Water Quality Standard
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Appendix B

Groundwater Analytical Data Summary
NOW Corporation
NYSDEC Site No. 3-14-008
Town of Clinton, New York

	MW-5										MW-6S													
Analytes/Standards**	**4/27/93**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/29/08**	**4/27/93**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**10/19/05**	**4/24/07**	**5/28/08**	**4/27/09**	**5/27/10**	**4/19/11**	**5/8/12**	**4/23/13**
1,1,1-Trichloroethane/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**710**	**510**	**23**	ND	**45**	**2.5**	**7.6**	**12**	**4**	**3.7**	**2.3**	**11**	**3.8**	**8.5**	ND
1,1,2-Trichloroethane/1	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.38 J**	**57**	**39**	**3**	ND	**14**	ND	**2.7**	**4.3**	**1.3**	**1.9**	**0.93**	**18**	**2.9**	**3**	**0.85**
1,1-Dichloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**11**	**3**	ND	ND	ND	ND	**1.3**	**1.1**	**0.38 J**	**0.91**	**0.33 J**	**2.8**	**0.73**	ND	ND
1,2-Dichloroethane/0.6	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene/1	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**17**	**12**	**2**	ND	ND	ND	**0.9**	**2.2**	**0.69**	**0.49 J**	**0.38 J**	**1.1**	**0.64**	**1.8**	**0.32 J**
Ethylbenzene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene/5	**2**	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene/5	**2**	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene/5	ND	**2**	ND	ND	ND	ND	ND	ND	ND	ND	**610**	**460**	**43**	ND	**160**	**25**	**47**	**57**	**21**	**34**	**22**	**82 D**	**31**	**25**	**17**
Vinyl Chloride/2	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VOCs	4	2	ND	ND	ND	ND	ND	ND	ND	0.38	1408	1024	71	ND	219	27.5	59.5	76.6	27.37	41	25.94	114.9	39.07	38.3	18.17

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Appendix B

Groundwater Analytical Data Summary
NOW Corporation
NYSDEC Site No. 3-14-008
Town of Clinton, New York

	MW-6D														MW-7S										
Analytes/Standards**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/28/08**	**4/27/09**	**5/27/10**	**4/19/11**	**5/8/12**	**4/23/13**	**5/8/98**	**8/1/99**	**8/27/03**	**8/24/04**	**10/19/05**	**4/24/07**	**5/29/08**	**4/27/09**	**5/27/10**	**4/19/11**	**5/8/12**	**4/23/13**
1,1,1-Trichloroethane/5	**160**	**13**	ND	**7**	**5.8**	**3**	**1.2**	**4.1**	**1.8**	**1.1**	**2.3**	**3.3**	**3.1**	**1.9**	**34**	*N/A*	**8.5/8.6***	**13**	**12**	**5.4**	**2.9**	ND	**12**	**3**	ND	ND
1,1,2-Trichloroethane/1	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane/5	**140**	**20**	**52**	ND	**16**	**26**	**26**	**17**	**18**	**11**	**13**	**15**	**19**	**12**	**11**	*N/A*	**3.2/3***	**6.4**	**2.4**	**1.7**	**2.2**	ND	**7.3**	ND	ND	**0.38 J**
1,1-Dichloroethene/5	**1**	ND	ND	**30**	**1.1**	**1.9**	**1.6**	**1.7**	**1.6**	**0.64**	**1.4**	**1.6**	**1.8**	**0.90**	ND	*N/A*	ND/ND*	**0.9**	ND	ND	**0.51**	ND	**0.95**	ND	ND	ND
1,2-Dichloroethane/0.6	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene/1	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene/5	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane/5	ND	ND	ND	ND	ND	**0.6**	**0.8**	**3.4**	ND	**0.94**	ND	**1.6**	**1.8**	**0.61**	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene/5	**0.7**	**2**	ND	ND	**1.5**	**1.4**	**1.2**	**1.2**	**1.1**	**0.95**	**1**	**1.2**	**1.0**	**1.2**	**17**	*N/A*	**20/20***	**16**	**9**	**5.9**	**9.7**	**5.6**	**31**	**5.4**	**4.7**	**3.4**
Ethylbenzene/5	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene/5	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene/5	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	**0.26J**	ND	ND	ND	ND	ND
Toluene/5	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene/5	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene/5	**11**	**13**	**6**	**8**	**11**	**7.4**	**6.6**	**8.2**	**7.1**	**5.8**	**7.5**	**8.6**	**6**	**7.8**	**280**	*N/A*	**160/160***	**190**	**160**	**91 D**	**230**	**82**	**260 D**	**82**	**91**	**50 D**
Vinyl Chloride/2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND/ND*	ND	ND	ND	ND	ND	1.4	ND	ND	ND
TOTAL VOCs	312.7	48	58	45	35.4	40.3	37.4	35.6	29.6	20.43	25.2	31.3	32.7	24.41	342	*N/A*	191.7	226.3	183.4	104	245.57	87.6	312.65	90.4	95.7	53.78

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Appendix B

Groundwater Analytical Data Summary
NOW Corporation
NYSDEC Site No. 3-14-008
Town of Clinton, New York

	MW-7D													MW-8								
Analytes/Standards**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**10/19/05**	**4/24/07**	**5/29/08**	**4/27/09**	**5/27/10**	**4/19/11**	**5/8/12**	**4/23/13**	**4/27/93**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/28/08**
1,1,1-Trichloroethane/5	**15**	*N/A*	**85**	**12**	**21/22***	**5.6**	**2**	**22/22***	ND	**5.4/5.3***	ND/ND*	ND	**2.5/2.4***	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane/1	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	ND/ND*	ND	ND/ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane/5	**34**	*N/A*	ND	**17**	**21/21***	**7.5**	**2.5**	**38/37***	ND	**5.9/5.7***	ND/ND*	**23**	**2.7/2.4***	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene/5	**4**	*N/A*	**28**	**2.4**	**4.7/4.7***	**1.3**	**0.73**	**4.6/5.2***	ND	**0.93/1.2***	ND/ND*	ND	ND/ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane/0.6	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	ND/ND*	ND	ND/ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene/1	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	ND/ND*	ND	ND/ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene/5	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	ND/ND*	ND	ND/ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane/5	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	ND/ND*	ND	ND/ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene/5	**8**	*N/A*	ND	**8.1**	**11/11***	**6.3**	**3.5**	**10/9.7***	**4.1 J**	**6.4/5.9***	**3.5/2.7***	ND	**5.7/5.3***	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene/5	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	ND/ND*	ND	ND/ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene/5	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	ND/ND*	ND	ND/ND	**0.8**	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene/5	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	ND/ND*	ND	ND/ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene/5	ND	*N/A*	ND	ND	ND/ND*	ND	ND	**0.25J/0.22J**	ND	ND/ND*	ND/ND*	ND	**0.25 J/ND**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene/5	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	**9.3/8***	ND	ND/ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene/5	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	ND/ND*	ND	ND/ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene/5	**340**	*N/A*	**380**	**190**	**250/260***	**150**	**110 D**	**220/220***	**140**	**150/160 D***	**110/92***	**260**	**120 D/110 D**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride/2	ND	*N/A*	ND	ND	ND/ND*	ND	ND	ND/ND*	ND	ND/ND*	ND/ND*	ND	ND/ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VOCs	401	*N/A*	493	229.5	312.7	170.7	118.73	294.49	144.1	173.37	112.75	283	131.15	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Groundwater Analytical Data Summary
NOW Corporation
NYSDEC Site No. 3-14-008
Town of Clinton, New York

	MW-9										MW-10									
Analytes/Standards**	**4/27/93**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/29/08**	**4/27/93**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/29/08**
1,1,1-Trichloroethane/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2**	**2**	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane/1	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**17**	**9**	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane/0.6	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Benzene/1	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene/5	**1**	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene/5	**2**	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	**1**	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene/5	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene/5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride/2	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND	*N/A*	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VOCs	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	11	ND	ND	ND	ND	ND	ND	ND	ND

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Appendix B

Groundwater Analytical Data Summary
NOW Corporation
NYSDEC Site No. 3-14-008
Town of Clinton, New York

	MW-11									MW-12S						MW-12D					
Analytes/Standards**	**1/12/94**	**5/8/98**	**8/1/99**	**8/18/00**	**8/27/03**	**8/24/04**	**8/25/05**	**4/24/07**	**5/28/08**	**5/29/08**	**4/27/09**	**5/27/10**	**4/19/11**	**5/8/12**	**4/23/13**	**5/29/08**	**4/27/09**	**5/27/10**	**4/19/11**	**5/8/12**	**4/23/13**
1,1,1-Trichloroethane/5	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	**0.24 J**	ND	ND	ND	**0.99**	ND
1,1,2-Trichloroethane/1	*N/A*	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane/5	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	**25**	**11**	**13**	**14**	**15**	**12**
1,1-Dichloroethene/5	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	**2**	**1.5**	**1.8**	**1.4**	**1.6**	**0.72**
1,2-Dichloroethane/0.6	*N/A*	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene/1	*N/A*	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene/5	*N/A*	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane/5	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	**4.6**	**2**	**4.5**	**2.9**	**2.0**	**1.4**
cis-1,2-Dichloroethene/5	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	**0.25 J**	**0.25 J**	**0.30 J**	ND	ND	**0.24 J**
Ethylbenzene/5	*N/A*	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene/5	*N/A*	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene/5	*N/A*	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene/5	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene/5	*N/A*	ND	ND	ND	ND	ND	ND/ND*	ND	ND	**0.31 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene/5	*N/A*	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene/5	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	**1.6**	**1.7**	**1.5**	**1.4**	**1.8**	**1.4**
Vinyl Chloride/2	ND	ND	ND	ND	ND	ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VOCs	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.31	ND	ND	ND	ND	ND	33.69	16.45	21.1	19.7	21.39	15.76

Notes:
1) Detected concentrations are shown in **bold typeface**, in units of ug/L.
2) ND = Not Detected
3) *N/A* = Not Analyzed (either well was effectively dry on date shown, or indicated analyte was not reported)
4) * = Duplicate sample result.
5) MW-6S, 7S & 7D were dry on 8/25/05. They were sampled on the date shown at the top of the columns.
6) D = denotes analytical result for a diluted sample.
7) J = denotes analytical result is an estimate.
8) ** = Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1), ug/L
9) Shaded cell indicates exceedance of Ambient Water Quality Standard
10) May 2012 Sampling Event - groundwater recovery wells had been inactive since October 2011.

Appendix C

Recent Point-of-Entry Raw Water Analytical Summary (2011-2013)

Appendix C
Recent Point-of-Entry Raw Water Analytical Summary (2011-2013)
Former NOW Corporation Facility
Town of Clinton, New York

Location/ COC	06/14/11	12/21/11	06/20/12	12/17/12	06/18/13
House #1					
Flow Reading	689,630	721,520	747,540	780,160	804,100
1,1-Dichloroethane	ND	ND	ND	ND	ND
Trichloroethene	0.56	3.9	7.9	1.9	3.4
Business #1					
No Flow Meter					
1,1-Dichloroethane	11	Unable to	26	Unable to	2.6
1,1- Dichloroethene	3.4	sample;	4.6	sample;	0.60
cis1,2-dichloroethene		closed for	1.3	closed for	ND
1,1,1-Trichloroethane		the season.	4.7	the season.	ND
Trichloroethene	4.5		12		0.74
Chloroethane	ND		ND		ND
House #3					
Flow Reading	558,900	573,860	587,380	600,170	601,420
1,1-Dichloroethane	0.59	0.85	0.77	ND	0.51
Chloroform	ND	ND	ND	ND	ND
Acetone	ND	ND	ND	ND	ND
House #2					
Flow Reading	346,110	358,940	371,710	383,060	359,150
Trichloroethene	ND	ND	ND	ND	ND

Notes:
1) Concentrations in micrograms per liter (µg/L).
2) ND indicates below detection limit
3) Results are shown only for detected analytes

Appendix D

Summary of Point-of-Entry Treatment System Data (2013)

Appendix D

Summary of Point-of-Entry Treatment System Data (2013)

Former NOW Corporation Facility
Town of Clinton, New York
Sample Date: 6/18/13

Compound	House #1 - R	House #1 - I	House #1 - F	Business #1 - R	House #3 - R	House #3 - I	House #3 - F	House #2 - R	House #2 - I	House #2 - F
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1- Dichloroethane	ND	ND	ND	**2.6**	**0.51**	ND	ND	ND	ND	ND
1,1- Dichloroethene	ND	ND	ND	**0.60**	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	**3.4**	ND	ND	**0.74**	ND	ND	ND	ND	ND	ND

Notes:
1) All results are in micrograms per liter (µg/l).
2) **Bold** text indicates a concentration greater than method detection limit.
3) R = Raw water sample
4) I = Intermediate water sample
5) F = Final water sample
6) ND indicates result was below method detection limit.

Appendix E

House #2 Soil Vapor Intrusion Results (2011 – 2012)

Appendix E

House #2 Soil Vapor Intrusion Results (2011 - 2012)
Former NOW Corporation Facility
Town of Clinton, New York

Sample ID	State of New York Background Concentrations* µg/m³	SS-1		IA-1		IA-2		OA-1	
Matrix		Sub-slab air		Indoor Air (Basement)		Indoor Air (First Floor)		Outdoor Air	
Sample Date		3/31/2011	3/28/2012	3/31/2011	3/28/2012	3/31/2011	3/28/2012	3/31/2011	3/28/2012
Dilution Factor		4	2	0.702	0.702	0.702	0.702	0.702	0.702
VOCs (µg/m3)									
Acetone	**16**	**28**	**29**	**8.9**	ND	**61**	**41**	**11**	**12**
Benzene	**1.9**	ND	ND	**3.2**	**4.7**	**4.9**	**5.4**	**0.40**	**0.49**
Benzyl Chloride	**NL**	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	**NL**	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	**NL**	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	**0.4**	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Butadiene	**NL**	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	**6.2**	**5.9**	ND	**2.2**	ND	**4.7**	ND	**1.9**	ND
Carbon Disulfide	**NL**	**18**	ND	ND	ND	**0.21**	ND	ND	ND
Carbon Tetrachloride	**0.4**	ND	ND	**0.54**	**0.38**	**0.53**	**0.49**	**0.46**	**0.33**
Chlorobenzene	**0.1**	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	**0.2**	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	**0.2**	ND	ND	**0.75**	ND	**0.53**	**0.23**	ND	ND
Chloromethane	**0.2**	ND	**0.94**	**0.31**	**0.32**	**0.74**	**1.0**	**1.0**	**0.94**
Cyclohexane	**NL**	ND	ND	**2.4**	**5.5**	**2.8**	**4.9**	ND	ND
Dibromochloromethane	**NL**	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	**0.2**	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	**0.2**	ND	ND	ND	ND	ND	**0.43**	ND	**0.29**
1,3-Dichlorobenzene	**0.3**	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	**NL**	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane (Freon 12)	**NL**	**2.2**	**2.3**	**2.4**	**1.7**	**1.4**	**0.90**	**2.6**	**1.5**
1,1-Dichloroethane	**0.1**	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	**0.1**	ND	ND	ND	ND	**0.72**	**0.20**	ND	ND
1,1-Dichloroethene	**0.1**	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	**0.2**	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	**NL**	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	**0.4**	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	**0.2**	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	**0.1**	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	**0.3**	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	**NL**		ND		ND		ND		ND
Ethanol	**NL**	**4.5**	ND	**7.0**	**9.5**	**390**	**230**	**4.9**	**3.7**
Ethyl Acetate	**NL**	ND	**20**	ND	ND	**2.5**	**4.8**	**0.15**	**1.0**
Ethylbenzene	**0.8**	**2.2**	ND	**2.8**	**3.4**	**3.5**	**4.2**	ND	**0.16**
4-Ethyl Toluene	**NL**	**22**	ND	**0.62**	**0.77**	**0.84**	**1.1**	ND	ND
n-Heptane	**NL**	**3.9**	ND	**2.2**	**2.9**	**4.8**	**4.6**	ND	ND
Hexachlorobutadiene	**1.2**	ND	ND	ND	ND	ND	ND	ND	ND
Hexane	**NL**	**32**	ND	**10**	**15**	**14**	**18**	**0.62**	ND
2-Hexanone	**NL**	**7.1**	ND	**0.57**	ND	**0.78**	ND	**0.32**	**0.26**
Isopropanol	**NL**	**1.5**	ND	**0.97**	ND	**22**	**48**	**0.83**	ND
Methyl tert-Butyl Ether (MTBE)	**NL**	ND	ND	**0.16**	ND	**0.14**	ND	ND	ND
Methylene Chloride	**0.8**	**4.6** B	**6.3**	**1.4** B	**4.4**	**6.4** B	**20**	**2.2** B	**9.3**
4-Methyl-2-Pentanone (MIBK)	**0.8**	ND	**0.57**	ND	ND	**0.64**	**0.53**	ND	**0.30**
Naphthalene	**NL**	NA	ND	NA	**0.62**	NA	**0.81**	NA	**0.19**
Propene	**NL**	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	**0.2**	**4.9**	ND	ND	ND	**0.63**	**0.78**	ND	**0.20**
1,1,2,2-Tetrachloroethane	**0.1**	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	**0.6**	ND	ND	ND	ND	**0.5**	**0.58**	ND	ND
Tetrahydrofuran	**NL**	**5.4**	**0.29**	ND	ND	ND	ND	ND	ND
Toluene	**11**	**3.7**	**2.9**	**20**	**25**	**29**	**28**	**0.56**	**0.67**
1,2,4-Trichlorobenzene	**0.8**	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	**0.3**	ND	**0.82**	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	**0.2**	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	**0.2**	ND	ND	**0.20**	ND	ND	ND	ND	ND
Trichlorofluoromethane (Freon 11)	**NL**	ND	**1.3**	**1.3**	**1.2**	**1.3**	**1.2**	**1.4**	**1.2**
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	**NL**	ND	ND	**0.57**	**0.60**	**0.56**	**0.62**	**0.63**	**0.71**
1,2,4-Trimethylbenzene	**NL**	**12**	ND	**3.2**	**4.0**	**3.3**	**4.8**	ND	ND
1,3,5-Trimethylbenzene	**NL**	**15**	ND	**1.0**	**1.2**	**1.0**	**1.3**	ND	ND
Vinyl Acetate	**NL**	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	**0.2**	ND	ND	ND	ND	ND	ND	ND	ND
m/p-Xylene	**0.8**	**7.4**	ND	**11**	**12**	**13**	**14**	ND	ND
o-Xylene	**0.7**	**10**	ND	**4.2**	**4.8**	**4.3**	**5.1**	ND	ND
Total Volatile Organic Compounds		**190**	**64.4**	**87.9**	**98.0**	**577**	**442.97**	**29.0**	**33.24**

Notes:
*Mean outdoor air concentration from study of VOCs in air of fuel heated homes, Final NYSDOH CEH BEEI Soil Vapor Intrusion Guidance, Appendix C, October 2006 (Table C1).
1) NL - No standard listed.
2) NA - Not analyzed
3) ND - Not detected.
4) B - Compound was found in the associated blank.
5) NA - Not applicable
6) **Bold** values indicate a compound was detected
7) **Bold and Shaded** values indicate an exceedance of the New York State Background Concentration

Appendix F

House #4 – Routine Operations of Soil Vapor Mitigation System

June 11, 2009

Current occupant of
House #4

RE: Routine Operations of Soil Vapor Mitigation System
Introductory Letter for 2009 – 2011 Inspection & Maintenance
House #4 ; System ID: 314008-NOW-001
Site Name: NOW Corporation; Site Code: 314008

Dear Property Owner:

This letter is being sent to provide you with important information regarding the ventilation system that the New York State Department of Environmental Conservation (NYSDEC) is responsible for maintaining at the property referenced above. The NYSDEC is maintaining the system as part of the ongoing remediation of the NOW Corporation site.

HDR, Inc. has been retained by the NYSDEC to conduct routine inspection and maintenance (I&M) activities at hundreds of ventilation systems across the state, including the system installed on your property. HDR is an engineering and consulting firm with offices located across the country, ten in New York alone. Contact information is provided below.

HDR, Inc.
Attn: Michael P. Musso, P.E.
One Blue Hill Plaza
Pearl River, NY 10965
Phone: 845-735-8300
Email: michael.musso@hdrinc.com

In order to familiarize our technical staff with the operational details of your system and make sure it is performing as expected, an inspection of the system will be performed by HDR (or one of our subcontractors) sometime between September 2009 and April 2010. HDR will attempt to coordinate **interior access** for the upcoming inspection for purposes of observing the system fan and other equipment that may be contained within the building's basement or attic. Interior inspections are anticipated to be brief (15 – 30 minutes). You will be receiving another letter providing the anticipated inspection date approximately two weeks prior to the inspection. In addition, HDR will attempt to contact you by telephone a few days prior to the scheduled inspection for confirmation.

In the meantime, please contact the NYSDEC at the toll-free number 1-888-459-8667 if any of the following situations arise:

- If the exhaust fan is not operating or is making excessive, unusual noise;
- If the liquid levels in any U-tube are even (no difference in levels);
- If any new construction or structural changes occur that affect the footprint of the building or the basement or crawl space including penetrations through the slab;
- If there is standing water or flooding observed in the basement;
- If any new combustion appliance or exhaust system is installed; or
- If the property is sold.

If you are not a resident or occupant of the building, please pass along this information to your tenant(s). Thank you again for your cooperation.

Respectfully submitted on behalf of NYSDEC,

Henningson, Durham & Richardson
Architecture and Engineering, P.C.
In association with HDR Engineering, Inc.

Michael P. Musso, P.E.

Michael P. Musso, P.E.
Project Manager

October 19, 2009

Current occupant of
House #4

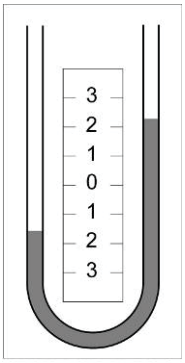
RE: Routine Operations of Soil Vapor Mitigation System
Annual Inspection Notification
House #4 ; System ID#: 314008-NOW-001
Site Name: NOW Corporation; Site Code: 314008

Dear Property Owner:

This letter is being sent to provide you with important information regarding the ventilation system that the New York State Department of Environmental Conservation (DEC) installed, or is responsible for maintaining, at the property referenced above. The DEC is maintaining the system as part of the ongoing remediation of the NOW Corporation site. If you have any questions regarding the information contained in this letter, please call Mr. Eric Hausamann at the DEC's toll-free number: 888-459-8667.

The ventilation system installed on your property draws air from beneath the building and vents it to the outdoor air above the roofline to prevent subslab vapors from potentially entering your building (see the attached schematic diagram at the end of this letter). The primary system components include:

- An electrically-powered exhaust fan mounted on the outside of your home/building. The exhaust fan should operate on a continuous basis.
- Vacuum gauges ("U-tubes") attached at one or more suction points (pipe entering the basement floor). The levels of the liquid in the U-tube(s) should be uneven as shown to the right.
- Labels identifying the system and providing contact information.



UNEVEN LEVELS INDICATE SYSTEM IS OPERATING

While the system is designed to operate continuously, there may be instances when the system needs to be repaired or modified. In any of the following situations, please contact the DEC at the toll-free number listed above and on the system label:

- If the exhaust fan is not operating or is making excessive, unusual noise;
- If the liquid levels in any U-tube are even (no difference in levels);
- If any new construction or structural changes occur that affect the footprint of the building or the basement or crawl space including penetrations through the slab;
- If there is standing water or flooding observed in the basement;
- If any new combustion appliance or exhaust system is installed; or
- If the property is sold.

HDR has been retained by the DEC to conduct inspection and maintenance activities associated with your ventilation system. A periodic inspection of the ventilation system installed on your property is required and will be performed by HDR or one of our subcontractors. Please be advised that HDR has scheduled an interior and exterior inspection of the soil vapor mitigation system on **November 18th, 2009**. HDR will attempt to contact you by telephone a few days prior to the scheduled inspection as a reminder. My contact information is provided below.

HDR, Inc.
Attn: Michael P. Musso, P.E.
One Blue Hill Plaza
Pearl River, NY 10965
Phone: 845-735-8300
Email: michael.musso@hdrinc.com

HDR will attempt to coordinate **interior access** for the inspection, for purposes of observing the system fan and other equipment that may be contained within the building's basement or attic. Interior inspections are anticipated to be brief (15 – 30 minutes).

If you are not a resident or occupant of the building, please pass along this information to your tenant(s) or kindly let me know who we should contact. Thank you again for your cooperation.

Respectfully submitted on behalf of the DEC,

Henningson, Durham & Richardson
Architecture and Engineering, P.C.
In association with HDR Engineering, Inc.

Michael P. Musso, P.E.
Project Manager

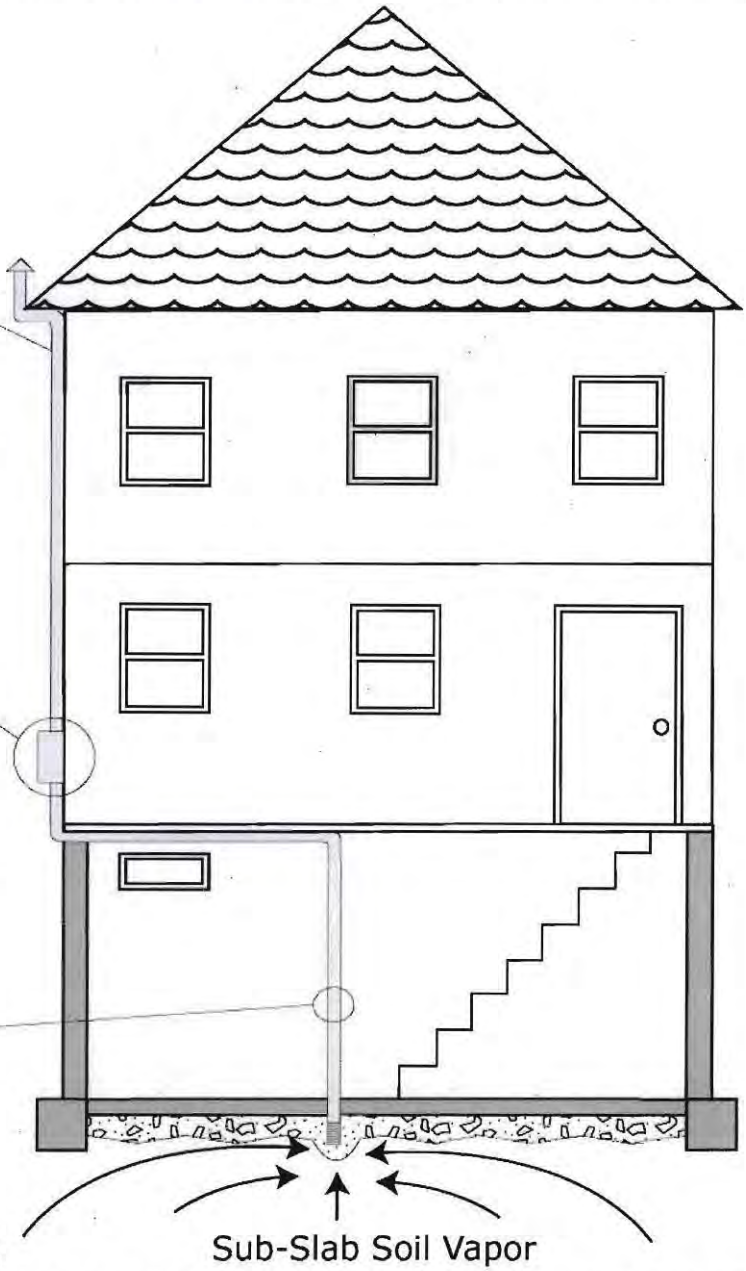
Sub-Slab Depressurization System

(commonly called a radon mitigation system)

The vent pipe is routed up the side of the structure to a location above the roof line.

A fan is used to draw soil vapor from beneath the slab.

A liquid gauge, or manometer is used to verify that the system is operating properly



A sub-slab depressurization system vents contaminated soil vapor before it enters a structure. The fan draws vapor from beneath the building outside to the roof line where it is released to the outside air.

Export Data

Import Sys Data

Periodic Operations Visit Form

☐ Check box if new sys info

System ID: **314008-NOW-001**

Date of Visit: **Nov 18, 2009**

Owner Name: Current occupant of House #4

Date Installed: Nov 11, 2008

System Address:

Telephone:

City:

Zip:

Alt. Telephone:

Performed By: Paul Lenarczyk

Site No: 314008

Company: Yu & Associates

Site Name: NOW Corporation

EXTERIOR

Fan Operation Confirmation

	Fan #1	Fan #2	Fan #3
Fan Model No(s).	RP145		
Is Fan Operating (arrival)?	◉ Yes ○ No	○ Yes ○ No	○ Yes ○ No
Confirmation Method	Sound		
Is Fan Operating (departure)?	◉ Yes ○ No	○ Yes ○ No	○ Yes ○ No

Requested to inspect interior system components? ○ Yes ○ No

If yes, when and by whom? Date:

INTERIOR

Structural Review

			Notes
Change in building footprint since last inspection?	○ Yes	◉ No	
Basement occupied (>4 hrs per day)?	○ Yes	◉ No	
Heating/ventilation system modifications?	○ Yes	◉ No	
Crawlspace inspected?	○ Yes	◉ No	
Large cracks in floor or near sumps?	○ Yes	◉ No	
Wall penetrations or cracks noted?	○ Yes	◉ No	

Piping, Slab & Wall

Are system suction points sealed?	◉ Yes	○ No	
Is piping system in need of repair?	○ Yes	◉ No	

Miscellaneous

Are manometer levels equal?	○ Yes	◉ No	2.1
Are system labels accurate and applied correctly?	◉ Yes	○ No	

Maintenance completed (check all that apply): ☐ Replace fan ☐ Seal pipe ☐ Electrical ☒ Other

Describe repairs made and any proposed actions requiring a subsequent visit (if necessary):

Secured metal clamps above and under the fan. No further action required.

Print Form

Submit by Email

September 13, 2010

Current occupant of
House #4

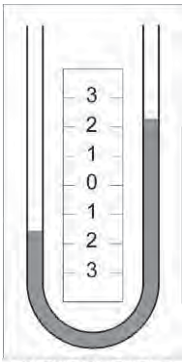
RE: Routine Operations of Soil Vapor Mitigation System
Annual Letter
House #4 ; System ID: 314008-NOW-001
Site Name: NOW Corporation Site Code: 314008

Dear Property Owner:

This letter is being sent to provide you with information regarding the ventilation system that the New York State Department of Environmental Conservation (DEC) installed, or is responsible for maintaining, at the property referenced above. The DEC is maintaining the system as part of the ongoing remediation of the NOW Corporation site. If you have any questions regarding the information contained in this letter, please refer to the Vapor Intrusion Mitigation System Owner's Manual (Manual) that was left at the address during the last system inspection visit, or call Mr. Eric Hausamann at the DEC's toll-free number: 888-459-8667.

The ventilation system installed on your property draws air from beneath the building and vents it to the outdoor air above the roofline to prevent subslab vapors from potentially entering your building (see the attached schematic diagram at the end of this letter). The primary system components include:

- An electrically-powered exhaust fan mounted on the outside of your home/building. The exhaust fan should operate on a continuous basis.
- Vacuum gauges ("U-tubes") attached at one or more suction points (pipe entering the basement floor). The levels of the liquid in the U-tube(s) should be uneven as shown to the right.
- Labels identifying the system and providing contact information.



UNEVEN LEVELS INDICATE SYSTEM IS OPERATING

While the system is designed to operate continuously, it is important that it be inspected periodically by the building owner or occupant. There may be instances when the system needs to be repaired or modified. If the exhaust fan is not operating, the occupant should refer to the Manual for tips to troubleshoot the issue. In any of the following situations, please contact the DEC at the toll-free number listed above and on the system label:

- If the exhaust fan is not operating or is making excessive, unusual noise;
- If the liquid levels in any U-tube are even (no difference in levels);
- If any new construction or structural changes occur that affect the footprint of the building or the basement or crawl space including penetrations through the slab;
- If there is standing water or flooding observed in the basement;
- If any new combustion appliance or exhaust system is installed; or

- If the property is sold.

HDR has been retained by the DEC to coordinate maintenance activities associated with ventilation systems like the one at your property. You are responsible for periodically checking to see that the system is operating and informing the DEC or HDR if it is not running properly. In the mean time, should you have any questions about the system or the information included in the Manual, please feel free to contact me. My contact information is provided below.

HDR, Inc.
Attn: Michael P. Musso, P.E.
One Blue Hill Plaza
Pearl River, NY 10965
Phone: 845-735-8300
Email: michael.musso@hdrinc.com

If you are not a resident or occupant of the building, please pass along this information to your tenant(s) or kindly let me know who we should contact. Thank you again for your cooperation.

Respectfully submitted on behalf of the DEC,

Henningson, Durham & Richardson
Architecture and Engineering, P.C.
In association with HDR Engineering, Inc.

Michael P. Musso, P.E.
Project Manager

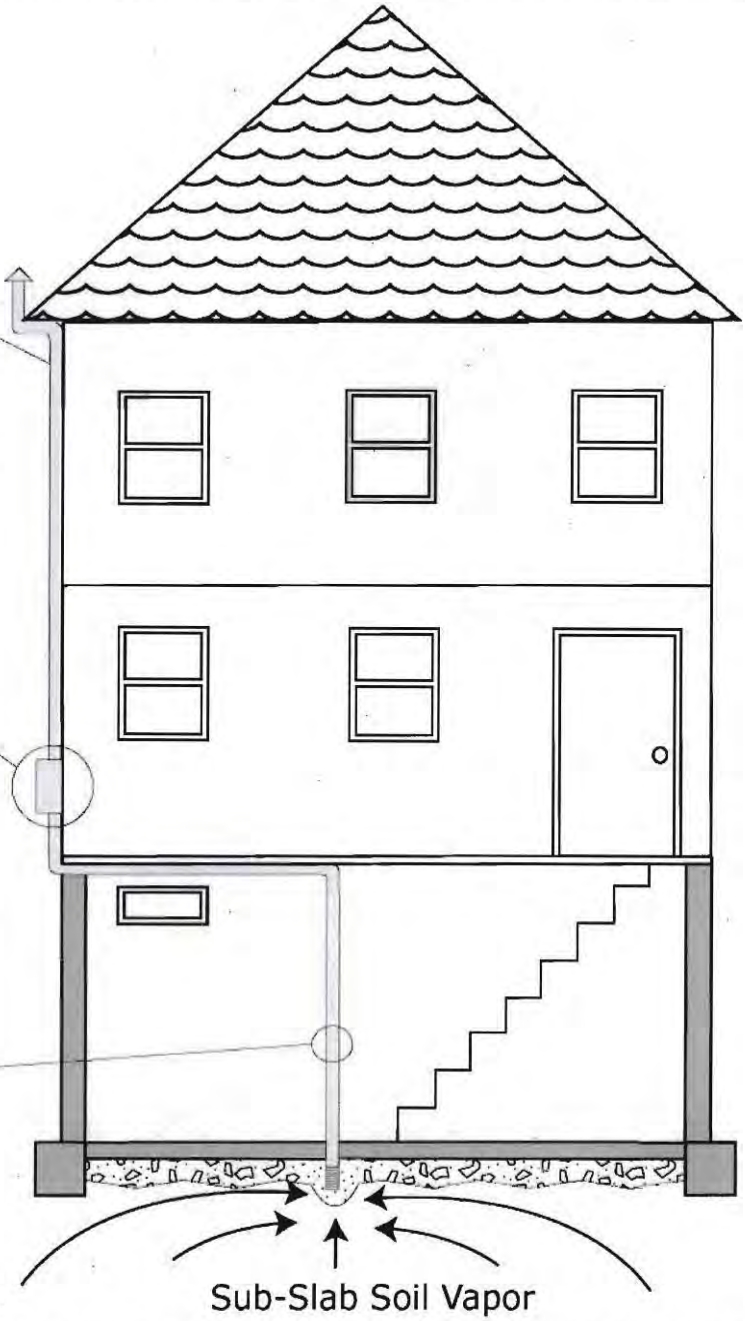
Sub-Slab Depressurization System

(commonly called a radon mitigation system)

The vent pipe is routed up the side of the structure to a location above the roof line.

A fan is used to draw soil vapor from beneath the slab.

A liquid gauge, or manometer is used to verify that the system is operating properly



A sub-slab depressurization system vents contaminated soil vapor before it enters a structure. The fan draws vapor from beneath the building outside to the roof line where it is released to the outside air.

Appendix G

Institutional and Engineering Controls Certification Form

Enclosure 1
Engineering Controls - Standby Consultant/Contractor Certification Form

Site Details **Box 1**

Site No. **314008**

Site Name NOW Corporation

Site Address: Route 9-G Zip Code: ~~12514~~ 12580
City/Town: Clinton
County: Dutchess
Site Acreage: 9.0

Reporting Period: ~~July 30, 2010~~ to June 30, 2013
JAN 1, 2011

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

Box 2

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

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and contact the DEC PM regarding the development of a Corrective Measures Work Plan to address these issues.

N/A
Signature of Standby Consultant/Contractor

Date

SITE NO. 314008 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
6267-00-130500-0000	Joseph C Picard	
6267-00-272452-0000	FRIED, ROBERT	Monitoring Plan O&M Plan

Institutional Controls for the site include a monitoring plan and an Operation and maintenance plan.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
6267-00-130500-0000	~~Groundwater Treatment System~~ (NOT APPLICABLE) Vapor Mitigation (NOT CERTIFIED BY AECOM)
6267-00-272452-0000	Groundwater Treatment System ~~Vapor Mitigation~~ (NOT APPLICABLE)

Engineering controls include a groundwater pump and treatment system and vapor mitigation.

6267-00-182542-0000 POET
6267-00-187549-0000 POET
6267-00-220609-0000 POET

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification, including data and material prepared by previous contractors for the current certifying period, if any;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☒	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) nothing has occurred that would constitute a failure to comply with the Site Management Plan, or equivalent if no Site Management Plan exists.

YES	NO
☒	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and contact the DEC PM regarding the development of a Corrective Measures Work Plan to address these issues.

N/A

Signature of Standby Consultant/Contractor

Date

IC/EC CERTIFICATIONS

Box 6

Professional 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 SCOTT A. UNDERHILL at AECOM TECHNICAL SERVICES NORTHEAST, INC.
print name

40 BRITISH AMERICAN BLVD.

LATHAM, NY 12110
(print business address)

am certifying as a Professional Engineer.

Scott A Underhill
Signature of Professional Engineer

Stamp
(Required for PE)

3-6-15
Date