AECOM Environment

Prepared for:
NYSDEC
Albany, NY

Prepared by:
AECOM
Chestnut Ridge, NY
60269812
September 2014

Remedial Investigation Report
Crystal Cleaners Site (No. 3-60-053)

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ENGINEERING CERTIFICATION

I, Claire Hunt, certify that I am currently a NYS registered professional engineer and that this Remedial Investigation Report 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) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Respectfully submitted,
AECOM Technical Services Northeast, Inc.

STATE OF NEW YORK
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9/29/14
Date

Note: It is a violation of the of the State Education Law (Section 7209 of Article 145) for any person to alter any document that bears the seal of a professional engineer, unless the person is acting under the direction of a licensed professional engineer.

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List of Acronyms

AECOM	AECOM Technical Services Northeast, Inc.
amsl	above mean sea level
AST	above ground storage tank
bgs	below ground surface
CsD	Chatfield-Charlton complex soils
DCE	dichloroethene
DHC	dehalococcoides
DER	Division of Environmental Remediation
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
DPW	department of public works
DUSR	data usability summary report
ELAP	Environmental Laboratory Accreditation Program
f_{oc}	fraction of organic carbon
ft	feet
ft/day	feet per day
ft/yr	feet per year
in Hg	inches of mercury
g/cc	grams per cubic centimeter
HSA	hollow stem auger
K_d	soil/water distribution coefficient
K_{ow}	octanol/water coefficient
K_{oc}	octanol/carbon partition coefficient
µg/kg	micrograms per kilogram

µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
MTBE	methyl tert-butyl ether
mL/min	milliliters per minute
MS/MSD	matrix spike/matrix spike duplicate
mV	millivolt
NAPL	non-aqueous phase liquid
n_e	effective porosity
NTU	nephelometric turbidity units
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
ORP	oxidation-reduction potential
p_b	dry bulk density of aquifer matrix
PCE	tetrachloroethene
PE	professional engineer
PID	photoionization detector
ppm	parts per million
R_d	retardation factor
RI	remedial investigation
SCO	soil cleanup objective
SDG	sample delivery group
SM	standard method
t	time
TCE	trichloroethene

TOC	total organic carbon
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	underground storage tank
VOC	volatile organic compound
V_{pt}	contaminant transport rate
V_s	groundwater seepage velocity
Zebra	Zebra Environment Corp.

1.0 INTRODUCTION

AECOM Technical Services Northeast, Inc. (AECOM) was issued work assignment no. 35 under the New York State Department of Environmental Conservation (NYSDEC) State Superfund Standby Contract for Investigation and Design Services (D00436). The scope of work is to conduct a remedial investigation (RI) and feasibility study at the Crystal Cleaners site, Village of Pelham, New York 10803, located in Westchester County (NYSDEC registry number 3-60-053). The site location is shown on Figure 1.

NYSDEC initially issued approval of the scope of work and related budget for work assignment D00436-35 on December 30, 2010. The RI scope of work consisted of two phases. During Phase 1, soil boring sampling, well installation and sampling, soil vapor sampling, and indoor air sampling were planned. During Phase 2, the wells were to be re-sampled. Phase 1 was initially delayed due to construction at the Village of Pelham Department of Public Works (DPW) which is located west of the site. Drilling began in June 2011. The soil boring sampling, installation of four overburden wells, and installation of three soil vapor points were completed in June 2011. The soil vapor points were sampled in July 2011. The monitoring wells were sampled in October 2011.

Following review of the monitoring well data, NYSDEC determined that additional wells were required to define the extent of contamination horizontally southwest of the site and vertically on the DPW property. Four wells were installed in September 2012 under work assignment no. 15 to NYSDEC State Superfund Standby Contract D007626. Groundwater samples were collected in February 2012.

Indoor air sampling was conducted at three structures in March 2011, two structures in February 2012, two structures in April 2012, and two structures in April 2014. To determine the cause of elevated contaminant concentrations detected in some structures and to attempt to define the vertical extent of contamination on the DPW property, NYSDEC determined that additional groundwater investigation was required. Due to the ending of contract D00436 in September 2012, the remaining scope of work was transferred to work assignment no. 15 under contract D007626. An amendment was issued on August 17, 2012. Three bedrock wells and one overburden well were installed between September 2012 and October 2012 in Phase 3 of the RI. The monitoring wells were sampled in November 2012. Additionally, temporary wells were sampled in October 2012, September 2013, and April 2014.

This RI report presents the findings of the field investigations outlined above.

1.1 Site Background Information

Information on the location, previous investigations, and study area characteristics are provided in the subsections below.

1.1.1 Land Use

The Crystal Cleaners site is located at 113 Wolfs Lane in the Village of Pelham, Westchester County, New York 10803 (Figure 1). The surrounding area is urban with commercial establishments as well as

residences nearby. The Crystal Cleaners site is an active dry cleaning business adjacent to several businesses along Wolfs Lane. Property owned by the Village of Pelham DPW is located west of the site. The site is situated to the north of the former Pelham Residence Voluntary Cleanup Program site (V00258-3) at 195 Sparks Avenue. The Voluntary Cleanup Program site work was never completed.

1.1.2 Prior Investigations Conducted at the Site

1.1.2.1 Pelham Residence/Village Offices Site Investigation

The Village of Pelham offices are located in the Pelham Residence site at 195 Sparks Avenue, immediately adjacent to and south of the Village of Pelham DPW (Figure 2). A site investigation of the Pelham Residence site was conducted from 1997 to 2000 and included the removal of underground storage tanks (USTs), installation of monitoring wells, and the sampling of the wells. A Phase I Environmental Site Assessment (ESA) was performed by Environmental Liability Management, Inc. (ELM; June 1999) at the Pelham Residence site and provided the following information.

A groundwater investigation was conducted at the Pelham Residence Site in response to a fuel spill and UST removal (DEC Spill Case #96-11862, 96-00189, and 96-11119) during which contaminated soil was removed and monitoring wells on the Village of Pelham property were sampled (MW 1A, 2A, 3A, 9, and 10; see Figure 3) (ELM; June 1999). NYSDEC (2000) also indicates that there were four above-ground storage tanks (ASTs) on this property as of January 2000. There were 12 monitoring wells on the property (although one, MW-2, could not be located). Groundwater data obtained as part of the investigations at the Pelham Residence site indicated high concentrations of tetracholoroethene (PCE) (1300 µg/L), trichloroethene (TCE) (22 µg/L), and dichloroethene (DCE; isomer not specified) (36 µg/L). Based on the direction of groundwater flow and the upgradient location of the site, Crystal Cleaners was identified as a possible source of the contamination. Crystal Cleaners is also listed as a large quantity generator of hazardous waste, and utilizes solvents (typically chlorinated hydrocarbons). Crystal Cleaners was classified as a “P” site on April 21, 2000 subsequent to the site investigation at the Pelham Residence site. On September 11, 2000, the Pelham Residence site withdrew from the Voluntary Cleanup Program.

Nine USTs were removed from a property at 101 Wolfs Lane in 1998; all contained petroleum products (six gasoline tanks, plus one each with used oil, hydraulic fluid, and fuel oil). About 135 tons of petroleum-contaminated soils were removed concurrently with the removal of the USTs. The 101 Wolfs Lane site is located north of Crystal Cleaners as shown in Figure 2.

No data were located indicating that the monitoring wells were sampled following the above-cited reports and investigations prior to the NYSDEC site characterization for Crystal Cleaners.

1.1.2.2 NYSDEC Site Characterization

NYSDEC conducted a site characterization of Crystal Cleaners in 2008 (EarthTech, 2009). The field investigation was conducted to determine the existence of contamination at the site and to identify the nature of the contamination. The field investigation consisted of installing two monitoring wells and collecting soil vapor samples, soil samples, and groundwater samples. Boring locations and monitoring well locations were surveyed using ground-penetrating radar for utility clearance by a subcontractor (Advanced Geological Services, Inc.) prior to intrusive work.

Two permanent monitoring wells (MW-C1 and MW-C2) were installed at the site. MW-C1 was installed in the upgradient direction while MW-C2 was installed in the vicinity of the suspected source location (Crystal Cleaners facility). One soil sample was collected during well installation at the downgradient well. A subsurface soil vapor investigation was conducted throughout the project area to try to determine hot spots or a potential contaminant source, and to determine if subsurface vapor migration is a potential threat to the businesses and residences in the site vicinity. The monitoring well and soil vapor point locations are shown on Figure 2 and Figure 3, respectively. Soil, soil vapor, and groundwater samples were analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) method SW846 8260. The findings for the investigation are listed below by matrix:

Soil Samples - Methylene chloride was detected below the 6 New York Codes, Rules and Regulations [NYCRR] Part 375-6.8(a) unrestricted use soil cleanup objectives (SCO) in the soil sample collected at MW-C2 from 13 ft to 15 ft below ground surface (bgs), located west of the Crystal Cleaner facility on the DPW property. All other VOCs were not detected or below the unrestricted use SCOs.

Groundwater - Elevated concentrations of several chlorinated organic and non-chlorinated organic compounds were detected from the groundwater samples collected from the downgradient monitoring wells. PCE was detected above the class GA groundwater criterion of 5 µg/L for 11 of 14 groundwater samples with concentrations ranging from 5.2 µg/L to 790 µg/L. TCE concentrations exceeded the class GA groundwater criterion of 5 µg/L for the samples collected from the downgradient monitoring wells, 5.1 µg/L for MW-3A and 54 µg/L for MW-9. The samples collected from MW-3A and MW-9 contained elevated levels of chlorinated solvents:

- MW-3A - 2.3 µg/L vinyl chloride, 6.3 µg/L PCE, 5.1 µg/L TCE, and 36 µg/L cis-1,2-DCE; and,
- MW-9 - 790 µg/L PCE, 54 µg/L TCE, and 81 µg/L cis-1,2-DCE.

A decline in PCE levels at MW-3A between the 1997 and 2008 sampling events (Figure 2 and Figure 3) was observed which may indicate that the groundwater plume is dispersing.

Soil Vapor - PCE and TCE were detected in the soil vapor samples. PCE was detected at concentrations ranging from 248 µg/m^3 to 159,877 µg/m^3 for the samples collected downgradient of the site. Elevated concentrations of TCE were detected at three of the six locations, SV-1 through SV-3, ranging from 32 µg/m^3 to 1,793 µg/m^3. TCE was not detected in the other three soil vapor samples. The highest concentration of PCE and TCE was observed in SV-2 on the DPW property. Elevated concentrations of several chlorinated organic and non-chlorinated organic compounds were observed in the soil vapor samples and outdoor air sample collected in the vicinity of the site.

In addition to the field investigation, NYSDEC conducted a site visit of the facility in February 2008. Interviews with the current operator of the business did not reveal any suspect disposal practices. No route of disposal was observed. The site was well maintained. No evidence of PCE contamination was observed in the vicinity of the dry cleaning machine or in the basement. Disposal may have taken place by dumping of liquids immediately behind the facility on the same lot or in an unpaved area of the DPW.

NYSDEC determined that contamination present at the site is a significant threat to the public health and the environment based on exceedence of class GA groundwater criteria. Soil vapor concentrations were elevated compared to the New York State Department of Health (NYSDOH) guidance (2006) matrices and indicate a potential threat to human health. The source appeared to be Crystal Cleaners site since the elevated levels of PCE and TCE were detected downgradient of the site and no other potential sources of PCE and TCE contamination were identified. Based on these findings, NYSDEC reclassified the site as Class 2.

1.1.2.3 NYSDEC Soil Vapor Intrusion Study

NYSDEC conducted a soil vapor intrusion study at four structures located near the Crystal Cleaners site. The samples were collected in February 2009. The protocol used for the soil vapor intrusion study was in conformance with NYSDOH (2006). A total of nine air samples, four sub-slab samples, four indoor basement or lower level samples, and one outdoor air sample were collected and analyzed for VOCs by USEPA method TO-15.

Levels of TCE detected in indoor and sub-slab air at two structures indicated the need for mitigation to minimize current or potential exposures associated with soil vapor intrusion. Levels of PCE detected in sub-slab and indoor air samples collected at three structures indicated the need for mitigation. A sub-slab sample was not collected at the fourth structure at the owners request (Structure B03). The level of PCE detected in the indoor air sample at the fourth structure indicated the need to take reasonable and practical actions to identify the source for the detected PCE and reduce exposures.

Following review of the data by NYSDEC and NYSDOH and discussions with the property owners, one structure was mitigated by installation of a sub-slab depressurization system (Structure B02).

1.2 Environmental Data Resources, Inc. Report

An Environmental Data Resources, Inc. report was prepared in 2008 for the site. The report identifies the following recognized environmental conditions within a 0.25-mile radius of Crystal Cleaners: 70 leaking storage tanks; ten USTs; and five ASTs containing leaded and unleaded gasoline, diesel, and fuel oil. Five spills were reported in the vicinity of the site. Carol Cleaners and Tailors, Inc., is the only dry cleaner facility reported within a 1/8-mile radius.

1.3 Topography

The 1966 United States Geological Survey (USGS) topographic map for the Mount Vernon, New York Quadrangle was reviewed to obtain information about the topography of the site (Figure 1). The map shows that the land surface slopes from the north and east to the south and west. The highest elevation in the study area is 46.5 ft above mean sea level (amsl) near the site and the lowest elevation in the southwest is 18.8 ft amsl. There is a net decrease in elevation across the study area of 27.7 ft.

1.4 Surface Water Hydrology

The Hutchinson River is located approximately 1,000 ft west of the site. The land west of the site is within the 100 year and 500 year flood plain of the Hutchinson River. The Hutchinson River is designated as Class SB surface water. Best usages of Class SB surface water are primary and secondary contact recreation and fishing. The waters are suitable for fish propagation and survival.

Surface water in the river flows into the Eastchester Bay of the Long Island Sound, a distance of approximately two miles from the site. No wetlands were observed in the study area. The closest designated wetland is located southeast of the site along the shore of the Hutchinson River.

Based on the local topography, storm water is expected to flow west across the site. Runoff may be captured in drains. Prior to 2011, runoff flowing west from the Crystal Cleaners facility would have encountered an unpaved area with an apparent drywell provided a route of migration into the subsurface.

1.5 Groundwater Hydrology

The topography of the surrounding area indicates the groundwater flow would be predominantly to the west. However, based on the groundwater elevation data available, the groundwater flow direction is to the southwest to south-southwest.

1.6 Site Geology

The site geology is till containing sand and gravels overlying bedrock. Urban coverings and fill are encountered throughout the site area. Groundwater is encountered between 18 and 46 ft bgs depending on the location within the site area. Bedrock is located from 8 to 47 ft bgs across the site.

2.0 REMEDIAL INVESTIGATION

A RI was conducted to determine the sources and location of contamination within the site and its threat to human health or the environment. The scope and execution of the RI is discussed below. The work to date consisted of the following:

- Direct push soil sampling (June 2011, September 2013, and April 2014);
- Well installation and groundwater sampling (June 2011 to October 2011, January 2012 to February 2012, September 2012 to November 2012, September 2013, and April 2014);
- Soil vapor sampling (July 2011); and,
- Soil vapor intrusion sampling (March 2011, February 2012, and April 2012).

Field forms for the sampling events are provided in Appendix A. A photo log is provided in Appendix B.

2.1 Direct Push Soil Sampling

Direct push sampling was conducted west of the site on DPW property to characterize the extent of contamination within the soil. Initially, up to ten soil borings were planned. At the time of sampling, the area had undergone significant development. The elevation was changed, structures had been demolished, new buildings constructed, and utilities were installed. These improvements limited the areas that could be sampled. Six of the planned locations were unobstructed. The soil boring locations are shown on Figure 5. The borings SB-01 through SB-05 could not be advanced closer to the site because of dumpsters placed on a newly installed cement pad and utilities that run through this area.

Enviroprobe Services, Inc. conducted a utility mark out for the soil borings on June 20, 2011. A geophysical investigation report is provided in Appendix C. Aztech Technologies, Inc. (Aztech) mobilized to the site on June 20, 2011. Drilling was conducted for soil borings SB-01 through SB-05 and SB-09 on June 21, 2011 by direct push. Soil boring logs are provided in Appendix A. Soil samples were collected in five foot intervals by macrocores to collect readings with a photoionization detector (PID) and soil characterization. Soil samples were collected from stained soil or soil with PID readings above background. If no staining or PID detections were observed, a sample was collected from the deepest interval above the water table. One field duplicate sample was collected. Refusal was encountered between 1.5 ft bgs and 14 ft bgs at borings SB-01 through SB-05. Refusal was encountered at 40.5 ft bgs at SB-09, the approximate depth of bedrock.

AECOM attempted to collect a soil boring on the elevated area immediately adjacent to the Crystal Cleaners facility using a hand auger, but no exposed soil was present that will permit soil collection.

Soil samples were collected at four temporary well points shown on Figure 6: TWP-3, TWP-4, TWP-12, and TWP-13. Direct push sampling was conducted to characterize the extent of contamination within the soil downgradient of the site. The utility markout and soil sampling was conducted on the

same day. Enviroprobe Services, Inc. conducted a utility mark out for the soil borings on September 10, 2013 (TWP-3 and TWP-4) and April 16, 2014 (TWP-12 and TWP-13). Geophysical investigation reports are provided in Appendix C. Zebra Environmental Corp. (Zebra) conducted the drilling. Soil boring logs are provided in Appendix A. Soil samples were collected in five foot intervals by macrocores to collect readings with a photoionization detector (PID) and soil characterization. Soil samples were collected from stained soil or soil with PID readings above background. One field duplicate sample was collected during both sampling events.

The soil samples were collected in unpreserved jars provided by the laboratory. The jars provided during the April 2014 sampling were pre-weighed vials and the soil added was measured using disposable open barrel syringes. The samples were kept cooled to 4ºC and sent to AECOM's subcontract laboratory. Samples were analyzed for VOCs (USEPA method SW846 8260).

2.2 Well Installation and Groundwater Sampling

2.2.1 Rationale for Monitoring Well Locations

The monitoring wells installed for the site are shown on Figure 6. Nine overburden and five bedrock wells were installed. The upgradient bedrock well MW-C01 was installed for the site investigation in 2008. The overburden well MW-C02 and other wells sampled for the site characterization, were destroyed during improvements on the DPW property in 2011.

Well construction data are provided in Table 1. The wells were installed to determine the extent of the groundwater contamination in the overburden and bedrock:

- Phase 1 – Installation June 2011 through September 2011
    - Overburden well MW-C03 replaced MW-C02 at a location adjacent to the Crystal Cleaners facility.
    - Overburden well MW-C04 was located in the area of highest contamination based on the site investigation results.
    - Overburden wells MW-C05, MW-C06, MW-C07, and MW-C08 were installed to identify the horizontal extent of the plume.
- Phase 2 – Installation January 2012 and February 2012
    - Bedrock wells MW-C09 and MW-C10 were installed to determine if bedrock was impacted in these areas.
    - Overburden wells MW-C12 and MW-C13 were installed to identify the horizontal extent of the plume.
- Phase 3 – Installation September 2012 and October 2012
    - Bedrock well MW-C11 was installed to determine if bedrock was impacted in this area.

- The overburden well MW-C14 and bedrock well MW-C15 were installed due to elevated soil vapor intrusion levels detected on Manning Circle.

- Temporary well samples were collected from two locations on Manning Circle to identify the source of elevated soil vapor levels detected in the area during the mobilization to install MW-C14.

- Bedrock well MW-C16 was installed to define the vertical extent of the plume.

2.2.2 Monitoring Well Installation

The monitoring wells were installed over three phases of the investigation. Aztech Technologies, Inc. installed the Phase 1 monitoring wells MW-C07 and MW-C08 in June 2011, and MW-C03 through MW-C06 in September 2011. Aztech installed the Phase 2 monitoring wells MW-C09, MW-C10, MW-C12, and MW-C13 in January 2012 and February 2012. Parratt-Wolff, Inc. installed the Phase 3 monitoring wells MW-C11, MW-C15, and MW-C16 in September 2012 and October 2012. Well MW-C14 is located near overhead utility lines and a gas line in the roadway. Because of proximity to the utilities, Parratt-Wolff, Inc. determined that they were unable to install MW-C14 with their equipment. AECOM procured the services of Zebra to install MW-C14 with a direct push rig in October 2012. Since installation of the well was completed in the morning, Zebra collected samples from temporary wells at two locations in the same mobilization. Enviroprobe Services, Inc. conducted utility markouts for the well locations on June 20, 2011 and September 24, 2012. Five temporary wells were installed downgradient of the site on September 10, 2013. Six temporary wells were attempted on April 16, 2014. Zebra conducted the drilling for these two events following utility markouts by Enviroprobe Services, Inc.. Geophysical investigation reports are provided in Appendix C.

Shallow overburden monitoring wells were installed during Phase 1. Drilling was difficult for several of the borings because of rocks or boulders in the subsurface. The borings for the monitoring wells MW-C03, MW-C04, MW-C05 and MW-C07 were advanced using 6.25-inch hollow stem augers (HSAs). The HSAs were advanced to the target depth for well installation. No split spoon samples were collected. The monitoring wells were installed as single-cased monitoring wells. The monitoring wells were constructed of 2-inch schedule 40 PVC pipe with a 10-ft 0.010 slot screen. The filter pack material (No. 1 sand) was placed a minimum of 2 ft above the top of the screen. A bentonite seal (bentonite chips) was placed in the annular space to a minimum depth of 2 ft above the sand pack. The remaining borehole was grouted using cement-bentonite grout. A flush-mounted protective casing was installed and fitted with a sealing cap. Soil cuttings were collected in 55-gallon drums.

Monitoring well MW-C08 was attempted with HSAs but hit refusal at a shallow depth. This well was relocated and installed with a direct push rig in the same manner as described above, except that the well is constructed of 1-inch schedule 40 PVC pipe and the screen is 5 ft long.

Monitoring well MW-C06 was attempted with HSAs, but hit refusal at a shallow depth due to the presence of a boulder. The area available for this well is limited due to the presence of utilities. Aztech remobilized with an ODEX system to install MW-C06 wells. The monitoring well was constructed of 2-inch schedule 40 PVC pipe with a 10-ft 0.010 slot screen.

Phase 2 included installation of two shallow overburden wells and two bedrock wells. Overburden wells MW-C12 and MW-C13 were installed using HSAs in the same manner described above for the

Phase 1 wells. Bedrock wells MW-C09 and MW-C10 were installed using HSAs and a rock corer. The rock wells are single cased. The monitoring wells were constructed of 2-inch schedule 40 PVC pipe with a 10-ft 0.010 slot screen.

Phase 3 included installation of one shallow overburden well and three bedrock wells. MW-C14 was installed using a direct push rig and a pre-pack 2-inch well with a 10-ft 0.0-0 slot screen. Macrocores were collected for soil characterization down to the water table.

Bedrock wells MW-C11 and MW-C15 were installed with a mud rotary drill rig. A 6.25-in borehole was advanced; 4-inch steel casing was set 3 to 5 feet into competent rock; an additional 15 ft was drilled into the rock using a 5.75-inch bit. The monitoring wells were constructed of 2-inch schedule 40 PVC pipe with a 10-ft 0.010 slot screen.

Bedrock well MW-C16 was installed with a mud rotary drill rig. A 8.25-inch borehole was advanced through the overburden and 3 to 5 ft into competent rock; 6-inch steel casing was installed to 5 ft into competent rock to seal off the overburden. A 5.75-inch borehole was advanced through the contaminated bedrock zone. A 4-in steel casing was set from the bottom of the 6-inch steel casing from 44 to 80 ft. A 3.88-inch borehole was advanced15 ft below the casing. The monitoring well was constructed of 2-inch schedule 40 PVC pipe with a 10-ft 0.010 slot screen.

After the grout was allowed to set for at least eight hours, each new monitoring well was developed to achieve a hydraulic connection between the formation and the well screen. The wells were developed using a surge and pump method. A Waterra pump with poly tubing was used for development at MW-C08 because of the narrow diameter of the well. The remaining wells were developed using a submersible pump. The well was purged until the water ran clear (less than 50 nephelometric turbidity units [NTU]) or two hours of development. The purge water did not have any visible contamination and was collected in 55-gallon drums.

Monitoring well construction forms, a soil boring log for MW-C14 where macrocore samples were collected, and well development forms are provided in Appendix A.

Phase 4 included groundwater sampling from five temporary wells (TWP-3 through TWP-7). Phase 5 included groundwater sampling from up to six temporary wells (TWP-8 through TWP-13). Groundwater was collected from only two wells (TWP-12 and TWP-13). Groundwater was not encountered at TWP-8 through TWP-11. All temporary well samples were collected with a hydropunch device. The hydropunch device was advanced to a depth below the groundwater surface and retracted to expose the stainless steel screened interval. Groundwater was purged from the hydropunch device with the goal of obtaining clear water prior to sampling. Purge water was collected in a drum. Groundwater samples from the hydropunch locations were collected using a peristaltic pump with Teflon-lined poly tubing.

YEC, Inc. conducted a land survey of the permanent monitoring wells on February 28, 2012 and October 23, 2012. The coordinates are provided in Table 1. YEC, Inc. conducted land surveys of the temporary well points on September 11, 2013 (TWP-3 through TWP-7) and July 2, 2014 (TWP-12 and TWP-13).

2.2.3 Groundwater Sampling

Groundwater sampling activities were conducted on October 18 to 20, 2011 for Phase 1, February 22 and 23, 2012 for Phase 2, and November 15, 2012 for Phase 3. Prior to sample collection, AECOM measured the groundwater elevation in each well. The groundwater samples were collected using the USEPA low-flow sampling method (USEPA, 1996). Water quality parameters (pH, dissolved oxygen [DO], oxidation reduction potential [ORP], specific conductivity, temperature, and turbidity) were measured using a flow-through cell. A water level indicator was used to measure depth during sampling. The wells were purged at a rate of 300 mL/min or less. Recharge is poor for MW-C03 and MW-C08; these wells were sampled at 20 mL/min and 30 mL/min, respectively, to prevent the wells from going dry. A QED MP10 controller was used with the QED Sample Pro bladder pump for the 2-inch diameter wells. A 0.75-inch Geotech bladder pump was used for the 1-inch diameter well MW-C08. Water samples were collected after stabilization of the water quality parameters. Purging was considered complete when the indicator parameters stabilized over three consecutive readings. Stabilization parameters are:

- pH: ± 0.1;
- Conductivity: ± 3 percent;
- DO: ± 10 percent;
- ORP: ±10 mV; and,
- Turbidity: less than 50 NTU.

During sample collection, the flow through cell was disconnected and the sample tubing discharge was transferred directly into the laboratory-supplied sample containers. The tubing was connected to a 0.45 micron filters for filtered metals samples. The dedicated tubing was placed back into the well after sampling for future use. The non-dedicated sampling equipment was decontaminated prior to collecting each sample. Groundwater sampling logs are provided in Appendix A.

A field duplicate sample and trip blank were collected during each monitoring well sampling event.

Temporary well samples were collected with a Geoprobe sampler at two locations. The Hydropunch device was advanced to the targeted depth (16-20 ft bgs) and retracted to expose the stainless steel screened interval. A peristaltic pump was used to purge groundwater from the Hydropunch with the goal of obtaining clear water prior to sampling. Groundwater samples from the two temporary wells were collected using a peristaltic pump fitted with Teflon-lined poly tubing. A water level indicator was used to measure the static water level. Field measurements were not recorded during temporary well sampling.

2.2.4 Analysis of Groundwater Samples

Water samples were collected in pre-preserved bottles provided by the laboratory, cooled to 4ºC after collection, and shipped to the subcontract laboratory for analysis. All groundwater samples were analyzed for VOCs (USEPA SW846 method 8260).

All wells were sampled for monitored natural attenuation (MNA) parameters in Phase 1. Wells MW-C09, MW-C10, MW-C12, and MW-C13 were sampled for MNA during Phase 2 sampling. The wells installed during Phase 3 were not sampled for MNA parameters because sufficient data was collected during the previous phases to evaluate these parameters. Samples collected for MNA parameters were analyzed for iron and manganese (total and field filtered; USEPA method 200.7), biochemical oxygen demand (Standard Methods [SM] 5210B), chemical oxygen demand (SM 5220), alkalinity (SM 2320B), ammonia (SM 4500-NH3), nitrate, chloride, and sulfate (USEPA 300.0), phosphorous (USEPA 365.3), sulfide (USEPA 9034), total organic carbon (SM 5310B), and methane, ethane, and ethene (PM01C/AM20GAx).

2.3 Decontamination

Drilling equipment was decontaminated before the first use, between boreholes and prior to demobilization using high-pressure steam. The bladder pumps were disassembled and cleaned after each use. A new bladder was used for each well. Stainless steel parts were decontaminated with laboratory grade detergent (e.g. Alconox) and rinsed with deionized water. Other parts, such as gaskets, were replaced after each use. Acetate liners and tubing used for development were discarded after use. The groundwater sampling tubing was left in the wells for future use. Decontamination water was drummed for disposal.

2.4 Investigation-Derived Waste Disposal

Investigation derived wastes generated from installation and sampling of the soil borings and monitoring wells were temporarily stored on the DPW property in 55-gallon steel drums. AECOM collected composite samples from the drums on September 16, 2011 (soil), October 19, 2011 (groundwater), February 23, 2012 (groundwater), September 10, 2013, and April 16, 2014 for waste characterization. The groundwater waste samples were analyzed for VOCs. The soil waste characterization samples were analyzed for VOCs, semivolatile organic compounds, pH, reactive sulfide, reactive cyanide, flashpoint, metals, and PCBs. The data are provided in Appendix D. Cycle Chem, Inc. labeled and transferred the drums to a disposal facility as nonhazardous waste on December 1, 2011 for Phase 1, March 28, 2012 for Phase 2, and October 2, 2012 for initial drums of soil cuttings during Phase 3. Veolia Environmental Services transported the remaining Phase 3 drums on November 19, 2012. Groundwater collected during Phase 4 and Phase 5 was collected in one drum. Veolia Environmental Services transported the Phase 4 and Phase 5 drum on June 17, 2014. The waste disposal documentation is provided in Appendix A.

2.5 Probe Hole Closure

All probe holes were backfilled with bentonite, indigenous soil and/or clean sand.

At an initial borehole location for MW-C08, a sidewalk slab was removed and a boring attempted in June 2011 during Phase 1 sampling. The boring will backfilled and the slab replaced before moving to the next boring location. During the Phase 2 field investigation in September 2011, the Village of Pelham DPW informed Aztech that the soil beneath the slab had eroded, collapsing the slab. Aztech repaired the slab in November 2011.

2.6 Soil Vapor Sampling

Three temporary soil vapor points were installed and sampled to determine the extent of soil vapor contamination and determine if additional soil vapor intrusion sampling was needed in nearby structures. Soil vapor points SV-07 and SV-08 were installed on June 23, 2011 by a direct push rig. Soil vapor point SV-9 was installed on June 14, 2011, using a post hole digger because the presence of utilities in the area limited access by the drill rig. The points were installed according to the requirements in NYSDOH (2006) for permanent points. The soil vapor sample points are shown on Figure 7. Soil vapor construction logs are provided in Appendix A.

Soil vapor sampling was conducted on July 8, 2011. One outdoor air sample and field duplicate were collected. The air sampling equipment (Summa canisters and regulators) was provided by the analytical laboratory. The soil vapor points were abandoned after sampling.

Soil vapor probes were installed to a depth of 8 ft bgs by Aztech for SV-07 and SV-08, and 5 ft bgs for SV-09. The boreholes were backfilled with glass beads and bentonite slurry was placed above the glass beads to the ground surface. A leak test was performed on each of the sampling trains and fittings to confirm that air leakage was not occurring.

The tubing was purged of approximately two to three probe volumes at a flow rate less than 0.2 liters per minute. PID readings were recorded during pumping. The air sampling pump was disconnected and the end of the tubing was connected directly to the Summa canister intake valve. Each Summa canister was checked to verify that the initial vacuum was 28 inches of mercury (28 in Hg), ±2 in Hg, before sampling. Samples were collected in laboratory-provided batch-certified 1.4 L Summa canisters with regulators calibrated to collect a sample for a 2-hour period. Soil vapor samples were analyzed for VOCs by USEPA method TO-15. A soil vapor sampling field data sheet is provided in Appendix A.

2.7 Soil Vapor Intrusion Sampling

Soil vapor intrusion sampling was conducted in structures near the site to determine whether actions were needed to address exposures to site-related contaminants. Soil vapor intrusion sampling was conducted in seven structures. The property locations are shown in Figure 8. The structures were selected by NYSDEC and NYSDOH. Sampling dates are as follows:

- Structures B01 through B03 - March 25 to 26, 2011;
- Structure B04 – February 4 to 5, 2012;
- Structure B05 – February 11 to 12, 2012;
- Structure B06 – April 13 to 14, 2012;
- Structure B07 – April 16 to 17, 2012 ; and,
- Structures B08 and B09 – April 1 to 2, 2014.

Soil vapor intrusion sampling was previously conducted at B02 and B03. NYSDEC previously installed a sub-slab depressurization system at B02. For both Structures B02 and B03, only indoor air samples

were collected (no sub-slab samples). At Structure B08, no sub-slab sample was collected. The location the property owner selected for the sub-slab sample was not safe due to its proximity to the sewer line.

2.7.1 Pre-Sampling Building Survey

Building surveys were performed prior to sampling. The focus of the pre-sampling building survey is to select sampling locations, identify chemical usage, and to identify and minimize conditions that may interfere with the proposed testing. The survey evaluated the type of structure, floor layout, air flows, and physical conditions. Information obtained during the pre-sampling building survey, including information on sources of potential indoor air contamination, was documented on the NYSDOH Indoor Air Quality Questionnaire and Building Inventory Form for each structure. The NYSDOH Indoor Air Quality Questionnaire and Building Inventory Forms were provided to NYSDEC separately to protect the confidentiality of the tenants and owners.

A product inventory was also conducted during the pre-sampling building survey to identify chemicals and products that may bias sampling results. In addition, the presence and description of odors and portable vapor monitoring equipment readings (e.g., PID) were recorded. PID readings were taken outdoors to establish typical background values.

Residents were provided with a list of activities to avoid during sampling. The list is provided in Appendix A.

2.7.2 Sampling Locations

Based on the observations made during the pre-sampling building survey, AECOM identified locations for the collection of the sub-slab vapor, indoor air, and outdoor air samples. Indoor air sampling locations were selected primarily in areas routinely occupied by the residents and/or employees, while sub-slab vapor sampling locations were selected to provide coverage of the presumed lateral extent of the soil vapor plume. Sub-slab vapor sampling locations were also selected based on the condition of the basement floor and presence of crawl spaces.

2.7.3 Sub-Slab Vapor Sample Collection

AECOM personnel installed the temporary probes. A hammer drill was utilized to make a 1-inch diameter hole through the concrete slab. The drill bit was advanced approximately 6 inches into the sub-slab material at each location to create an open cavity. A Teflon-lined polyethylene tube was then inserted into the hole. The annulus around the tube was sealed with a non-volatile putty to the top of the cement slab.

After installation of the probe, the tubing was connected to a SKC pump, and up to one liter (approximately three times the volume of air in the tubing and probe) of sub-slab vapor was purged at a rate less than 200 mL/min. Once purging was completed, the sampling tube was connected to a 6-liter, stainless steel Summa canister equipped with a pre-set regulator designed to sample for a 24-hour period. A field data sheet was completed for each sampling location (Appendix A). After setup was complete, samples were drawn concurrently with indoor and outdoor air samples at each property. At the completion of the sampling, all holes were patched to restore the pre-sampling condition.

2.7.4 Indoor Air Sample Collection

For the indoor air sampling program, indoor air samples were collected by placing the Summa canister in the breathing zone (4 to 6 ft above the ground). The flow regulator was connected to a 6-liter, stainless steel Summa canister equipped with a pre-set regulator designed to sample for a 24-hour period. A field data sheet was completed for each sampling location (Appendix A).

2.7.5 Outdoor Air Sample Collection

For the outdoor air sampling program, the locations of the samples were selected away from outdoor operations that are known to generate VOCs (e.g.,driveway). Outdoor air samples were collected by placing the Summa canister in the breathing zone (4 to 6 ft above ground). The flow regulator was connected to a 6-liter, stainless steel Summa canister equipped with a pre-set regulator designed to sample for a 24-hour period. A field data sheet was completed for each sampling location (Appendix A).

2.7.6 Analytical Methodology

The Summa canisters were retrieved at the completion of the 24-hour sample time. The samples were analyzed for VOCs using USEPA method TO-15. The quantitation limit was less than 1 $\mu g/m^3$ for all compounds in all media (sub-slab vapor, indoor air and outdoor air samples) in undiluted samples (i.e., samples with a dilution factor of 1.0); the quantitation limit for TCE was less than 0.25 $\mu g/m^3$ (typically 0.12 $\mu g/m^3$) to meet the evaluation criteria in the Soil Vapor/Indoor Air Matrix 1 (NYSDOH, 2006). The Summa canisters were batch certification by the laboratory.

3.0 LABORATORY ANALYTICAL RESULTS

This section summarizes the laboratory analytical results and provides a comparison to the applicable environmental criteria or guideline values.

3.1 Soil Sampling

Six soil samples (plus a field duplicate) were collected from six direct push soil boring locations collected on the DPW property. Four soil samples (plus two field duplicate samples) were collected from temporary well borings. The samples were submitted for laboratory analysis of VOCs. The soil analytical results are compared to the unrestricted use SCOs and presented in Table 3. VOC detections are summarized in Figure 9 for the DPW property and Figure 10 for downgradient samples.

On the DPW property, PCE was detected in three of the six samples and is above the criterion of 1300 µg/kg in sample SB-3 (5 to 5.17 ft bgs) at 17,000 µg/kg. There are no other exceedances of the unrestricted use SCOs. TCE, which is potentially a breakdown product of PCE, was detected below the criterion. Acetone, which may be used as a stain remover by dry cleaners, was detected below the criterion in four of the soil samples. Total xylene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and 1,2-dichloropropane, which may be associate with fuel sources, were detected below the unrestricted use SCOs.

At the temporary well borings, PCE was detected at low levels (2 µg/kg to 6 µg/kg) below the 1300 µg/kg unrestricted use SCO in three of the four samples. Cis-1,2-DCE was detected below the 250 µg/kg unrestricted use SCO in the two soil samples (TWP-3 at 1 µg/kg and TWP-4 at 7 µg/kg) collected on Manning Circle. Acetone was detected in the sample from TWP-12 collected from 10 to 10.5 ft bgs at 59 µg/kg, exceeding the 50 µg/kg unrestricted use SCO. Acetone was detected in soil samples closer to the site at concentrations below the unrestricted use criteria (2 µg/kg to 13 µg/kg). Because the acetone concentrations are lower in soil near the site, this exceedance is unlikely to be associated with the site. Methylene chloride, ethylbenzene, toluene, xylene, styrene, and 2-butanone were detected below the unrestricted use SCOs.

3.2 Groundwater Sampling

Groundwater was collected during three phases of the investigation. The groundwater data are compared to the class GA groundwater criteria and presented in Table 4 for VOCs and Table 5 for MNA parameters. The MNA results are evaluated to determine the contaminant fate in Section 7.5.

3.2.1 Overburden Wells

Detections of VOCs in environmental samples are summarized in Figure 11 for the overburden monitoring wells and Figure 12 for the temporary wells. Exceedances of the class GA groundwater criteria in the overburden wells are listed below:

- PCE (5 µg/L criterion)

- MW-C03 (100 µg/L October 2011 and 53 µg/L March 2012);
- MW-C04 (750 µg/L October 2011 and 570 µg/L March 2012);
- MW-C07 (53 µg/L October 2011);
- MW-C08 (37 µg/L October 2011 and 27 µg/L March 2012);
- MW-C14 (150 µg/L November 2012);
- TWP-1 (610 µg/L November 2012);
- TWP-2 (20 µg/L November 2012);
- TWP-3 (17 µg/L September 2013);
- TWP-4 (340 µg/L September 2013);
- TWP-5 (7 µg/L September 2013);
- TWP-6 (57 µg/L September 2013);
- TWP-7 (770 µg/L September 2013);
- TWP-12 (17 µg/L April 2014);

- TCE (5 µg/L criterion)
  - MW-C04 (620 µg/L March 2012);
  - MW-C07 (12 µg/L October 2011);
  - MW-C08 (7 µg/L October 2011 and 11 µg/L March 2012);
  - MW-C14 (17 µg/L November 2012);
  - TWP-1 (72 µg/L November 2012);
  - TWP-4 (42 µg/L September 2013);
  - TWP-6 (10 µg/L September 2013);
  - TWP-7 (87 µg/L September 2013);
- cis-1,2-DCE (5 µg/L criterion)
  - MW-C04 (1300 µg/L October 2012 and 1900 µg/L March 2012);

- MW-C07 (33 µg/L October 2011);
- MW-C08 (7.5 µg/L October 2011 and 7.4 µg/L March 2012) ;
- MW-C14 (62 µg/L November 2012);
- TWP-1 (510 µg/L November 2012);
- TWP-2 (26 µg/L November 2012);
- TWP-3 (8 µg/L September 2013);
- TWP-4 (190 µg/L September 2013);
- TWP-6 (49 µg/L September 2013);
- TWP-7 (270 µg/L September 2013);

- Vinyl chloride (2 µg/L criterion)
  - MW-C04 (1300 µg/L October 2012 and 1900 µg/L March 2012);
  - MW-C07 (33 µg/L October 2011);
  - MW-C08 (7.5 µg/L October 2011 and 7.4 µg/L March 2012).

TCE, cis-1,2-DCE, and vinyl chloride which are breakdown compounds of PCE were detected in MW-C07 (March 2012; TCE and cis-1,2-DCE), TWP-2 (November 2012; TCE), TWP-3 (September 2013; TCE), and TWP-5 (September 2013; cis-1,2-DCE) below the class GA criterion. Toluene was detected above the 5 µg/kg class GA groundwater criterion at TWP-12. Toluene was not detected above the criterion closer to the site and is unlikely to be site related. Other parameters that were detected below the class GA criteria are trans-1,2-DCE (MW-C04 and TWP-1), 1,1-DCE and methylcyclohexane (MW-C04), and toluene (TWP-13).

There were no detections in wells MW-C05, MW-C06, MW-C12, and MW-C13 at the west and southwest perimeter of the investigation area.

3.2.2 Bedrock Wells

Detections of VOCs in environmental samples are summarized in Figure 13 for bedrock wells. Exceedances of the class GA groundwater criteria in the bedrock wells are listed below:

- PCE (5 µg/L criterion)
  - MW-C09 (340 µg/L March 2012)
  - MW-C10 (1400 µg/L March 2012);

  - MW-C11 (790 µg/L November 2012);
  - MW-15 (560 µg/L November 2012);
  - MW-16 (310 µg/L November 2012);

- TCE (5 µg/L criterion)
  - MW-C09 (440 µg/L March 2012)
  - MW-C10 (99 µg/L March 2012);
  - MW-C11 (44 µg/L November 2012);
  - MW-15 (22 µg/L November 2012);
  - MW-16 (170 µg/L November 2012);
- cis-1,2- DCE (5 µg/L criterion)
  - MW-C09 (92 µg/L March 2012)
  - MW-C10 (91 µg/L March 2012);
  - MW-C11 (27 µg/L November 2012);
  - MW-15 (18 µg/L November 2012);
  - MW-16 (37 µg/L November 2012);
- trans-1,2- DCE(5 µg/L criterion)
  - MW-C09 (7.3 µg/L March 2012);
  - MW-16 (6.4 µg/L November 2012);
- Vinyl chloride (2 µg/L criterion)
  - MW-C09 (5.2 µg/L March 2012);

Vinyl chloride was detected below the class GA criterion in MW-16 (November 2012). Methyl tert-butyl ether (MTBE), cyclohexane, methylcyclohexane, and sec-butylbenzene were also detected. These compounds may be associated with fuel sources. Chloroform was detected in one well (MW-C09) at 1.1 µg/L, below the class GA criteria. Chloroform can be associated with waste from laundries.

There were no detections in the upgradient well MW-C01 in October 2011 or March 2012.

3.3 Soil Vapor Sampling

Three soil vapor samples, one outdoor air sample, and one field duplicate outdoor air sample were collected in July 2009. All air samples were analyzed for VOCs by USEPA method TO-15. The analytical results are presented in Table 6 and summarized in Figure 14. The detections were compared to the USEPA (2002) generic screening levels for an attenuation factor of 0.1 and risk of 1E-6. Exceedances of the screening criteria are listed below.

- PCE was detected in the three soil vapor samples and the outdoor air sample and is above the screening level of 8.1 µg/m^3 in SV-7 (3100 µg/m^3), SV-8 (2700 µg/m^3), and SV-9 (47 µg/m^3);
- TCE was detected in one of the three soil vapor samples and the outdoor air sample (duplicate) and is above the screening level of 0.22 µg/m^3 in SV-8 (18 µg/m^3);
- Chloroform was in two of the three soil vapor samples and the outdoor air sample and is above the screening level of 1.1 µg/m^3 in SV-8 (450 µg/m^3) and SV-9 (87 µg/m^3); and,
- Benzene was detected in one of the three soil vapor samples and the outdoor air sample and is above the screening level of 3.1 µg/m^3 in SV-9 (4.4 µg/m^3).

TCE is potentially a breakdown product of PCE. Chloroform is associated with several potential sources including laundries. Benzene may be associated with fuel sources.

Other compounds that were detected below the screening level include toluene, ethylbenzene, total xylenes, 4-ethyltoluene, 1,3,5-trimethylbenzene, n-heptane, n-hexane, which may be associate with fuel sources. Carbon tetrachloride and two Freon compounds (trichlorofluoromethane and dichlorodifluoromethane) were also detected.

3.4 Soil Vapor Intrusion Sampling

A total of 22 air samples and six field duplicate samples were collected from nine structures (B01 through B09) in 2011, 2012, and 2014. The air samples include sub-slab vapor samples, indoor air samples, and outdoor air samples. All air samples were analyzed for VOCs by USEPA method TO-15. The analytical results are presented in Table 7. A figure showing the sampling locations was provided to NYSDEC separately to protect the confidentiality of the tenants and owners.

The sub-slab sample detections were compared to the USEPA (2002) generic screening levels for an attenuation factor of 0.1 and risk of 1E-6. Exceedances of the screening criteria are listed below.

- PCE was detected in five of the six sub-slab samples and is above the screening level of 8.1 µg/m^3 in B04 (9800 µg/m^3) B05 (52 µg/m^3), B07 (8300 µg/m^3), and B09 (10 µg/m^3);
- TCE was detected in four of the six sub-slab samples and is above the screening level of 0.22 µg/m^3 in B04 (560 µg/m^3), B06 (1.2 µg/m^3), B07 (370 µg/m^3), and B09 (1.1 µg/m^3); and,
- cis-1,2-DCE was detected in four of the six sub-slab samples and is above the screening level of 350 µg/m^3 in B04 (2500 µg/m^3) and B07 (1500 µg/m^3).

Additional compounds were detected at levels below the screening criteria, including compounds that may be related to a fuel source (e.g., benzene, ethylbenzene, toluene, xylenes, and n-hexane) and Freons.

The indoor and outdoor air sample detections were compared to the NYSDOH (2006) guidance values. TCE exceeded the guidance value of 5 $\mu g/m^3$ in B03 (7.2 $\mu g/m^3$).

The soil vapor intrusion data were also compared to the soil vapor/indoor air matrices in the NYSDOH (2006) guidance. The comparison is provided in Table 8 for PCE and TCE. Based on the guidance, the recommendations for the structures are as follows:

- No further action for B09;
- Take reasonable and practical actions to identify sources and reduce exposures for B01, B05, and B06; and,
- Mitigate for B04, and B07.

No recommendations can be made for B03 and B08 based on the guidance, because sub-slab samples were not collected from the structures. A sub-slab depressurization system is in operation at B02.

NYSDEC and NYSDOH will determine the appropriate course of action for the structures in consultation with the property owners.

4.0 ANALYTICAL DATA AND USABILITY

Data were generated and validated for the soil, groundwater, soil vapor, and soil vapor intrusion sampling events. The laboratory data packages and the data usability summary reports (DUSRs) are provided in Appendix D on CD. The sample data generated for this RI were validated by an independent subcontractor, Environmental Data Services, Inc. (EDS) of Williamsburg, VA. The tabulated data used in this report include any qualifiers applied during validation.

Phase 1 and Phase 2 soil and groundwater samples were analyzed by Spectrum Analytical, Inc. Warwick, Rhode Island, a NYSDOH Environmental Laboratory Approval Program (ELAP) certified lab (ELAP ID 11376). Phase 3 groundwater samples were analyzed by Pace Analytical Services, Inc. (Pace; formerly H2M Labs, Inc.), Melville, New York (ELAP ID 10478). Phase 4 and Phase 5 soil and groundwater samples were analyzed by Pace, Melville, New York (ELAP ID 10478). Soil vapor and soil vapor intrusion samples were analyzed by TestAmerica, South Burlington, Vermont (ELAP ID 10391).

Site-specific quality control samples were collected as follows:

- Soil sampling (DPW property) – one matrix spike/matrix spike duplicate (MS/MSD) pair, one field duplicate;
- Soil sampling (temporary well borings) –one field duplicate per sampling event;
- Groundwater sampling - one trip blank, one MS/MSD pair, and one field duplicate per sampling event;
- Temporary well samples - one field duplicate per sampling event in September 2013 and April 2014;
- Soil vapor sampling - one field duplicate; and,
- Soil vapor intrusion sampling – one field duplicate per sampling event.

In addition, the laboratory performed batch quality control samples as required by the methods.

A summary of the data quality review is provided below. Groundwater data were validated for VOCs analysis only.

4.1 Soil Sampling

Soil data from samples collected in June 2011 were reported by Spectrum Analytical, Inc. in one sample delivery group (SDG), K1099. One DUSR was prepared for this SDG. A total of ten analyses were validated, including one MS/MSD pair, one field duplicate, one dilution, and six environmental samples.

There were several rejections of the data:

- Acetone was rejected in two original analysis samples and one reanalysis sample due to a severely low initial calibration relative response factor value; and,
- 2-Butanone and 1,4-dioxane were rejected in all samples due to severely low initial calibration relative response factor values.

Overall, the remaining data are acceptable for the intended purposes as qualified for the following deficiencies:

- Twelve VOC compounds were qualified as estimated in one original analysis sample due to low MS/MSD percent recoveries;
- Acetone was qualified as estimated in five original analysis samples due to a low initial calibration relative response factor value;
- 1,2-Dibromo-3-chloropropane was qualified as estimated in all original analysis samples due to a high initial calibration percent relative standard deviation value;
- Hexachlorobutadiene and 1,2,3-trichlorobenzene were qualified as estimated in one reanalysis sample due to high initial calibration percent relative standard deviation values; and,
- Chloromethane, vinyl chloride, and bromomethane were qualified as estimated in one reanalysis sample due to high continuing calibration percent difference values.

A waste characterization sample was collected from drummed soil cuttings. The analytical data for this sample were not validated.

Soil data from samples collected in September 2013 were reported by Pace in one sample delivery group (SDG), AECOM225. One DUSR was prepared for this SDG. A total of three analyses were validated for three environmental samples.

There were minor rejections of the data. This data cannot be used in the decision-making process for this project:

- 1,2-Dibromo-3-chloropropane was rejected in all samples due to a low continuing calibration relative response factor value.

Overall, the remaining data are acceptable for the intended purposes as qualified for the following deficiencies:

- 2-Hexanone was qualified as estimated in all samples due to a low laboratory control sample recovery; and,

- Several compounds (dichlorodifluoromethane, bromomethane, acetone, methyl acetate, 2-butanone, 4-methyl-2-pentanone, 2-hexanone, and 1,2,4-trichlorobenzene) were qualified as estimated in all samples due to high continuing calibration percent difference values.

Soil data from samples collected in April 2014 were reported by Pace in one sample delivery group (SDG), AECOM232. One DUSR was prepared for this SDG. A total of three analyses were validated for three environmental samples.

There were no rejections of the data. Overall, the data are acceptable for the intended purposes as qualified for the following deficiencies:

- Acetone was qualified as not detected in two samples due to method blank contamination; and,

- Several compounds (dichlorodifluoromethane, chloromethane, bromomethane, 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trigluoroethane, carbon disulfide, methylene chloride, trans-1,2-dichloroethene, and 1,2,4-trichlorobenzene) were qualified as estimated in all samples due to high continuing calibration percent difference values.

4.2 Groundwater Sampling

Phase 1 groundwater data from samples collected in October 2011 were reported by Spectrum Analytical, Inc. in one SDG, K2059. One DUSR was prepared for this SDG. A total of 13 analyses were validated, including one trip blank, one MS/MSD pair, one field duplicate, one dilution, one reanalysis, and seven environmental samples.

There were several rejections of the data. Acetone, 2-butanone, and 1,4-dioxane were rejected in all samples due to low initial calibration relative response factor values.

Overall, the remaining data are acceptable for the intended purposes as qualified for the following deficiencies:

- Several compounds were qualified as estimated in one dilution sample and one reanalysis sample due to analysis outside the recommended holding time;

- Several compounds were qualified as estimated in one original analysis sample due to low MS/MSD percent recoveries;

- Several compounds were qualified as estimated in all samples due to high initial calibration percent relative standard deviation values; and,

- 2,2-Dichloropropane and 2-hexanone were qualified as estimated in one dilution sample and one reanalysis sample due to high continuing calibration percent difference values.

Phase 2 groundwater data from samples collected in February 2012 were reported by Spectrum Analytical, Inc. in one SDG, L0372. One DUSR was prepared for this SDG. A total of 20 analyses were validated, including one trip blank, one MS/MSD pair, one field duplicate, four dilutions, and 12 environmental samples.

There were several rejections of the data: acetone, 2-butanone, and 1,4-dioxane were rejected in several samples due to low initial calibration relative response factor values.

Overall, the remaining data are acceptable for the intended purposes as qualified for the following deficiencies:

- PCE was qualified as not detected in five samples due to trip blank contamination;
- Several compounds (dichlorodifluoromethane, 1,4-dioxane, bromomethane, chloroethane, acetone, 2-butanone, and hexachlorobutadiene) were qualified as estimated in all samples due to high initial calibration percent relative standard deviation values; and,
- Acetone was qualified as estimated in 12 samples due to a high continuing calibration percent difference value.

The temporary well data collected in October 2012 were not validated.

Phase 3 groundwater data from samples collected in November 2012 were reported by Pace in one SDG, AECOM205. One DUSR was prepared for this SDG. A total of 11 analyses were validated, including one trip blank, one storage blank, one field duplicate, four dilutions, and four environmental samples.

There were no rejections of the data. Overall, the data are acceptable for the intended purposes as qualified for the following deficiencies:

- Acetone was qualified as not detected in three samples due to trip blank contamination; and,
- Several compounds (dichlorodifluoromethane, 4-methyl-2-pentanone, bromomethane, 2-hexanone, and 1,2-dibromo-3-chloropropane) were qualified as estimated in all samples due to high continuing calibration percent difference values.

Phase 4 groundwater data from samples collected in September 2013 were reported by Pace in one SDG, AECOM2224. One DUSR was prepared for this SDG. A total of 12 analyses were validated, including one trip blank, one storage blank, one field duplicate, three dilutions, and six environmental samples.

There were no rejections of the data. Overall, the data are acceptable for the intended purposes as qualified for the following deficiencies:

- 1,2,4-Trichlorobenzene was qualified as not detected in one dilution sample due to method blank contamination; and,
- Several compounds (dichlorodifluoromethane, 4-methyl-2-pentanone, bromomethane, 2-hexanone, trichlorofluoromethane, 2-butanone, chloroethane, bromoform, cyclohexane, dibromochloromethane, methylcyclohexane, 1,2,4-trichlorobenzene, and 1,2-dibromo-3-chloropropane) were qualified as estimated in all samples due to high continuing calibration percent difference values.

Phase 5 groundwater data from samples collected in April 2014 were reported by Pace in one SDG, AECOM231. One DUSR was prepared for this SDG. A total of five analyses were validated, including one trip blank, one storage blank, and three environmental samples.

There were minor rejections of the data. This data cannot be used in the decision-making process for this project:

- 1,2-Dibromo-3-chloropropane was rejected in all samples due to a low initial calibration relative response factor value.

Overall, the remaining data are acceptable for the intended purposes as qualified for the following deficiencies:

- Two compounds (2-hexanone and 1,2,4-trichlorobenzene) were qualified as estimated in all samples due to high initial calibration percent relative standard deviation values; and,

- Five compounds (dichlorodifluoromethane, chloromethane, methyl acetate, methylcyclohexane, and 4-methyl-2-pentanone) were qualified as estimated in all samples due to high continuing calibration percent difference values.

4.3 Soil Vapor Sampling

Soil vapor data from samples collected in July 2011 were reported by TestAmerica in one SDG, J6005. One DUSR was prepared for this SDG. A total of five analyses were validated, including one field duplicate, and four environmental samples.

There were no rejections of the data. Overall, the data are acceptable for the intended purposes as qualified for the following deficiencies:

- Toluene was qualified as estimated in one sample due to a high concentration above the linear range of the instrument; and,

- Six compounds (cyclohexane, toluene, ethylbenzene, o-xylene, m&p-xylene, and total xylenes) were qualified as estimated in two samples due to poor field duplicate precision.

4.4 Soil Vapor Intrusion Sampling

Soil vapor intrusion samples collected February 25 to 26, 2011 were reported by TestAmerica in one SDG, J4088. One DUSR was prepared for this SDG. A total of eight analyses were validated, including one field duplicate, one dilution, and six environmental samples.

There were no rejections of the data. Overall, the data are acceptable for the intended purposes. The data were not qualified.

Soil vapor intrusion samples collected February 4 to 5, 2012 were reported by TestAmerica in one SDG, J9327. One DUSR was prepared for this SDG. A total of four analyses were validated, including one field duplicate and three environmental samples.

There were no rejections of the data. Overall, the data are acceptable for the intended purposes as qualified for the following deficiencies: 4-ethyltoluene was qualified as estimated in two samples due to a high laboratory control sample recovery.

Soil vapor intrusion samples collected February 11 to 12, 2012 were reported by TestAmerica in one SDG, J9378. One DUSR was prepared for this SDG. A total of four analyses were validated, including one field duplicate and three environmental samples.

There were no rejections of the data. Overall, the data are acceptable for the intended purposes as qualified for the following deficiencies:

- Three compounds (methylene chloride, 4-ethyltoluene, and 1,3,5-trimethylbenzene) were qualified as estimated in one sample due to high continuing calibration percent differences; and,

- Cyclohexane was qualified as estimated in two samples due to poor field duplicate precision.

Soil vapor intrusion samples collected April 13 to 14, 2012 and April 16 to 17, 2012 were reported by TestAmerica in one SDG, J9378. One DUSR was prepared for this SDG. A total of seven analyses were validated, including one field duplicate and five environmental samples.

There were no rejections of the data. Overall, the data are acceptable for the intended purposes as qualified for the following deficiencies: two compounds (4-ethyltoluene and 1,3,5-trimethylbenzene) were qualified as estimated in five samples due to high continuing calibration percent differences.

Soil vapor intrusion samples collected April 1 to 2, 2014 were reported by TestAmerica in one SDG, J21756. One DUSR was prepared for this SDG. A total of six analyses were validated, including one field duplicate and five environmental samples.

There were no rejections of the data. Overall, the data are acceptable for the intended purposes as qualified for the following deficiencies: two compounds (4-ethyltoluene and 1,3,5-trimethylbenzene) were qualified as estimated in two samples due to high percent relative standard deviation values.

5.0 GEOLOGY/HYDROGEOLOGY

5.1 Regional Geology

The site is located in an area of Westchester County that is characterized by a thin surficial layer of glacial till and stream deposited (fluvial) sediments overlying shallow metamorphic and igneous bedrock. A description of the surface soils and underlying bedrock is provided below.

According to the Surficial Geology Map of New York – Lower Hudson Sheet (Cadwell, 1989) the surface layer consists of glacial till. The till is of variable texture and poorly sorted. According to Cadwell (1989), the soil is in general relatively impermeable. The thickness varies from 1 meter to 50 meters.

The United States Department of Agriculture characterizes the land under the site and nearby vicinity as urban land (Figure 15). Southwest of the site, the land is characterized as Urban land – Charlton Complex. The parent material is acid loamy till derived mainly from schist, gneiss or granite. The capacity of the most limiting layer to transmit water is moderately high to high (1.14 ft/day to 11.9 ft/day. A frequently flooded Fluvaquents-Udifluvents complex is located on the border of the Hutchinson River west of the site. The Charlton series consists of well drained loamy soils formed in till. East of the site, there is an area of Chatfield-Charlton complex soils (CsD). The Chatfield series consists of well to somewhat excessively drained soils formed in till. The CsD areas are hilly and very rocky. The parent material is loamy till derived mainly from schist, gneiss, or granite. The capacity of the most limiting layer to transmit water varies from 0.02 ft/day to 11.9 ft/day.

Based on a review of the Geologic Map of New York published by the New York State Museum of Science (Fisher, et al., 1970), the site is located in the Manhattan Prong geologic sub-province of the New England Upland physiographic province (Figure 16). The bedrock unit beneath the site is located is the Hartland Formation, which is Cambrian in age. According to Fisher (1970), the metamorphic rocks that comprise the Hartland Formation at and in the vicinity of the site include a basal amphibolite overlain by pelitic schists. Approximately 600 ft to the west of the site, the bedrock unit is the Manhattan Formation comprised of pelitic schists and amphibolites.

5.2 Site Geology

Information concerning the site stratigraphy was obtained from the soil collected from soil borings. Fill, sand, and gravel were identified in the surface soils within the study area. Rocks and boulders were encountered during drilling activities. Drilling was difficult due to the compaction of the till. Soil characterization of the direct push borings is documented in the logs provided in Appendix A. The DPW property behind the site had recently undergone construction. The area is now completely asphalt covered. Below the asphalt, up to 39 inches of fill was identified in five of the borings. Black stained fill with a fuel odor was identified in one boring 4 to 13 inches bgs (SB-04). Boring SB-09 was characterized to the top of bedrock at 40 ft bgs. Medium and coarse sand with a trace of gravel was found from approximately 1 to 11.5 ft bgs. A layer of gravel with coarse to medium sand was found from 11.5 to 12.25 ft bgs. Below the gravel layer, the soil is a poorly sorted mix of medium and coarse

sand with gravel. Samples collected during installation of MW-C14 found medium sand with gravel. No confining units were observed in the soil borings.

The depth to bedrock surface varies across the study area. A cross-section showing the depth to bedrock is provided in Figure 17. Bedrock is located from 8 ft bgs at MW-C01 to 47 ft bgs at MW-C11. Based on review of rock cores, the bedrock in the study area is Manhattan schist. The surface of the bedrock beneath the DPW property is highly fractured. Competent rock is found below 5 ft of the bedrock surface. At MW-C15, more than 10 ft of unfractured rock was encountered beneath the top of rock.

5.3 Regional Hydrogeology

The regional groundwater flow is assumed to mimic the surface topography, which slopes from the north and east to the south and west towards the Hutchinson River. It is likely that groundwater beneath the study area discharges to the Hutchinson River. The primary and principal aquifers are defined in NYSDEC (1990). There are no primary and principal aquifers in the vicinity of the site (NYSDEC, 2012). Westchester County prepared a map of natural resources in the Village of Pelham, New York (Westchester County Information Systems, 2012). No aquifer is shown beneath the study area. Municipal water is supplied to this area. Groundwater is not used as a resource at or in the vicinity of the site.

5.4 Site Hydrogeology

Nine overburden and five bedrock monitoring wells were installed in addition to one existing bedrock well to obtain information regarding the site hydrogeology and groundwater quality. Groundwater was encountered in the overburden at depths ranging from approximately 5.5 to 20.9 feet bgs and in the bedrock wells at 7.5 to 14.1 ft bgs. Table 2 summarizes the screen intervals and the depths to groundwater measured in the wells during the sampling events in October 2011, February 2012, and November 2012 and the corresponding elevations.

Water table surface contour maps for elevations measured during the February 2012 sampling event are shown in Figure 18 for the overburden wells and Figure 19 for the bedrock wells. The map shows that the groundwater flow direction is from the northeast to the southwest for the overburden wells and to the west for the bedrock wells. The groundwater elevations vary from 8.24 ft amsl in MW-C12 to 13.49 ft amsl in MW-C03 in the overburden wells. The direction of groundwater flow in the wells is consistent with the presumed regional groundwater flow direction based on local topography. The bedrock well figure may be inaccurate due to the small number of wells. The groundwater elevations vary from 11.6 ft amsl in MW-C10 to 37.94 ft amsl in MW-C01 in the bedrock wells.

Water table surface contour maps for elevations measured during the November 2012 sampling event are shown in Figure 20 for the overburden wells and Figure 21 for the bedrock wells. The groundwater flow direction is from the northeast to the southwest/south-southwest in the overburden and bedrock wells. The groundwater elevations vary from 8.14 ft amsl in MW-C12 to 13.49 ft amsl in MW-C03 in the overburden wells. The groundwater elevations vary from 6.68 ft amsl in MW-C15 to 34.86 ft amsl in MW-C01 in the bedrock wells.

The well location for MW-C08 was initially attempted farther to the east. No groundwater was observed and the boring was abandoned. From this attempt, it is concluded that groundwater in the overburden is not present farther to the east near Wolfs Lane.

6.0 CONTAMINATION – NATURE AND EXTENT

6.1 Nature of Contamination

Historical data collected at the site since 1991 have identified chlorinated VOCs among the contaminants in groundwater at the Crystal Cleaners site and immediate vicinity. Data collected during this RI are consistent with previous data with regard to the nature of contamination found.

6.1.1 Soil

VOC detections for soil samples collected on the DPW property are summarized in Figure 9. PCE was detected in three of the six samples located directly to the west of the Crystal Cleaners facility. One PCE detection at 17,000 µg /kg exceeds the unrestricted use SCO of 1,300 µg/kg. Since dry cleaners typically use PCE based solvents, PCE is considered a source contaminant.

Acetone was detected in the soil sample from TWP-12 above the unrestricted use SCO. Acetone can be used as a spot remove by dry cleaners. Because the exceedance for acetone is located downgradient from the site and acetone levels detected in soil on the DPW property were below the unrestricted use SCO, the exceedance is not associated with the site.

The chemical of concern in the soil is PCE.

6.1.2 Groundwater

As shown on Figure 11 and Figure 12, the VOCs detected in the overburden wells at concentrations exceeding the class GA groundwater criteria are the chlorinated aliphatics PCE, TCE, cis-1,2-DCE, and vinyl chloride. As shown on Figure 13, the VOCs detected in the bedrock wells at concentrations exceeding the class GA groundwater criteria are the chlorinated aliphatics PCE, TCE, cis-1,2-DCE, vinyl chloride, trans-1,2-DCE, and 1,2-dichloroethane. Since dry cleaners typically use PCE based solvents, PCE is considered a source contaminant. The remaining chlorinated organic compounds are likely to have been an impurity in the dry cleaning solvent or other chemicals used in operations or result from the degradation or dechlorination of PCE.

MTBE was detected above the class GA criterion in bedrock wells MW-C11, MW-C15, and MW-C16. This parameter is likely to originate from another source since MTBE is almost exclusively used as a fuel additive in motor gasoline and is not associated with dry cleaning operations. MTBE may be associated with Pelham Residence site (including the DPW) or the 110 Wolfs Lane site discussed in Section 1.1.2.1, both of which stored petroleum products.

Toluene was detected above the class GA criterion in temporary well TWP-12. This parameter is likely to originate from another source, is a component of gasoline, is not associated with dry cleaning operations, and was not detected in wells near the site.

The chemicals of concern in the overburden groundwater are: PCE, TCE, cis-1,2-DCE, and vinyl chloride. The chemicals of concern in the bedrock groundwater are: PCE, TCE, cis-1,2-DCE, vinyl chloride, trans-1,2-DCE, and 1,2-dichloroethane.

6.1.3 Soil Vapor

Soil vapor detections are summarized in Figure 14. PCE and TCE were detected above the USEPA generic screening levels. Since dry cleaners typically use PCE based solvents, PCE is considered a source contaminant. TCE is likely to have been an impurity in the dry cleaning solvent or results from the degradation or dechlorination of PCE.

Chloroform and benzene were also detected above the USEPA generic screening levels. Chloroform may be associated with laundry services. Benzene may be associated with fuel sources. There is no clear link to Crystal Cleaners as the source of these compounds.

The chemicals of concern in the soil vapor are: PCE and TCE.

6.2 Extent of Contamination (Contaminant Distribution)

This section discusses the distribution of contamination on all properties from which samples were collected and data are available. While the major discussion of contaminant migration (transport) is in the following sections of this report, the discussion of contaminant distribution in this section assumes the groundwater flow is generally to the southwest.

6.2.1 Soil

No map was prepared for the soil samples. The PCE concentration exceeded the unrestricted use SCO in one soil boring on the DPW property which was about 75 ft from the back of the Crystal Cleaners building and roughly consistent with the previously unpaved area. The two borings located closer to the building have much lower (4 orders of magnitude) concentrations. From this data, it is assumed that the extent of the PCE concentrations exceeding the criterion is limited to a relatively small area west of the Crystal Cleaners facility. Soil closer to or beneath the Crystal Cleaners site may be impacted and acting as a source, but this area was not sampled.

6.2.2 Groundwater

A contaminant distribution maps were developed for PCE in the overburden wells (Figure 22) and in the bedrock wells (Figure 23). Other VOC chemicals of concern are coincident with PCE in groundwater. Therefore, these figures represent the extent of site-related VOC contamination. The diagram is based on the maximum concentration in any sampling round. The areas with concentrations greater than 5 µg/L approximates the horizontal extent of the groundwater plume exceeding the class GA groundwater criterion for PCE. The highest concentrations of PCE are centered on the DPW property. The concentrations decrease to non-detect to the west at MW-C05 and MW-C06 and to the southwest at wells MW-C12 and MW-C13. The results from temporary wells TWP-12 and TWP-13 provide bounding of the plume to the south with PCE not detected at TWP-13 and PCE approaching the class GA criterion of 5 µg/L with a detection of 17 µg/L. The PCE concentrations at well MW-C14 and temporary wells TWP-1 through TWP-7 with the highest PCE concentration detected at TWP-7 (770 µg/L), exceed the class GA criterion for PCE. The extent of the plume is bounded towards the east. Shallow bedrock was observed at the attempted temporary well

points TWP-8 through TWP-11 near Wolfs Lane and at the first attempted location for well MW-C08 along Sparks Avenue, farther east towards Wolfs Lane. Groundwater was not encountered in these borings. The impacted overburden aquifer appears to be bounded to the east by the shallow bedrock.

A similar contaminant distribution map was developed for PCE in the bedrock wells (Figure 23).The highest concentration of PCE was detected on the DPW property. The PCE concentrations exceed the class GA criteria in all bedrock wells except the upgradient well MW-C01. PCE concentrations in bedrock are unbounded vertically and horizontally. The levels are well above the class GA criterion and the groundwater is likely to migrate through fractures in the bedrock. The extent of contamination cannot be confidently predicted from this information.

Upon review of the groundwater distribution of PCE and related chemicals, with the most elevated concentrations in the groundwater and the isolated elevated soil sample exceeding the unrestricted use SCOs found on the DPW property, it seems possible that the Pelham Residence site (including the DPW) could be a potential second source of the PCE. PCE may have been used as a degreaser during operations by the Village of Pelham.

6.2.3 Soil Vapor

A contaminant distribution map was developed for PCE in the soil vapor (Figure 24). TCE detections are coincident with PCE in soil vapor. Therefore, these figures represent the extent of site-related VOC contamination. The diagram is based on the maximum concentration in either sampling round. The sub-slab soil vapor intrusion sample results were also considered in the development of the contours. The locations of the soil vapor intrusion samples are not shown on Figure 24 to protect the confidentiality of the tenants and owners. The PCE soil vapor intrusion distribution approximates the overburden groundwater distribution. The highest concentrations of PCE are centered on the DPW property. The concentrations decrease to the south and west of the site.

6.3 Volume of PCE Contaminated Groundwater

The volume between the groundwater surface and the depth of PCE contamination in the overburden was estimated. The horizontal extent is limited to the area exceeding 5 µg/L shown on Figure 22 for the overburden wells. The impacted area is approximately 247,000 $ft^{2,}$ although the southern extent is not documented. The approximate depth of the groundwater above bedrock is 27 ft. The volume of soil and groundwater is 7,000,000 ft^3. This volume was multiplied by the effective porosity to estimate the volume of impacted groundwater. A default effective porosity value of 0.375 was selected from Argonne National Laboratory (1993) assuming the middle range for loam. The estimated volume of contaminated groundwater is 20 million gallons in the overburden.

An estimate of the volume of impacted groundwater in bedrock cannot be estimated from the data collected to date, because the horizontal and vertical extent of groundwater in bedrock exceeding the class GA criterion cannot be ascertained.

6.4 Uncertainties in Nature and Extent of Contaminant Distribution

The identity of the contaminants of concern is well-established, with data collected from the RI wells confirming findings from the site investigation in terms of compounds detected (PCE, TCE, DCE, and vinyl chloride) and the spatial distribution of the contamination.

6.4.1 Soil

Based on the data collected for the RI (Figure 9), the extent of PCE soil contamination on the DPW property is limited. Additional soil contamination may be present closer to or under the facility, but data are not available for this area. There were no exceedances of the unrestricted use SCO for PCE in the soil samples from temporary well borings collected downgradient of the site.

6.4.2 Groundwater

The vertical extent of contamination is bounded for the overburden groundwater by the shallow bedrock. The vertical contamination is not bounded for the bedrock groundwater.

For the overburden groundwater, the horizontal (areal) extent of contamination is fully defined to the west and southwest. The horizontal extent is approximated by of the location of TWP-12, which is in the direction of groundwater flow based on the PCE concentration pattern, with a concentration of 17 µg/kg, which is approaching the 5 µg/kg class GA criterion for PCE. Overburden groundwater is not expected to be present to the east of the study area approaching Wolfs Lane. The vertical extent of the overburden groundwater is bounded by bedrock. The volume of PCE contaminated groundwater in the overburden is estimated using the approximate extents of the plume and effective porosity assigned by soil or bedrock type using literature values.

For the bedrock groundwater, the horizontal and vertical extent of contamination is not bounded.

6.4.3 Soil Vapor

NYSDEC and NYSDOH have reviewed the soil vapor and soil vapor intrusion data. Property owners within the impacted areas have been contacted for sampling and/or mitigation, as necessary.

7.0 CONTAMINANT FATE AND TRANSPORT

Fate and transport properties are important for understanding the behavior of the chemicals of concern at the site. As discussed in Section 6, the contaminants of concern for the site are PCE, TCE, cis-1,2-DCE, vinyl chloride, trans-1,2-DCE and 1,2-dichloroethane. This section focuses on the subsurface fate and the mobility of PCE and related chemicals. An understanding of the fate and transport of PCE and related chemicals is necessary to evaluate future potential exposure risks and to evaluate remedial technologies at the feasibility study stage. Physical properties of the chemicals of concern are summarized on Table 9.

7.1 Potential Routes of Contaminant Transport

Contaminant transport pathways provide the mechanisms for contamination to travel from its area of deposition and to potentially leave the site. Potential contaminant transport pathways include:

- Vertical infiltration of free phase chemicals into the overburden and bedrock;
- Rainwater flow through contaminated soils with subsequent flushing and dissolution into the deeper vadose zone and aquifer matrix;
- Groundwater flow off site;
- Discharge of contaminated groundwater to downgradient surface water bodies; and,
- Volatilization of contaminants and transport through soil interstitial spaces or along subsurface features such as utility runs.

Of these potential mechanisms, groundwater flow and movement of contaminants with groundwater are the most significant routes of migration for chlorinated contaminants.

Vertical infiltration of free-phase chemicals (non-aqueous phase) may have been an important process historically, because the ability for PCE to migrate through many feet of overburden aquifer and into the bedrock would have been limited as a dissolved phase material, and would have been more likely transported as a dense non-aqueous phase liquid (DNAPL). However, no non-aqueous phase liquid (NAPL) has been observed at the site, and observed contaminant concentrations do not suggest the potential presence of NAPL.

Rainwater flow through contaminated soils (contaminant leaching) may have been a transport mechanism of historical significance. However, most of the study area west of the site is now paved. Soil sampling to date located a limited extent of contaminated soil. However, since the PCE migrated through the soil to reach the groundwater, this mechanism is likely to have been important prior to 2011.

Groundwater may ultimately discharge to the Hutchinson River. However, the plume in the overburden groundwater does not appear to extend to this water body. The extent of the plume in the bedrock is not known.

Comparison of the soil vapor and groundwater concentration data shows the distribution of these matrices overlap. Therefore, it is assumed that an understanding of the groundwater transport will provide an indication of soil vapor transport.

7.2 Groundwater Flow

Groundwater surface elevation data were collected during each sampling round. Groundwater contours are presented in Figures 18 and 19, for the overburden and bedrock wells in February 2012 and Figures 20 and 21, for the overburden and bedrock wells in October 2012. The groundwater elevation data are summarized in Table 2. As illustrated in these figures, the groundwater flow direction in the overburden and bedrock wells is toward the southwest. These results confirm the presumed groundwater flow direction based on the site topography.

The following modified Darcy equation provides an estimate of the local overburden groundwater seepage velocity, using the hydraulic gradient information and average hydraulic conductivity:

$$V_s = K_i/n_e$$

where:

Vs = groundwater seepage velocity (ft/day),

K= hydraulic conductivity (ft /day),

i = hydraulic gradient (ft/ft), and

n_e = effective porosity.

Groundwater flow is estimated at 0.27 ft/day, assuming hydraulic conductivity of 10 ft/day (sand and gravel, semi-pervious; Bear, 1972), hydraulic gradient of 0.01 ft/ft, and effective porosity of 0.375 (mid-range for sand; Argonne National Laboratory, 1993).

7.3 Contaminant Transport

The process by which a solute (dissolved phase contaminant) is transported by the bulk movement of groundwater flow is referred to as advection (Driscoll, 1986). The average linear velocity of groundwater through a porous aquifer is determined by the hydraulic conductivity, effective porosity of the aquifer formation, and hydraulic gradient (Freeze and Cherry, 1979). The velocity of a contaminant in the groundwater can be decreased if there is precipitation/dissolution or partitioning of the contaminant into other media (e.g., adsorption). These physiochemical processes are discussed below.

7.3.1 Adsorption

One of the most important geochemical processes affecting the rate of migration of chemicals dissolved in groundwater is adsorption to and desorption from the soil matrix. If the organic chemical is strongly adsorbed to the solid matrix (i.e., the aquifer material), the chemical is relatively immobile and will not be leached or transported from the source. If the organic chemical is weakly adsorbed, the chemical can be transported large distances from the source, contaminating large quantities of groundwater. The degree of adsorption also affects other transformation reactions such as volatilization, hydrolysis, and biodegradation since these reactions require the chemical to be in the dissolved phase.

The distribution of chemicals between water and the adjoining solid matrix is often described by the soil/water distribution coefficient, K_d. For dissolved chemicals at environmental concentrations, the distribution coefficient is usually defined as the ratio of concentrations in the solid and water phase (Freeze and Cherry, 1979). K_d has been shown to be proportional to the fraction of natural organic carbon (f_{oc}) in the solid matrix, the solubility of the chemical in the aqueous phase and the n-octanol/water or octanol/carbon partition coefficient (K_{ow} or K_{oc}, respectively). Retardation factors, described below, and K_d values are site specific.

A convenient way to express chemical mobility is by use of the retardation factor (R_d), which is a function of the average velocity of the retarded constituent, velocity of the groundwater, soil bulk density, and total porosity. If the K_d equals zero, the chemical species of concern is not affected by physiochemical reactions and migrates at the same velocity as the water based on convective-dispersive mechanisms. If the K_d greater than zero, the chemical species will be retarded. More accurately, the retardation factor is the average linear velocity of the groundwater divided by the velocity of the contaminant chemical at the point when the chemical concentration is one-half the concentration of the chemical at its source. When K_d equals zero (no adsorption), R equals one (i.e., the chemical and water move at the same velocity). If R equals 10, the contaminant chemicals move at one-tenth the velocity of the groundwater.

Adsorption of chlorinated aliphatics at the site may be an important process influencing the transport of contaminants in groundwater. The importance of adsorption depends significantly upon the characteristics of the aquifer matrix material, which acts as the adsorbing medium. In particular, adsorption of hydrophobic organic compounds has been shown to be a function of the amount of natural organic carbon in the aquifer matrix. PCE has a K_d greater than zero and, therefore, will be adsorbed or retarded to a degree. The calculated retardation factors are based on literature default values for some aquifer characteristics for which site-specific data are not available.

7.3.2 Dispersion

The study of dispersion at a site is important to determine the concentration of a contaminant and the time it will take to reach a specific location (e.g., a drinking water well). In other words, dispersion of a contaminant affects the velocity and spatial distribution of a contaminant. Although the above discussion implies one-dimensional dispersion, in actuality, dispersion is three dimensional (i.e., longitudinal, transverse, and vertical). The longitudinal and transverse dispersion coefficient are affected primarily by aquifer heterogeneity, whereas, the vertical dispersion is also affected by the density of the contaminant. Because chlorinated aliphatics as a group are denser than water, they have a tendency to migrate vertically faster than many other contaminants (e.g., gasoline-related hydrocarbons such as benzene and toluene).

7.3.3 Dilution

Dilution is an effect of dispersion. When contaminants come in contact with uncontaminated groundwater, mixing occurs, resulting in a decrease in contaminant concentration. Rainwater precipitation can also cause dilution of contaminant concentrations. The area near the site and a portion of the remaining study area are paved.

7.4 Contaminant-Specific Transport Velocity

As noted above, contaminant-specific migration in the groundwater is reduced by adsorption, expressed as the retardation factor. The retardation factor, Rd, is calculated as:

$$R_d = 1 + K_{oc} * f_{oc}\ p_b / n_e$$

where:

R_d = retardation factor

K_{oc} = organic carbon partition coefficient

f_{oc} = fraction of organic carbon

p_b = dry bulk density of aquifer matrix

n_e -- effective porosity

The fraction of organic carbon is estimated at 0.002. The K_{oc} values were obtained from www.state.nj.us/dep/srp/vaporintrusion.htm. Bulk density is estimated at 1.5 g/cc for (mid-range for sandy clay loam; Natural Resources Conservation Service, 2012).

The contaminant transport rate V_{pt} is determined by dividing the groundwater seepage velocity V_s by the retardation factor R_d:

$$V_{pt} = V_s / R_d$$

The distance (D) that a contaminant travels in a given time (t) is calculated using the following equation:

$$D = V_{pt} * t$$

Using the equations above, the transport rate and distance for the principle contaminants were calculated and are shown on Table 10. The estimated seepage rates range from 0.07 ft/day to 0.23 ft/day. The contaminated overburden groundwater would reach the Hutchinson River between 12 and 40 years from the time of the release, depending on the contaminant of concern.

7.5 Contaminant Fate

The fate of organic chemicals in the subsurface environment is affected by a variety of physiochemical and biological processes. Abiotic transformations are not significant factors in contaminant fate.

Biodegradation is the one process which may have reduced PCE concentrations because breakdown products were detected in groundwater samples near the site.

7.5.1 Biotic Transformation

Anaerobic biodegradation for chlorinated VOCs occurs when bacteria sequentially remove chlorine atoms from the VOC molecule and replace with hydrogen under anaerobic conditions.

PCE → TCE → DCE → vinyl chloride → ethene

Naturally occurring bacteria create hydrogen under reducing conditions that replaces chlorine to sequentially dechlorinate chlorinated ethenes. These biologically-mediated reactions occur favorably in anaerobic (negligible dissolved oxygen), reducing (oxidation reduction potential or ORP is less than -75 mV), circum-neutral (pH between 6.0 and 8.5) groundwater. Under direct anaerobic reductive dechlorination, the bacteria use the chlorinated VOC as the electron acceptor and gain energy from the reaction. Cometabolic anaerobic reductive dechlorination occurs when the chlorinated VOCs are reduced by a non-specific enzyme or co-factor produced during microbial metabolism of another compound (i.e., the primary substrate) in an anaerobic environment. Anaerobic biodegradation is the best understood biotic reaction pathway for chlorinated VOCs; and enhanced reductive dechlorination is a commonly used in-situ remediation method for site contaminants.

For microbial mediated reactions, aerobic reactions are the most energetically favorable. As dissolved oxygen is consumed, microbes use electron acceptors in the order of reducing energy efficiencies (denitrification of nitrate, manganese reduction, ferric iron reduction, sulfate reduction, carbon dioxide in methanogenesis). Biotic reductive dechlorination typically occurs most favorably in ORP range needed for sulfate reduction or methanogenesis (i.e., below -200 mV). Water quality data from the site indicate that the groundwater near the site is slightly anaerobic to aerobic. Under highly reducing conditions, nitrate and sulfate would not be expected to be measured as these would be reduced to ammonia and sulfide, respectively. Negative ORP values, dissolved oxygen less than 1 mg/L, and the presence of sulfide, methane, elevated total/dissolved iron and manganese are all indicators of anaerobic conditions which could support anaerobic reductive dechlorination (see Table 5).

The best indicator that anaerobic reductive dechlorination is occurring is the presence of less chlorinated daughter products that accompany decreases in parent VOCs as shown in the reactions above (i.e., increase in TCE and cis-1,2-DCE as PCE decreases). VOC analysis in site wells indicate that reductive dechlorination is occurring to some degree in groundwater near the site with decreases in concentration of the parent VOC (PCE), and concentrations of daughter products have increased over the same time period. In particular reductive dechlorination appears to be occurring near well MW-C04 (and previously at nearby well MW-3A), and groundwater quality in this well is more characteristic of anaerobic conditions than other wells sampled.

Microorganisms capable of degrading PCE to TCE to cis-1,2-DCE are omnipresent in subsurface environments. However, there is only one known microbe capable of fully dechlorinating PCE to non-toxic ethene (dehalococcoides or DHC), and members of this bacteria group are not present in the subsurface at all sites or uniformly at a given site. As such, the reductive dechlorination reactions can stall at cis-1,2-DCE or vinyl chloride. Detection of ethene is one indicator that dechlorination is occurring to completion; however, low to non-detect concentrations were measured in samples in

2011 and 2012. If site groundwater was more anaerobic, reductive dechlorination would likely occur at a faster rate and on a larger scale. The presence of daughter products in wells further downgradient may be the result of partial reductive dechlorination closer to well MW-C04 in groundwater that has migrated with time.

7.5.2 Anaerobic Abiotic Transformation

Abiotic reductive dechlorination occurs when a chlorinated VOC is reduced by a chemical reaction (not biological) with a reactive compound, such as iron-sulfide or zero-valent iron. Under these abiotic reactions dechlorination PCE is dechlorinated to acetylene products and does not generate lesser chlorinated daughter products (as described above). The abiotic reaction pathway is summarized below, and this reaction is often also referred to as biogeochemical reduction as biotic reactions are required to generate the iron sulfide that would reaction with PCE.

Sulfate → Sulfide (sulfur reducing bacteria)

Iron + Sulfide → Iron Sulfide (iron reducing bacteria)

PCE + Iron Sulfide → acetylene (abiotic beta elimination)

The lack of hydrogen sulfide and high measured concentrations of sulfate (12 to 120 mg/L) in all monitoring wells suggests that conditions are not reducing enough to support sulfur reducing bacteria. Without significant quantities of sulfide in the subsurface, this reaction pathway is likely not occurring at the site.

7.5.3 Aerobic Co-metabolism and Aerobic Oxidation

Aerobic co-metabolism has been observed where biochemical reactions from bacterial enzymes catalyze aerobic oxidation of certain chlorinated VOCs while not providing any benefit to the bacteria. Aerobic oxidation occurs in aerobic or mildly anaerobic (iron reducing) conditions where lesser chlorinated ethenes are used by bacteria as electron donors, and the chlorinated ethene is oxidized. Bacteria capable of aerobically oxidizing vinyl chloride are virtually ubiquitous in the environment, and establish themselves very soon after vinyl chloride appears. However, no aerobic co-metabolic or oxidation pathways have been identified for PCE. As noted above, all monitoring wells indicate aerobic to slightly anaerobic groundwater conditions, and these aerobic reactions may be occurring to some degree where some reductive dechlorination has generated daughter products.

7.5.4 Biodegradation at the Site

Groundwater monitoring indicates that anaerobic reductive dechlorination is occurring to some extent based on the presence of lesser chlorinated daughter products. However, as groundwater conditions are only slightly anaerobic to aerobic, reductive dechlorination is limited in extent and rates without further enhancement. Aerobic co-metabolism and/or aerobic oxidation of generated PCE daughter products may be occurring, but site data cannot be used to confirm these processes.

8.0 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

A qualitative human health exposure assessment was completed based on the information presented in the preceding sections of this RI report. This exposure assessment discusses potential migration routes by which chemicals in the environment may be able to reach human receptors. This discussion is based on current and hypothetical future site conditions. The assessment is based on the requirements in DER-10 Appendix 3B. A summary of the assessment is provided in Table 11. The five elements associated with exposure pathways are described below for the study area.

8.1 Contaminant Source Description

Based on the RI findings, the source of contamination is a limited area of soil PCE contamination adjacent to the site on DPW property; and groundwater contamination in the overburden and bedrock within the study area. The chemicals of concern are PCE, TCE, cis-1,2-DCE, vinyl chloride, trans-1,2-DCE, and 1,1-dichloroethane. The extent of contamination was discussed in Sections 6 of this RI. The extent of contamination is represented by PCE isopleths shown in Figure 22 for groundwater in the overburden, Figure 23 for groundwater in bedrock, and Figure 24 for soil vapor.

8.2 Contaminant Release and Transport Mechanisms

The regional groundwater flow direction is to the southwest towards the Hutchinson River. Soil gas is transported through pores in the soil and cracks in building slabs and basement floors and walls.

8.3 Potential Exposure Points

There is no direct exposure to the workers at the Crystal Cleaners. NYSDEC conducted a site visit of the Crystal Cleaner facility in January 2008. No PCE related contamination was observed in the facility.

There is no current exposure to contaminated soil. The area overlying the contaminated soil is the paved DPW property. Construction workers could be exposed to the contaminated soil in the future.

There is no current exposure to contaminated groundwater. Groundwater is found 5 ft bgs and deeper within the study. There are no known groundwater wells in the study area. Construction workers in the study area could be exposed to the groundwater in the future.

There is current exposure to contaminated soil vapor. Elevated levels were detected in structures within the study area. As discussed in Section 1.1.2.3, NYSDEC installed a sub-slab depressurization system at Structure B02. Based on an indoor air sample collected in 2011 at Structure B02, there is currently no significant exposure to the receptors at this structure. The future exposure scenario is the same as the current except that construction workers in the study area could also be exposed to soil vapor in the future.

8.4 Routes of Exposure

There is currently no route of exposure for soil and groundwater in the study area. The current and future route of exposure for soil vapor is inhalation within some structures located in the study area. The future route of exposure for soil, groundwater, and soil vapor is through direct dermal contact, incidental ingestion, and inhalation in excavated areas.

8.5 Receptor Populations

The site is currently operating as a dry cleaner. Workers at the site, and workers and residents in structures within the study area are current receptor populations. Construction workers are a future receptor population.

8.6 Exposure Pathways

There are no current complete exposure pathways for soil or groundwater.

There is currently a complete exposure pathway for inhalation of soil vapor to some off-site receptors. This pathway has being investigated by soil vapor intrusion sampling as documented in Section 1.1.2.3 and Section 3. This exposure pathway is expected to be complete in the future, unless structures requiring mitigation as determined by NYSDEC and NYSDOH are remediated. On-site receptors may be exposed to contaminated soil vapor, but soil vapor intrusion sampling was not conducted at the facility.

The future exposure pathway for construction workers to soil, groundwater, and soil vapor via dermal contact, incidental ingestion, and soil vapor inhalation is complete.

9.0 FISH AND WILDLIFE IMPACT ANALYSIS

The Crystal Cleaners site is located in an urban residential and commercial area. The Hutchinson River is located to the west of the site, but the groundwater plume from the site does not extend to the river. There are no other natural resources at or in the vicinity of the site. Therefore, per Appendix 3C of DER-10, no fish and wildlife resources impact analysis is needed.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 Extent of the Areas of Concern

For soil, groundwater, and soil vapor, the extent of the area of concern is determined by the extent of PCE impacts. For groundwater and soil vapor, there are other VOC contaminants of concern, but in each case, PCE is elevated.

Based on the data collected to date, the PCE concentration exceeded the unrestricted use SCO in one soil boring on the DPW property. The extent of the PCE concentrations exceeding the criterion is limited to a relatively small area west of the Crystal Cleaners facility on the DPW property. Soil closer to or beneath the Crystal Cleaners site may be impacted, but this area was not sampled and is a possible source area.

A contaminant distribution map was developed for PCE in the overburden wells (Figure 22). The areas with concentrations greater than 5 µg/L approximates the horizontal extent of the groundwater plume exceeding the class GA groundwater criterion for PCE. The highest concentrations of VOCs are centered on the DPW property. The highest detection of PCE was collected in a temporary well along Manning Circle. The concentrations decrease to non-detect to the west at MW-C05 and MW-C06 and to the southwest at wells MW-C12 and MW-C13. The area at the southern end of Manning Circle was bounded by temporary well samples collected on Brookside Avenue. PCE was not detected in the groundwater sample from TWP-13 and was approaching the class GA criterion of 5 µg/L in the sample from TWP-12 (17 µg/L). The PCE concentrations at well MW-14 and temporary wells TWP-1 through TWP-7 exceed the class GA criterion for PCE. The extent of the plume is bounded towards the east, because groundwater was not observed in the overburden in the area approaching Wolfs Lane and overburden may not be present to the east due to the shallow bedrock.

A similar contaminant distribution map was developed for PCE in the bedrock wells (Figure 23).The highest concentration of PCE was detected on the DPW property. The PCE concentrations in bedrock are unbounded vertically and horizontally. The levels are well above the class GA criterion and the groundwater is likely to migrate through fractures in the bedrock. The extent of contamination cannot be confidently predicted from this information.

A contaminant distribution map was developed for PCE in the soil vapor (Figure 24). The PCE soil vapor intrusion distribution approximates the overburden groundwater distribution. The highest concentrations of PCE are centered on the DPW property. The concentrations decrease to the south and west of the site.

10.2 Conceptual Site Model

The original sources of the primary contamination were PCE wastes (likely as liquid) from dry cleaning and laundry operations that were disposed on-site or in an unpaved area to the west of the site on DPW property, entering the subsurface through an unpaved area or drywell. PCE may be present as a source beneath the Crystal Cleaners facility. This waste flowed downward through the soil and entered the groundwater. Some of the PCE remains in the on-site soils and may be continuing to act

as a source, while much of it has dissolved into the groundwater. The groundwater flowing to the southwest carried the dissolved phase PCE, contaminating groundwater for at least 500 to 700 feet, although the farthest extent of the plume to the south has not been determined. In a secondary transport mechanism, PCE adsorbed to the soil and dissolved in the groundwater has volatilized into the soil vapor of the vadose zone, allowing for potential soil vapor intrusion into buildings. There is evidence that bacteria in the groundwater have degraded some of the PCE. However, the degradation has stalled at cis-1,2-DCE. VOCs may volatilize from the soil and groundwater matrix. The contaminants may then enter structures through soil vapor intrusion. VOCs contamination in the groundwater may be transported and diluted by groundwater flow. The contamination appears to be transported southwest of the site. Biodegradation has occurred, but appears to have stalled.

Currently, there is no direct contact with contaminated media. The aquifer in this section of Westchester County is not used for water supply. The area over contaminated soil is paved. Future construction could potentially result in contact with contaminated soil, groundwater or soil vapor. There is the potential for exposure through soil vapor intrusion in on-site and off-site structures. No environmental receptors were identified in this urban setting.

10.3 Complete Exposure Pathways

The exposure pathway is complete for off-site soil gas inhalation. NYSDEC and NYSDOH will determine if sampling at additional structures or mitigation actions are required.

10.4 Future Work Recommendations

AECOM recommends an evaluation of remedial alternatives for contaminated soil and groundwater related to the past operations at the site. NYSDEC may consider sampling beneath the building (e.g., sub-slab air sample or soil sampling) to determine if there is a significant source of contamination present.

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Table 1
Well Construction Data
Crystal Cleaners, Pelham, New York

Well Number	Installed	Northing	Easting	Ground Elevation (ft)	Top of Casing Elevation (ft)	Total Depth of Well (ft)	Well Material	Aquifer	Depth to Screen (ft)	Screen Length (ft)	Well Diameter (ft)
MW-C01	7/2/2008	756,953.80	682,668.53	46.54	46.11	26	PVC	Bedrock	16-26	10	0.17
MW-C03	9/13/2011	756,949.67	682,429.35	28.49	28	17.2	PVC	Overburden	7.2-17.2	10	0.17
MW-C04	9/12/2011	756,851.68	682,361.61	25.73	25.54	22	PVC	Overburden	12-22	10	0.17
MW-C05	9/15/2011	756,987.59	682,254.39	18.38	18.05	22	PVC	Overburden	12-22	10	0.17
MW-C06	9/28/2011	756,832.45	682,091.43	22.69	22.28	18	PVC	Overburden	8-18	10	0.17
MW-C07	6/23/2011	756,720.64	682,251.66	26.25	26	29	PVC	Overburden	19-29	10	0.08
MW-C08	6/23/2011	756,765.13	682,339.24	32.31	32.13	23	PVC	Overburden	18-23	5	0.17
MW-C09	2/23/2012	756,948.19	682,445.59	29.25	28.85	41	PVC	Bedrock	31-41	10	0.17
MW-C10	2/4/2012	756,853.04	682,365.34	25.88	25.67	48.5	PVC	Bedrock	42.5-47.5	5	0.17
MW-C11	10/3/2012	756,714.67	682,250.91	25.69	25.42	67	PVC	Bedrock	57-67	10	0.17
MW-C12	1/31/2012	756,563.19	682,210.84	18.8	18.55	18	PVC	Overburden	8-18	10	0.17
MW-C13	1/31/2012	756,660.07	681,944.75	18.82	18.43	17.7	PVC	Overburden	7.7-17.7	10	0.17
MW-C14	10/16/2012	756,648.85	682,266.05	21.18	20.86	22	PVC	Overburden	12-22	10	0.17
MW-C15	10/5/2012	756,566.00	682,211.18	18.82	18.4	60	PVC	Bedrock	50-60	10	0.17
MW-C16	9/25/2012	756,842.78	682,361.01	26	25.51	95	PVC	Bedrock	85-95	10	0.17

Notes:
Vertical datum: NAVD88
Horizontal datum: NY State Plane NAD83
NA - Not available
MW-C02 and other wells sampled for the site characterization report were removed by the Village of Pelham during construction at the DPW.

Table 2
Groundwater Elevations
Crystal Cleaners, Pelham, New York

Well Number	Top of Casing Elevation (ft)	Depth To Water 10/18-19/2011	Groundwater Elevation 10/18-19/2011	Depth To Water 2/22-23/2012	Groundwater Elevation 2/22-23/2012	Depth To Water 11/15/12	Groundwater Elevation 11/15/12
MW-C01	46.11	7.52	38.59	8.17	37.94	11.25	34.86
MW-C03	28	14.39	13.61	14.51	13.49	14.51	13.49
MW-C04	25.54	13.89	11.65	14.34	11.2	14.59	10.95
MW-C05	18.05	5.45	12.6	6.14	11.91	6.11	11.94
MW-C06	22.28	10.77	11.51	11.35	10.93	11.49	10.79
MW-C07	26	15.02	10.98	15.47	10.53	15.68	10.32
MW-C08	32.13	20.32	11.81	20.85	11.28	21.1	11.03
MW-C09	28.85	NA	NA	13.11	15.74	13.22	15.63
MW-C10	25.67	NA	NA	14.07	11.6	14.33	11.34
MW-C11	25.42	NA	NA	NA	NA	16.38	9.04
MW-C12	18.55	NA	NA	10.31	8.24	10.41	8.14
MW-C13	18.43	NA	NA	9.63	8.8	9.75	8.68
MW-C14	20.86	NA	NA	NA	NA	11.29	9.57
MW-C15	18.4	NA	NA	NA	NA	11.72	6.68
MW-C16	25.51	NA	NA	NA	NA	15.47	10.04

Notes:
All elevations and depths are in feet.
Vertical datum: NAVD88

Table 3
VOCs in Soil
Crystal Cleaners, Pelham, New York

	Station ID:	SB-01	SB-02	SB-03	SB-04	SB-05	SB-09	SB-09 (Dup)
	Depth (ft.):	2.6-3.1	0.3-1	5-5.2	11.1-11.4	0.3-0.8	0.8-0.9	0.8-0.9
	Sample ID:	SB-01-31-37	SB-02-03-12	SB-03-60-62	SB-04-133-137	SB-05-04-09	SB-09-09-11	SB-59-09-11
	Sample Date:	6/27/11	6/27/11	6/27/11	6/27/11	6/27/11	6/27/11	6/27/11
Unit: µg/Kg	Criteria	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Duplicate
1,1,1,2-Tetrachloroethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,1,1-Trichloroethane	680	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,1,2,2-Tetrachloroethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,1,2-Trichloroethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,1-Dichloroethane	270	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,1-Dichloroethene	330	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,1-Dichloropropene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,2,3-Trichlorobenzene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U
1,2,3-Trichloropropane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,2,4-Trichlorobenzene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U
1,2,4-Trimethylbenzene	3600	5.2 U	**1.2** J	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U
1,2-Dibromo-3-chloropropane	NA	5.2 UJ	5.4 UJ	5.1 UJ	5.4 UJ	5.5 UJ	5.6 UJ	5.6 UJ
1,2-Dibromoethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,2-Dichlorobenzene	1100	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U
1,2-Dichloroethane	20	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,2-Dichloropropane	NA	5.2 U	**1.1** J	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,3,5-Trimethylbenzene	8400	5.2 U	**11**	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,3-Dichlorobenzene	2400	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U
1,3-Dichloropropane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
1,4-Dichlorobenzene	1800	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U
1,4-Dioxane	100	R	R	R	R	R	R	R
2,2-Dichloropropane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
2-Butanone	120	R	R	R	R	R	R	R
2-Chlorotoluene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
2-Hexanone	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
4-Chlorotoluene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U
4-Isopropyltoluene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U
4-Methyl-2-pentanone	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Acetone	50	R	**2.9** J	**2.9** J	**2.9** J	**4** J	**4.7** J	R
Benzene	60	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Bromobenzene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Bromochloromethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Bromodichloromethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Bromoform	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Bromomethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Carbon disulfide	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Carbon tetrachloride	760	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Chlorobenzene	1100	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Chloroethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Chloroform	370	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Chloromethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
cis-1,2-Dichloroethene	250	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U

Table 3
VOCs in Soil
Crystal Cleaners, Pelham, New York

	Station ID:	SB-01	SB-02	SB-03	SB-04	SB-05	SB-09	SB-09 (Dup)
	Depth (ft.):	2.6-3.1	0.3-1	5-5.2	11.1-11.4	0.3-0.8	0.8-0.9	0.8-0.9
	Sample ID:	SB-01-31-37	SB-02-03-12	SB-03-60-62	SB-04-133-137	SB-05-04-09	SB-09-09-11	SB-59-09-11
	Sample Date:	6/27/11	6/27/11	6/27/11	6/27/11	6/27/11	6/27/11	6/27/11
Unit: µg/Kg	Criteria	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Duplicate
cis-1,3-Dichloropropene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Cyclohexane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Dibromochloromethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Dibromomethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Dichlorodifluoromethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Ethylbenzene	1000	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Hexachlorobutadiene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Iodomethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Isopropylbenzene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
m,p-Xylene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U
Methyl acetate	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Methyl tert-butyl ether	930	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Methylcyclohexane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Methylene chloride	50	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Naphthalene	NA	**1.2** J	5.4 U	5.1 U	5.4 U	**1.8** J	5.6 UJ	5.6 U
o-Xylene	NA	5.2 U	**1.1** J	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
sec-Butylbenzene	11000	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Styrene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
tert-Butylbenzene	5900	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Tetrachloroethene (PCE)	1300	5.2 U	**4.8** J	**17000**	5.4 U	**93**	5.6 U	**6.8**
Toluene	700	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
trans-1,2-Dichloroethene	190	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
trans-1,3-Dichloropropene	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Trichloroethene (TCE)	470	5.2 U	5.4 U	**1.1** J	5.4 U	5.5 U	5.6 U	5.6 U
Trichlorofluoromethane	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Vinyl acetate	NA	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U
Vinyl chloride	20	5.2 U	5.4 U	5.1 U	5.4 U	5.5 U	5.6 U	5.6 U
Xylene (Total)	260	5.2 U	**1.1** J	5.1 U	5.4 U	5.5 U	5.6 UJ	5.6 U

Table 3
VOCs in Soil
Crystal Cleaners, Pelham, New York

	Station ID:	TWP-3	TWP-4	TWP-4	TWP-12	TWP-13	TWP-13
	Depth (ft.):	17.5-18	14.5-15	14.5-15	10-10.5	0.5-1	0.5-1
	Sample ID:	TWP-3-17.5-18	TWP-4-14.5-15	TWP-54-14.5-15	TWP-12-10	TWP-13-1	TWP-63-10
	Sample Date:	9/10/13	9/10/13	9/10/13	4/16/14	4/16/14	4/16/14
Unit: µg/Kg	Criteria	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Duplicate
1,1,1,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	680	10 U	11 U	11 U	13 U	13 U	11 U
1,1,2,2-Tetrachloroethane	NA	10 U	11 U	11 U	13 U	13 U	11 U
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	10 U	11 U	11 U	13 UJ	13 UJ	11 UJ
1,1,2-Trichloroethane	NA	10 U	11 U	11 U	13 U	13 U	11 U
1,1-Dichloroethane	270	10 U	11 U	11 U	13 U	13 U	11 U
1,1-Dichloroethene	330	10 U	11 U	11 U	13 UJ	13 UJ	11 UJ
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	10 UJ	11 UJ	11 UJ	13 UJ	13 UJ	11 UJ
1,2,4-Trimethylbenzene	3600	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NA	R	R	R	13 U	13 U	11 U
1,2-Dibromoethane	NA	10 U	11 U	11 U	13 U	13 U	11 U
1,2-Dichlorobenzene	1100	10 U	11 U	11 U	13 U	13 U	11 U
1,2-Dichloroethane	20	10 U	11 U	11 U	13 U	13 U	11 U
1,2-Dichloropropane	NA	10 U	11 U	11 U	13 U	13 U	11 U
1,3,5-Trimethylbenzene	8400	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2400	10 U	11 U	11 U	13 U	13 U	11 U
1,3-Dichloropropane	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1800	10 U	11 U	11 U	13 U	13 U	11 U
1,4-Dioxane	100	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA	NA	NA	NA	NA
2-Butanone	120	9.7 UJ	11 UJ	11 UJ	**4** J	**4** J	**4** J
2-Chlorotoluene	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	NA	10 UJ	11 UJ	11 UJ	13 U	13 U	11 U
4-Chlorotoluene	NA	NA	NA	NA	NA	NA	NA
4-Isopropyltoluene	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NA	9.7 UJ	11 UJ	11 UJ	13 U	13 U	11 U
Acetone	50	**13** J	**8** J	**8** J	**59**	13 U	11 U
Benzene	60	10 U	11 U	11 U	13 U	13 U	11 U
Bromobenzene	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NA	10 U	11 U	11 U	13 U	13 U	11 U
Bromoform	NA	10 U	11 U	11 U	13 U	13 U	11 U
Bromomethane	NA	10 UJ	11 UJ	11 UJ	13 UJ	13 UJ	11 UJ
Carbon disulfide	NA	10 U	11 U	11 U	13 UJ	13 UJ	11 UJ
Carbon tetrachloride	760	10 U	11 U	11 U	13 U	13 U	11 U
Chlorobenzene	1100	10 U	11 U	11 U	13 U	13 U	11 U
Chloroethane	NA	10 U	11 U	11 U	13 U	13 U	11 U
Chloroform	370	10 U	11 U	11 U	13 U	13 U	11 U
Chloromethane	NA	10 U	11 U	11 U	13 UJ	13 UJ	11 UJ
cis-1,2-Dichloroethene	250	**1** J	**7** J	**11** U	13 U	13 U	11 U

Table 3
VOCs in Soil
Crystal Cleaners, Pelham, New York

	Station ID:	TWP-3	TWP-4	TWP-4	TWP-12	TWP-13	TWP-13
	Depth (ft.):	17.5-18	14.5-15	14.5-15	10-10.5	0.5-1	0.5-1
	Sample ID:	TWP-3-17.5-18	TWP-4-14.5-15	TWP-54-14.5-15	TWP-12-10	TWP-13-1	TWP-63-10
	Sample Date:	9/10/13	9/10/13	9/10/13	4/16/14	4/16/14	4/16/14
Unit: µg/Kg	Criteria	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Duplicate
cis-1,3-Dichloropropene	NA	10 U	11 U	11 U	13 U	13 U	11 U
Cyclohexane	NA	10 U	11 U	11 U	13 U	13 U	11 U
Dibromochloromethane	NA	10 U	11 U	11 U	13 UJ	13 UJ	11 UJ
Dibromomethane	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NA	10 UJ	11 UJ	11 UJ	13 U	13 U	11 U
Ethylbenzene	1000	10 U	11 U	11 U	13 U	**2** J	**6** J
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	NA
Iodomethane	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NA	10 U	11 U	11 U	13 U	13 U	11 U
m,p-Xylene	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	NA	10 UJ	11 UJ	11 UJ	13 U	13 U	11 U
Methyl tert-butyl ether	930	10 U	11 U	11 U	13 U	13 U	11 U
Methylcyclohexane	NA	10 U	11 U	11 U	13 U	13 U	11 U
Methylene chloride	50	10 U	11 U	**2** J	13 UJ	13 UJ	11 UJ
Naphthalene	NA	NA	NA	NA	NA	NA	NA
o-Xylene	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11000	NA	NA	NA	NA	NA	NA
Styrene	NA	10 U	11 U	11 U	13 U	**7** J	**15**
tert-Butylbenzene	5900	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	1300	**3** J	**2** J	**1** J	13 U	**6** J	**11** J
Toluene	700	10 U	11 U	11 U	**11** J	**7** J	**12**
trans-1,2-Dichloroethene	190	10 U	11 U	11 U	13 UJ	13 UJ	11 UJ
trans-1,3-Dichloropropene	NA	10 U	11 U	11 U	13 U	13 U	11 U
Trichloroethene (TCE)	470	10 U	11 U	11 U	13 U	13 U	11 U
Trichlorofluoromethane	NA	10 U	11 U	11 U	13 U	13 U	11 U
Vinyl acetate	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	20	10 U	11 U	11 U	13 U	13 U	11 U
Xylene (Total)	260	10 U	11 U	11 U	**3** J	**24**	**55**

Criteria - 6 New York Codes, Rules and Regulations [NYCRR] Part 375-6.8(a) unrestricted soil cleanup objectives
Dup - Field duplicate sample
U - Not detected
J - Estimated
R - Rejected
NA - Not available
Detections are bolded
Exceedances are highlighted

Table 4
VOCs in Groundwater
Crystal Cleaners, Pelham, New York

	Station ID:	MW-C01	MW-C01	MW-C03	MW-C03	MW-C04	MW-C04	MW-C05	MW-C05	MW-C06	MW-C06
	Sample ID:	MW-01	MW-C01	MW-03	MW-C03	MW-04	MW-C04	MW-05	MW-C05	MW-06	MW-C06
	Sample Date:	10/25/2011	3/1/2012	10/25/2011	3/1/2012	10/25/2011	3/1/2012	10/25/2011	3/1/2012	10/25/2011	3/1/2012
	Aquifer:	Bedrock	Bedrock	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden
Unit: µg/L	Class GA	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample
1,1,1,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	1	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U	**2** J	5 U	5 U	5 U	5 U
1,1-Dichloropropene	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	0.04	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U
1,2,4-Trichlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromo-3-chloropropane	0.04	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	0.6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	1	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3,5-Trimethylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dioxane	NA	R	R	R	R	R	R	R	R	R	R
2,2-Dichloropropane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	50	R	5 U	R	5 U	R	5 U	R	5 U	R	5 U
2-Chlorotoluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U
4-Chlorotoluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Isopropyltoluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	50	R	5 UJ	R	5 UJ	R	5 UJ	R	5 UJ	R	5 UJ
Benzene	1	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U
Bromobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromochloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	50	5 UJ	5 U	5 UJ	5 U	5 UJ	5 U	5 UJ	5 U	5 UJ	5 U
Bromomethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	60	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	5	5 U	5 U	5 U	5 U	**1300** J	**1900** D	5 U	5 U	5 U	5 U

Table 4
VOCs in Groundwater
Crystal Cleaners, Pelham, New York

	Station ID:	MW-C01	MW-C01	MW-C03	MW-C03	MW-C04	MW-C04	MW-C05	MW-C05	MW-C06	MW-C06
	Sample ID:	MW-01	MW-C01	MW-03	MW-C03	MW-04	MW-C04	MW-05	MW-C05	MW-06	MW-C06
	Sample Date:	10/25/2011	3/1/2012	10/25/2011	3/1/2012	10/25/2011	3/1/2012	10/25/2011	3/1/2012	10/25/2011	3/1/2012
	Aquifer:	Bedrock	Bedrock	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden
Unit: µg/L	Class GA	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample
cis-1,3-Dichloropropene	0.4	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cyclohexane	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromomethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	5	5 U	5 UJ	5 U	5 UJ	5 U	5 UJ	5 U	5 UJ	5 U	5 UJ
Ethylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	0.5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iodomethane	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
m,p-Xylene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyl acetate	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U
Methyl tert-butyl ether	10	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane	NA	5 U	5 U	5 U	5 U	**6.6**	5 U	5 U	5 U	5 U	5 U
Methylene chloride	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
o-Xylene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
sec-Butylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
tert-Butylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene (PCE)	5	5 U	5 U	**100**	**53**	**750** J	**650** D	5 U	5 U	5 U	5 U
Toluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	5	5 U	5 U	5 U	5 U	**2.6** J	**4** J	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	0.4	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene (TCE)	5	5 U	5 U	5 U	5 U	340 U	**620** D	5 U	5 U	5 U	5 U
Trichlorofluoromethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl acetate	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	2	5 U	5 U	5 U	5 U	**34**	**170**	5 U	5 U	5 U	5 U
Xylene (Total)	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U

Table 4
VOCs in Groundwater
Crystal Cleaners, Pelham, New York

	Station ID:	MW-C07	MW-C07 Dup	MW-C07	MW-C08	MW-C08	MW-C09	MW-C10	MW-C11	MW-C12	MW-C13
	Sample ID:	MW-07	MW-57 DUP	MW-C07	MW-08	MW-C08	MW-C09	MW-C10	MW-C11	MW-C12	MW-C13
	Sample Date:	10/25/2011	10/25/2011	3/2/2012	10/25/2011	3/2/2012	3/1/2012	3/1/2012	11/14/2012	3/1/2012	3/1/2012
	Aquifer:	Overburden	Overburden	Overburden	Overburden	Overburden	Bedrock	Bedrock	Bedrock	Overburden	Overburden
Unit: µg/L	Class GA	Env. Sample	Env. Duplicate	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample
1,1,1,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1,2-Trichloroethane	1	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,1-Dichloropropene	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
1,2,3-Trichlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
1,2,3-Trichloropropane	0.04	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
1,2,4-Trichlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2,4-Trimethylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
1,2-Dibromo-3-chloropropane	0.04	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 UJ	5 U	5 U
1,2-Dibromoethane	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dichlorobenzene	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dichloroethane	0.6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,2-Dichloropropane	1	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,3,5-Trimethylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
1,3-Dichlorobenzene	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,3-Dichloropropane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
1,4-Dichlorobenzene	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
1,4-Dioxane	NA	R	R	R	R	R	R	R	NA	R	R
2,2-Dichloropropane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
2-Butanone	50	R	R	R	R	R	5 U	5 U	10 U	5 U	5 U
2-Chlorotoluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
2-Hexanone	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 UJ	5 U	5 U
4-Chlorotoluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
4-Isopropyltoluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
4-Methyl-2-pentanone	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 UJ	5 U	5 U
Acetone	50	R	R	R	R	R	5 UJ	5 UJ	10 U	5 UJ	5 UJ
Benzene	1	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
Bromochloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
Bromodichloromethane	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Bromoform	50	5 UJ	5 UJ	5 U	5 UJ	5 U	5 U	5 U	10 U	5 U	5 U
Bromomethane	5	5 U	5 U	5 UJ	5 U	5 UJ	5 U	5 U	10 UJ	5 U	5 U
Carbon disulfide	60	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Carbon tetrachloride	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Chlorobenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Chloroethane	5	5 U	5 U	5 UJ	5 U	5 UJ	5 U	5 U	10 U	5 U	5 U
Chloroform	7	5 U	5 U	5 U	5 U	5 U	**1.1** J	5 U	**1.1** J	5 U	5 U
Chloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
cis-1,2-Dichloroethene	5	**33**	**33**	**2.3** J	**7.5**	**7.4**	**92**	**91**	**27**	5 U	5 U

Table 4
VOCs in Groundwater
Crystal Cleaners, Pelham, New York

	Station ID:	MW-C07	MW-C07 Dup	MW-C07	MW-C08	MW-C08	MW-C09	MW-C10	MW-C11	MW-C12	MW-C13
	Sample ID:	MW-07	MW-57 DUP	MW-C07	MW-08	MW-C08	MW-C09	MW-C10	MW-C11	MW-C12	MW-C13
	Sample Date:	10/25/2011	10/25/2011	3/2/2012	10/25/2011	3/2/2012	3/1/2012	3/1/2012	11/14/2012	3/1/2012	3/1/2012
	Aquifer:	Overburden	Overburden	Overburden	Overburden	Overburden	Bedrock	Bedrock	Bedrock	Overburden	Overburden
Unit: µg/L	Class GA	Env. Sample	Env. Duplicate	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample
cis-1,3-Dichloropropene	0.4	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Cyclohexane	NA	5 U	5 U	5 U	5 U	5 U	**12**	5 U	10 U	5 U	5 U
Dibromochloromethane	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Dibromomethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
Dichlorodifluoromethane	5	5 U	5 U	5 U	5 U	5 U	5 UJ	5 UJ	10 UJ	5 UJ	5 UJ
Ethylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Hexachlorobutadiene	0.5	5 U	5 U	5 UJ	5 U	5 UJ	5 U	5 U	NA	5 U	5 U
Iodomethane	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
Isopropylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
m,p-Xylene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
Methyl acetate	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Methyl tert-butyl ether	10	5 U	5 U	5 U	5 U	5 U	**3.3** J	**9.6**	**90**	5 U	5 U
Methylcyclohexane	NA	5 U	5 U	5 U	5 U	5 U	**2.7** J	5 U	10 U	5 U	5 U
Methylene chloride	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Naphthalene	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
o-Xylene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
sec-Butylbenzene	5	5 U	5 U	5 U	5 U	5 U	**1.5** J	5 U	NA	5 U	5 U
Styrene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
tert-Butylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
Tetrachloroethene (PCE)	5	**53**	**58**	6.2 U	**37**	**27**	**340** D	**1400** D	**790**	5 U	5 U
Toluene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
trans-1,2-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U	**7.3**	5 U	10 U	5 U	5 U
trans-1,3-Dichloropropene	0.4	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Trichloroethene (TCE)	5	**12**	**13**	**1.1** J	**7**	**11**	**440** D	**99**	**44**	5 U	5 U
Trichlorofluoromethane	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U
Vinyl acetate	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
Vinyl chloride	2	5 U	5 U	5 U	5 U	5 U	**5.2**	5 U	10 U	5 U	5 U
Xylene (Total)	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U

Table 4
VOCs in Groundwater
Crystal Cleaners, Pelham, New York

	Station ID:	MW-C13 Dup	MW-C14	MW-C15	MW-C16	MW-C16 Dup	TWP-1	TWP-2	TWP-3
	Sample ID:	MW-C63	MW-C14	MW-C15	MW-C16	MW-C66	TWP-1	TWP-2	TWP-3
	Sample Date:	3/1/2012	11/14/2012	11/14/2012	11/14/2012	11/14/2012	10/16/2012	10/16/2012	9/10/2013
	Aquifer:	Overburden	Overburden	Bedrock	Bedrock	Bedrock	Overburden	Overburden	Overburden
Unit: µg/L	Class GA	Env. Duplicate	Env. Sample	Env. Sample	Env. Sample	Env. Duplicate	Env. Sample	Env. Sample	Env. Sample
1,1,1,2-Tetrachloroethane	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
1,1,1-Trichloroethane	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	NA	5 U	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	5	5 U	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	0.04	5 U	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ
1,2,4-Trimethylbenzene	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
1,2-Dibromo-3-chloropropane	0.04	5 U	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U	10 UJ
1,2-Dibromoethane	NA	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	3	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	5 U	10 U	10 U	**2.5** J	**2.5** J	10 U	10 U	10 U
1,2-Dichloropropane	1	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene	5	5 U	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	3	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	5	5 U	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	3	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dioxane	NA	R	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	5	5 U	NA	NA	NA	NA	NA	NA	NA
2-Butanone	50	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ
2-Chlorotoluene	5	5 U	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	50	5 U	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U	10 UJ
4-Chlorotoluene	5	5 U	NA	NA	NA	NA	NA	NA	NA
4-Isopropyltoluene	5	5 U	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NA	5 U	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U	10 UJ
Acetone	50	5 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromobenzene	5	5 U	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	5	5 U	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	50	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ
Bromomethane	5	5 U	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U	10 UJ
Carbon disulfide	60	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	5 U	10 U	10 U	**2.8** J	**2.8** J	10 U	10 U	10 U
Chloromethane	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	5	5 U	**62**	**18**	**37**	**37**	**510** D	**26**	**8** J

Table 4
VOCs in Groundwater
Crystal Cleaners, Pelham, New York

	Station ID:	MW-C13 Dup	MW-C14	MW-C15	MW-C16	MW-C16 Dup	TWP-1	TWP-2	TWP-3
	Sample ID:	MW-C63	MW-C14	MW-C15	MW-C16	MW-C66	TWP-1	TWP-2	TWP-3
	Sample Date:	3/1/2012	11/14/2012	11/14/2012	11/14/2012	11/14/2012	10/16/2012	10/16/2012	9/10/2013
	Aquifer:	Overburden	Overburden	Bedrock	Bedrock	Bedrock	Overburden	Overburden	Overburden
Unit: µg/L	Class GA	Env. Duplicate	Env. Sample	Env. Sample	Env. Sample	Env. Duplicate	Env. Sample	Env. Sample	Env. Sample
cis-1,3-Dichloropropene	0.4	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyclohexane	NA	5 U	10 U	10 U	**5.2** J	**5.2** J	10 U	10 U	10 U
Dibromochloromethane	50	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromomethane	5	5 U	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	5	5 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U	10 UJ
Ethylbenzene	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	0.5	5 U	NA	NA	NA	NA	NA	NA	NA
Iodomethane	NA	5 U	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
m,p-Xylene	5	5 U	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	NA	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	10	5 U	10 U	**18**	**35**	**35**	10 U	10 U	10 U
Methylcyclohexane	NA	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	NA	5 U	NA	NA	NA	NA	NA	NA	NA
o-Xylene	5	5 U	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	5	5 U	NA	NA	NA	NA	NA	NA	NA
Styrene	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	5	5 U	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	5	5 U	**150**	**560**	**310**	**310**	**610**	**20**	**17**
Toluene	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,2-Dichloroethene	5	5 U	10 U	10 U	**6.4** J	**6.6** J	**1** J	10 U	10 U
trans-1,3-Dichloropropene	0.4	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene (TCE)	5	**1.4** J	**17**	**22**	**170**	**170**	**72**	**4** J	**2** J
Trichlorofluoromethane	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ
Vinyl acetate	NA	5 U	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2	5 U	10 U	10 U	**2.1** J	**2.1** J	10 U	10 U	10 U
Xylene (Total)	5	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 4
VOCs in Groundwater
Crystal Cleaners, Pelham, New York

	Station ID:	TWP-4	TWP-4	TWP-5	TWP-6	TWP-7	TWP-12	TWP-13
	Sample ID:	TWP-4	TWP-54	TWP-5	TWP-6	TWP-7	TWP-12	TWP-13
	Sample Date:	9/10/2013	9/10/2013	9/10/2013	9/10/2013	9/10/2013	4/16/2014	4/16/2014
	Aquifer:	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden
Unit: µg/L	Class GA	Env. Duplicate	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample
1,1,1,2-Tetrachloroethane	5	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloro-1,2,2-trifluoroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	5	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	0.04	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	5	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,2,4-Trimethylbenzene	5	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	0.04	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	R	R
1,2-Dibromoethane	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3,5-Trimethylbenzene	5	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichloropropane	5	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dioxane	NA	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	5	NA	NA	NA	NA	NA	NA	NA
2-Butanone	50	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
2-Chlorotoluene	5	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	50	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
4-Chlorotoluene	5	NA	NA	NA	NA	NA	NA	NA
4-Isopropyltoluene	5	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NA	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Acetone	50	10 U	10 U	10 U	10 U	10 U	25	10 U
Benzene	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromobenzene	5	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	5	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
Bromomethane	5	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
Carbon disulfide	60	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	5	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
cis-1,2-Dichloroethene	5	**190**	**200**	**4** J	**49**	**270**	10 U	10 U

Table 4
VOCs in Groundwater
Crystal Cleaners, Pelham, New York

	Station ID:	TWP-4	TWP-4	TWP-5	TWP-6	TWP-7	TWP-12	TWP-13
	Sample ID:	TWP-4	TWP-54	TWP-5	TWP-6	TWP-7	TWP-12	TWP-13
	Sample Date:	9/10/2013	9/10/2013	9/10/2013	9/10/2013	9/10/2013	4/16/2014	4/16/2014
	Aquifer:	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden
Unit: µg/L	Class GA	Env. Duplicate	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample
cis-1,3-Dichloropropene	0.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyclohexane	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromomethane	5	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	5	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	0.5	NA	NA	NA	NA	NA	NA	NA
Iodomethane	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
m,p-Xylene	5	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	NA	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
Methyl tert-butyl ether	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylcyclohexane	NA	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
Methylene chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	5	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	5	NA	NA	NA	NA	NA	NA	NA
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
tert-Butylbenzene	5	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	5	**320**	**330**	**7** J	**57**	**770**	**17**	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	**9** J	**2** J
trans-1,2-Dichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	0.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene (TCE)	5	**42**	**42**	10 U	**10**	**87**	10 U	10 U
Trichlorofluoromethane	5	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
Vinyl acetate	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (Total)	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U

TWP-1 through TWP-7, TWP-12, and TWP-13 are temporary wells.
Dup - Field duplicate sample
U - Not detected
J - Estimated
R - Rejected
D - Value from dilution
NA - Not available
Detections are bolded
Exceedances are highlighted

Table 5
MNA Parameters in Groundwater
Crystal Cleaners, Pelham, New York

Station ID:		MW-C01	MW-C03	MW-C04	MW-C05	MW-C06	MW-C07	MW-C07	MW-C08	MW-C09	MW-C10	MW-C12	MW-C13
Sample ID:		MW-01	MW-03	MW-04	MW-05	MW-06	MW-07	MW-57	MW-08	MW-C09	MW-C10	MW-C12	MW-C13
Sample Date:		10/19/11	10/20/11	10/18/11	10/19/11	10/19/11	10/18/11	10/18/11	10/18/11	2/23/12	2/23/12	2/23/12	2/23/12
Aquifer:		Bedrock	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Bedrock	Bedrock	Overburden	Overburden
Sample Type:		Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Duplicate	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample
Alkalinity, Total	$mgcaco^3/L$	20 U	110	130	120	130	120	110	110	360	110	79	110
Ammonia-N	mg/L	0.2 U	0.2 U	0.2 U	1.05	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BOD	mg/L	6	12	12	12	6	6	6	12	NA	NA	NA	NA
COD	mg/L	20 U	20 U	48	460	26	20	42	26	22	20 U	20 U	20 U
Chloride	mg/L	160	89	1500	17000	89	1200	1200	1400	490	590	640	380
Ethane	µg/L	1.2 U	7.4	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	2.6	1.3 U	1.2 U	3.1
Ethene	µg/L	1.5 U	2.5	4.4	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.6 U	1.6 U	1.5 U	1.7
Methane	µg/L	2	23	4	120	6.2	8.3	5.9	2.1	400	2.5	1.7	10
Nitrogen, Nitrate (As N)	mg/L	0.069 B	1.6 B	2.5 B	0.13 U	2 B	2.7 B	2.7 B	2.3 B	0.364 D	1.55 D	5 D	2.6 D
Organic Carbon, Total	mg/L	10 U	3.5 J	13	4.1 J	13	3.3 J	4.2 J	5.5 J	3.2 J	10 U	10 U	10 U
Phosphorus (As P)	mg/L	0.0535	0.752	0.324	0.0863	0.462	0.0921	0.0669	0.0539	0.0362	0.0219	0.0375	0.0316
Sulfate	mg/L	27	14	120	96	18	60	61	28	12	29	38	32
Sulfide	mg/L	0.03 U	0.03 U	0.066	0.049	0.03 U	0.035	0.035	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Total Iron	µg/L	1130	45600	3720	3290	1350	3710	3860	1800	527	135 B	2340	925
Dissolved Iron	µg/L	183 B	7040	606	84.3 B	107 B	94.8 B	84.4 B	125 B	511	64.8 B	31.9 B	73.5 B
Total Manganese	µg/L	88.3	1290	564	7320	100	4220	4090	42.5 B	3900	76.4	244	1660
Dissolved Manganese	µg/L	75.4	340	511	7160	84.1	4000	3990	12.5 B	3860	74.1	101	1540

Dup - Field duplicate sample
U - Not detected
J - Estimated
R - Rejected
D - Value from dilution
B -Analyte detected in the associated Method Blank

Table 6
VOCs in Soil Vapor
Crystal Cleaners, Pelham, New York

	Station ID:	SV-7	SV-8	SV-9	OA-1	OA-1
	Sample ID:	SV-7	SV-8	SV-9	OA-1	OA-51
		7/20/11	7/20/11	7/20/11	7/24/11	7/24/11
Units: µg/m3	Criteria	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Duplicate
1,1,1-Trichloroethane	22000	17 U	14 U	5.5 U	0.22 U	0.22 U
1,1,2,2-Tetrachloroethane	0.42	21 U	17 U	6.9 U	0.27 U	0.27 U
1,1,2-Trichloroethane	1.5	17 U	14 U	5.5 U	0.22 U	0.22 U
1,1-Dichloroethane	5000	12 U	10 U	4 U	0.16 U	0.16 U
1,1-Dichloroethene	2000	12 U	9.8 U	4 U	0.16 U	0.16 U
1,2-Dibromoethane	0.11	23 U	19 U	7.7 U	0.31 U	0.31 U
1,2-Dichloroethane	0.94	12 U	10 U	4 U	0.32 U	0.32 U
1,2-Dichloropropane	40	14 U	11 U	4.6 U	0.37 U	0.37 U
1,2-Dichlorotetrafluoroethane	NA	21 U	17 U	7 U	0.28 U	0.28 U
1,3,5-Trimethylbenzene	60	15 U	12 U	**9.1**	0.39 U	**1**
1,3-Butadiene	0.087	6.7 U	5.5 U	2.2 U	0.18 U	0.18 U
2,2,4-Trimethylpentane	NA	14 U	12 U	4.7 U	**1**	**1.1**
4-Ethyltoluene	NA	15 U	12 U	**12**	0.2 U	**0.65**
Allyl Chloride	NA	24 U	19 U	7.8 U	0.25 U	0.25 U
Benzene	3.1	9.7 U	7.9 U	**4.4**	**0.83**	**0.9**
Bromodichloromethane	1.4	20 U	17 U	6.7 U	0.27 U	0.27 U
Bromoethene	NA	13 U	11 U	4.4 U	0.35 U	0.35 U
Bromoform	22	31 U	26 U	10 U	0.41 U	0.41 U
Bromomethane	NA	12 U	9.6 U	3.9 U	0.31 U	0.31 U
Carbon Tetrachloride	1.6	19 U	16 U	6.3 U	**0.5**	**0.44**
Chloroethane	100000	20 U	16 U	6.6 U	0.21 U	0.21 U
Chloroform	1.1	15 U	**450**	**87**	**0.29**	**0.24**
cis-1,2-Dichloroethylene	350	12 U	9.8 U	4 U	0.16 U	**0.23**
cis-1,3-Dichloropropene	6.1	14 U	11 U	4.5 U	0.18 U	0.18 U
Cyclohexane	NA	10 U	8.5 U	3.4 U	**0.99** J	**0.23** J
Dibromochloromethane	1	26 U	21 U	8.5 U	0.34 U	0.34 U
Dichlorodifluoromethane	2000	38 U	31 U	12 U	**2.4**	**2.6**
Dichloroethylenes	NA	12 U	9.8 U	**6.5**	0.16 U	**0.23**
Ethylbenzene	22	13 U	11 U	**17**	**0.63** J	**2.7** J
Methylene Chloride	52	26 U	22 U	8.7 U	2.8 U	2.8 U
M-P-Xylene	70000	**45**	**35**	**70**	**1.5** J	**8.6** J
N-Heptane	NA	12 U	10 U	**6.3**	**1.1**	**0.65**
N-Hexane	2000	11 U	8.7 U	**5.5**	**1.1**	**0.74**
O-Xylene	70000	**18**	**13**	**24**	**0.5** J	**3.1** J
Tert-Butyl Methyl Ether	30000	11 U	8.9 U	3.6 U	0.14 U	0.14 U
Tetrachloroethylene (PCE)	8.1	**3100**	**2700**	**47**	**1**	**1.8**
Toluene	4000	**38**	**25**	**52**	**3.9** J	**15** J
Trans-1,2-Dichloroethene	700	12 U	9.8 U	**6.5**	0.16 U	0.16 U
Trans-1,3-Dichloropropene	NA	14 U	11 U	4.5 U	0.18 U	0.18 U
Trichloroethylene (TCE)	0.22	16 U	**18**	5.4 U	0.21 U	**0.32**
Trichlorofluoromethane	7000	17 U	14 U	5.6 U	**1.4**	**1.3**
Vinyl Chloride	2.8	7.8 U	6.3 U	2.6 U	0.2 U	0.2 U
Xylenes, Total	70000	**63**	**48**	**94**	**2** J	**12** J

Table 6
VOCs in Soil Vapor
Crystal Cleaners, Pelham, New York

Criteria: EPA, 2002; generic screening level for shallow soil gas; risk = $1x10^{6}$
U - Not detected
J - Estimated
Exceedances are highlighted
The EPA guidance values are for risk = 1 x 10-6.
OA-1 and OA-51 are outdoor air samples.

Table 7
VOCs in Soil Vapor Intrusion Samples
Crystal Cleaners, Pelham, New York

		Structure:	B01	B01	B01	B01	B01	B02	B03
		Sample Type:	Indoor	Indoor (Dup)	Sub-Slab	Outdoor	Outdoor (Dup)	Indoor	Indoor
		Sample ID:	B1-IA1-022511	B1-IA2-022511	B1-SS1-022511	B1-AA1-022511	B1-DUP-022511	B2-IA1-022511	B3-IA1-022511
	NYSDOH	Sample Date	3/10/11	3/10/11	3/15/11	3/10/11	3/10/11	3/10/11	3/10/11
Unit: µg/m3	Guideline	EPA Criteria	Env. Sample	Env. Duplicate	Env. Sample	Env. Sample	Env. Duplicate	Env. Sample	Env. Sample
1,1,1-Trichloroethane	NA	22000	**0.33**	0.22 U	1.1 U	0.36 U	**0.31**	0.22 U	**0.39**
1,1,2,2-Tetrachloroethane	NA	0.42	0.27 U	0.27 U	1.4 U	0.46 U	0.27 U	0.27 U	0.27 U
1,1,2-Trichloroethane	NA	1.5	0.22 U	0.22 U	1.1 U	0.36 U	0.22 U	0.22 U	0.22 U
1,1-Dichloroethane	NA	5000	0.16 U	0.16 U	0.81 U	0.27 U	0.16 U	0.16 U	0.16 U
1,1-Dichloroethene	NA	2000	0.16 U	0.16 U	0.79 U	0.26 U	0.16 U	0.16 U	0.16 U
1,2-Dibromoethane	NA	0.11	0.31 U	0.31 U	1.5 U	0.51 U	0.31 U	0.31 U	0.31 U
1,2-Dichloroethane	NA	0.94	0.32 U	0.32 U	0.81 U	0.54 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethene, Total	NA	NA	0.16 U	0.16 U	0.79 U	0.26 U	0.16 U	0.16 U	0.16 U
1,2-Dichloropropane	NA	40	0.37 U	0.37 U	0.92 U	0.62 U	0.37 U	0.37 U	0.37 U
1,2-Dichlorotetrafluoroethane	NA	NA	0.28 U	0.28 U	1.4 U	0.47 U	0.28 U	0.28 U	0.28 U
1,3,5-Trimethylbenzene	NA	60	**0.45**	0.39 U	0.98 U	0.65 U	**0.49**	**0.5**	**0.46**
1,3-Butadiene	NA	0.087	0.18 U	0.18 U	0.44 U	0.29 U	0.18 U	0.18 U	0.18 U
2,2,4-Trimethylpentane	NA	NA	**1.6**	**1.3**	0.93 U	**1.1**	**1.7**	**1.6**	**0.64**
4-Ethyltoluene	NA	NA	**0.49**	**0.32**	0.98 U	0.33 U	**0.44**	**0.44**	**0.45**
Allyl Chloride	NA	NA	0.25 U	0.25 U	1.6 U	0.42 U	0.25 U	0.25 U	0.25 U
Benzene	NA	3.1	**1.4**	**1.3**	**0.65**	**1.6**	**1.6**	**2.8**	**1.2**
Bromodichloromethane	NA	1.4	0.27 U	0.27 U	1.3 U	0.45 U	0.27 U	0.27 U	0.27 U
Bromoethene	NA	NA	0.35 U	0.35 U	0.87 U	0.58 U	0.35 U	0.35 U	0.35 U
Bromoform	NA	22	0.41 U	0.41 U	2.1 U	0.69 U	0.41 U	0.41 U	0.41 U
Bromomethane	NA	NA	0.31 U	0.31 U	0.78 U	0.52 U	0.31 U	0.31 U	0.31 U
Carbon Tetrachloride	NA	1.6	**0.51**	**0.58**	1.3 U	0.42 U	**0.49**	**0.42**	**0.39**
Chloroethane	NA	100000	0.21 U	0.21 U	1.3 U	0.35 U	0.21 U	0.21 U	0.21 U
Chloroform	NA	1.1	**0.61**	**0.79**	0.98 U	0.33 U	**0.71**	**0.31**	**0.25**
cis-1,2-Dichloroethene	NA	350	0.16 U	0.16 U	0.79 U	0.26 U	0.16 U	0.16 U	0.16 U
cis-1,3-Dichloropropene	NA	6.1	0.18 U	0.18 U	0.91 U	0.3 U	0.18 U	0.18 U	0.18 U
Cyclohexane	NA	NA	**1.3**	**0.96**	0.69 U	**0.81**	**1.6**	**2.8**	**0.46**
Dibromochloromethane	NA	1	0.34 U	0.34 U	1.7 U	0.57 U	0.34 U	0.34 U	0.34 U
Dichlorodifluoromethane	NA	2000	**2.4**	**2.3**	2.5 U	**2.4**	**2.4**	**2.6**	**2**
Ethylbenzene	NA	22	**1.7**	**1.4**	0.87 U	**0.61**	**1.7**	**1.5**	**0.59**
M,P-Xylenes	NA	70000	**5.4**	**4**	2.2 U	**1.7**	**5.6**	**4.5**	**2**
Methylene Chloride	60	52	2.8 U	2.8 U	1.7 U	4.6 U	2.8 U	**2.8**	**33**
N-Heptane	NA	NA	**6.7**	**5.5**	0.82 U	**1.5**	**7.1**	**2.8**	**0.99**
N-Hexane	NA	2000	**2.8**	**2.1**	**1.2**	**3**	**3.4**	**5.9**	**6.4**
O-Xylene	NA	70000	**1.6**	**1.3**	0.87 U	**0.6**	**1.9**	**1.6**	**0.63**
Tert-Butyl Methyl Ether	NA	30000	**0.93**	**0.61**	0.72 U	0.24 U	**0.94**	0.14 U	0.14 U
Tetrachloroethene (PCE)	100	8.1	**1.8**	**1.2**	1.4 U	0.45 U	**1.9**	**0.62**	**33**
Toluene	NA	4000	**8.2**	**6.1**	**8.6**	**5.5**	**9.2**	**15**	**2.9**
Trans-1,2-Dichloroethene	NA	700	0.16 U	0.16 U	0.79 U	0.26 U	0.16 U	0.16 U	0.16 U
Trans-1,3-Dichloropropene	NA	NA	0.18 U	0.18 U	0.91 U	0.3 U	0.18 U	0.18 U	0.18 U
Trichloroethene (TCE)	5	0.22	**3**	**3.1**	1.1 U	0.36 U	**2.9**	**0.62**	**7.2**
Trichlorofluoromethane	NA	7000	**1.2**	**1.2**	**1.3**	**1.2**	**1.3**	**1.3**	**1**
Vinyl Chloride	NA	2.8	0.2 U	0.2 U	0.51 U	0.34 U	0.2 U	0.2 U	0.2 U
Xylenes, Total	NA	70000	**7**	**5.3**	**1.7**	**2.3**	**7.5**	**6**	**2.7**

Table 7
VOCs in Soil Vapor Intrusion Samples
Crystal Cleaners, Pelham, New York

		Structure:	B04	B04	B04	B04	B05	B05
		Sample Type:	Indoor	Indoor	Sub-Slab	Outdoor	Indoor	Indoor
		Sample ID:	B04-IA1-2042012	B04-IA51-2042012	B04-SS1-2042012	B04-OA1-2042012	B05-IA1-20120211	B05-IA51-20120211
	NYSDOH	Sample Date	2/20/12	2/20/12	2/16/12	2/20/12	2/20/12	2/21/12
Unit: µg/m3	Guideline	EPA Criteria	Env. Sample	Env. Duplicate	Env. Sample	Env. Sample	Env. Sample	Env. Duplicate
1,1,1-Trichloroethane	NA	22000	0.22 U	0.22 U	87 U	0.22 U	0.22 U	0.22 U
1,1,2,2-Tetrachloroethane	NA	0.42	0.27 U	0.27 U	110 U	0.27 U	0.27 U	0.27 U
1,1,2-Trichloroethane	NA	1.5	0.22 U	0.22 U	87 U	0.22 U	0.22 U	0.22 U
1,1-Dichloroethane	NA	5000	0.16 U	0.16 U	65 U	0.16 U	0.16 U	0.16 U
1,1-Dichloroethene	NA	2000	0.16 U	0.16 U	63 U	0.16 U	0.16 U	0.16 U
1,2-Dibromoethane	NA	0.11	0.31 U	0.31 U	120 U	0.31 U	0.31 U	0.31 U
1,2-Dichloroethane	NA	0.94	0.32 U	0.32 U	65 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethene, Total	NA	NA	**2.6**	**2.5**	**2500**	0.16 U	0.16 U	0.16 U
1,2-Dichloropropane	NA	40	0.37 U	0.37 U	74 U	0.37 U	0.37 U	0.37 U
1,2-Dichlorotetrafluoroethane	NA	NA	0.28 U	0.28 U	110 U	0.28 U	0.28 U	0.28 U
1,3,5-Trimethylbenzene	NA	60	0.39 U	0.39 U	79 U	0.39 U	0.39 U	0.39 UJ
1,3-Butadiene	NA	0.087	0.18 U	0.18 U	35 U	0.18 U	0.18 U	0.18 U
2,2,4-Trimethylpentane	NA	NA	**0.23**	**0.55**	75 U	**0.19**	0.19 U	**0.22**
4-Ethyltoluene	NA	NA	**0.29** J	**0.3** J	79 U	0.2 U	0.2 U	0.2 UJ
Allyl Chloride	NA	NA	0.25 U	0.25 U	130 U	0.25 U	0.25 U	0.25 U
Benzene	NA	3.1	**0.65**	**0.65**	51 U	**0.52**	**0.51**	**0.84**
Bromodichloromethane	NA	1.4	0.27 U	0.27 U	110 U	0.27 U	0.27 U	0.27 U
Bromoethene	NA	NA	0.35 U	0.35 U	70 U	0.35 U	0.35 U	0.35 U
Bromoform	NA	22	0.41 U	0.41 U	170 U	0.41 U	0.41 U	0.41 U
Bromomethane	NA	NA	0.31 U	0.31 U	62 U	0.31 U	0.31 U	0.31 U
Carbon Tetrachloride	NA	1.6	**0.41**	**0.36**	100 U	**0.39**	**0.39**	**0.71**
Chloroethane	NA	100000	0.21 U	0.21 U	110 U	0.21 U	0.21 U	0.21 U
Chloroform	NA	1.1	**1.1**	**1.1**	78 U	0.2 U	0.2 U	**0.23**
cis-1,2-Dichloroethene	NA	350	**2.6**	**2.5**	**2500**	0.16 U	0.16 U	0.16 U
cis-1,3-Dichloropropene	NA	6.1	0.18 U	0.18 U	73 U	0.18 U	0.18 U	0.18 U
Cyclohexane	NA	NA	**0.15**	0.14 U	55 U	**0.18**	**0.96** J	**3.3** J
Dibromochloromethane	NA	1	0.34 U	0.34 U	140 U	0.34 U	0.34 U	0.34 U
Dichlorodifluoromethane	NA	2000	**2.1**	**2**	200 U	**2.5**	**2**	**3.9**
Ethylbenzene	NA	22	**0.31**	**0.28**	69 U	0.17 U	**0.31**	**0.32**
M,P-Xylenes	NA	70000	**1.1**	**1.1**	170 U	**0.25**	**0.9**	**0.88**
Methylene Chloride	60	52	1.4 U	1.4 U	140 U	1.4 U	1.4 U	**1.6** J
N-Heptane	NA	NA	**0.85**	**0.87**	66 U	**0.18**	**0.27**	**0.29**
N-Hexane	NA	2000	**0.48**	**0.49**	56 U	**0.37**	**0.53**	**0.93**
O-Xylene	NA	70000	**0.48**	**0.42**	69 U	0.17 U	**0.2**	**0.23**
Tert-Butyl Methyl Ether	NA	30000	0.14 U	0.14 U	58 U	0.14 U	0.14 U	0.14 U
Tetrachloroethene (PCE)	100	8.1	**11**	**10**	**9800**	0.27 U	0.27 U	0.27 U
Toluene	NA	4000	**1.5**	**1.3**	60 U	**0.6**	**7.5**	**9.7**
Trans-1,2-Dichloroethene	NA	700	0.16 U	0.16 U	63 U	0.16 U	0.16 U	0.16 U
Trans-1,3-Dichloropropene	NA	NA	0.18 U	0.18 U	73 U	0.18 U	0.18 U	0.18 U
Trichloroethene (TCE)	5	0.22	**0.93**	**0.96**	**560**	**0.23**	**1.1**	**1.1**
Trichlorofluoromethane	NA	7000	**0.99**	**1**	90 U	**1.3**	**1.1**	**2**
Vinyl Chloride	NA	2.8	0.2 U	0.2 U	41 U	0.2 U	0.2 U	0.2 U
Xylenes, Total	NA	70000	**1.6**	**1.5**	69 U	**0.34**	**1.1**	**1.1**

Table 7
VOCs in Soil Vapor Intrusion Samples
Crystal Cleaners, Pelham, New York

		Structure:	B05	B05	B06	B06	B06	B06
		Sample Type:	Sub-Slab	Outdoor	Indoor	Indoor	Sub-Slab	Outdoor
		Sample ID:	B05-SS1-20120211	B05-OA1-20120211	BO6IA1_04/13/12	BO6IA2_04/13/12	BO6SS1_04/13/12	BO6AA1_04/13/12
	NYSDOH	Sample Date	2/20/12	2/20/12	4/24/12	4/24/12	4/20/12	4/24/12
Unit: µg/m3	Guideline	EPA Criteria	Env. Sample	Env. Sample	Env. Sample	Env. Duplicate	Env. Sample	Env. Sample
1,1,1-Trichloroethane	NA	22000	1.1 U	0.22 U	0.22 U	0.22 U	1.1 U	0.22 U
1,1,2,2-Tetrachloroethane	NA	0.42	1.4 U	0.27 U	0.27 U	0.27 U	1.4 U	0.27 U
1,1,2-Trichloroethane	NA	1.5	1.1 U	0.22 U	0.22 U	0.22 U	1.1 U	0.22 U
1,1-Dichloroethane	NA	5000	0.81 U	0.16 U	0.16 U	0.16 U	0.81 U	0.16 U
1,1-Dichloroethene	NA	2000	0.79 U	0.16 U	0.16 U	0.16 U	0.79 U	0.16 U
1,2-Dibromoethane	NA	0.11	1.5 U	0.31 U	0.31 U	0.31 U	1.5 U	0.31 U
1,2-Dichloroethane	NA	0.94	0.81 U	0.32 U	0.32 U	0.32 U	0.81 U	0.32 U
1,2-Dichloroethene, Total	NA	NA	0.79 U	0.16 U	**2**	**2.2**	**4.3**	0.16 U
1,2-Dichloropropane	NA	40	0.92 U	0.37 U	0.37 U	0.37 U	0.92 U	0.37 U
1,2-Dichlorotetrafluoroethane	NA	NA	1.4 U	0.28 U	0.28 U	0.28 U	1.4 U	0.28 U
1,3,5-Trimethylbenzene	NA	60	**8**	0.39 U	**1.7** J	**1.7** J	0.98 U	0.39 UJ
1,3-Butadiene	NA	0.087	0.44 U	0.18 U	0.18 U	0.18 U	0.44 U	0.18 U
2,2,4-Trimethylpentane	NA	NA	0.93 U	0.19 U	**2.9**	**2.8**	**2**	0.19 U
4-Ethyltoluene	NA	NA	**9.4**	0.2 U	**1.9** J	**1.7** J	0.98 U	0.2 UJ
Allyl Chloride	NA	NA	1.6 U	0.25 U	0.25 U	0.25 U	1.6 U	0.25 U
Benzene	NA	3.1	0.64 U	**0.46**	**2.7**	**2.6**	**2.6**	**0.57**
Bromodichloromethane	NA	1.4	1.3 U	0.27 U	0.27 U	0.27 U	1.3 U	0.27 U
Bromoethene	NA	NA	0.87 U	0.35 U	0.35 U	0.35 U	0.87 U	0.35 U
Bromoform	NA	22	2.1 U	0.41 U	0.41 U	0.41 U	2.1 U	0.41 U
Bromomethane	NA	NA	0.78 U	0.31 U	0.31 U	0.31 U	0.78 U	0.31 U
Carbon Tetrachloride	NA	1.6	1.3 U	**0.37**	**0.55**	**0.54**	1.3 U	**0.44**
Chloroethane	NA	100000	1.3 U	0.21 U	0.21 U	0.21 U	1.3 U	0.21 U
Chloroform	NA	1.1	0.98 U	0.2 U	**0.55**	**0.57**	0.98 U	0.2 U
cis-1,2-Dichloroethene	NA	350	0.79 U	0.16 U	**2**	**2.2**	**4.3**	0.16 U
cis-1,3-Dichloropropene	NA	6.1	0.91 U	0.18 U	0.18 U	0.18 U	0.91 U	0.18 U
Cyclohexane	NA	NA	0.69 U	0.14 U	**1.7**	**1.7**	**1.7**	**0.28**
Dibromochloromethane	NA	1	1.7 U	0.34 U	0.34 U	0.34 U	1.7 U	0.34 U
Dichlorodifluoromethane	NA	2000	**3.7**	**2**	**1.9**	**2**	2.5 U	**2.4**
Ethylbenzene	NA	22	**1.3**	0.17 U	**2.6**	**2.8**	**1.2**	0.17 U
M,P-Xylenes	NA	70000	**5.4**	**0.2**	**9.6**	**10**	2.2 U	0.17 U
Methylene Chloride	60	52	1.7 U	1.4 U	1.4 U	1.4 U	1.7 U	1.4 U
N-Heptane	NA	NA	**1.8**	0.16 U	**3.6**	**3.6**	**3.4**	0.16 U
N-Hexane	NA	2000	**6**	0.28 U	**6.6**	**6.9**	**7**	**0.78**
O-Xylene	NA	70000	**2.4**	0.17 U	**3.7**	**3.9**	0.87 U	0.17 U
Tert-Butyl Methyl Ether	NA	30000	0.72 U	0.14 U	**4.8**	**5**	**1.8**	0.14 U
Tetrachloroethene (PCE)	100	8.1	**52**	0.27 U	**5.5**	**5.6**	**5**	0.27 U
Toluene	NA	4000	**6.3**	**1.3**	**12**	**12**	**13**	**0.48**
Trans-1,2-Dichloroethene	NA	700	0.79 U	0.16 U	0.16 U	0.16 U	0.79 U	0.16 U
Trans-1,3-Dichloropropene	NA	NA	0.91 U	0.18 U	0.18 U	0.18 U	0.91 U	0.18 U
Trichloroethene (TCE)	5	0.22	1.1 U	**0.59**	**1.4**	**1.3**	**1.2**	**0.67**
Trichlorofluoromethane	NA	7000	**1.3**	**0.99**	**1.6**	**1.7**	**2.4**	**1**
Vinyl Chloride	NA	2.8	0.51 U	0.2 U	0.2 U	0.2 U	0.51 U	0.2 U
Xylenes, Total	NA	70000	**7.8**	**0.2**	**13**	**14**	**2.4**	0.17 U

Table 7
VOCs in Soil Vapor Intrusion Samples
Crystal Cleaners, Pelham, New York

		Structure:	B07	B07	B07	B08	B08	B09
		Sample Type:	Indoor	Sub-Slab	Outdoor	Indoor	Outdoor	Indoor
		Sample ID:	BO7IA1_04/17/12	BO7SS1_04/17/12	BO7AA1_04/17/12	B08-IA1-20140401	B08-OA1-20140401	B09-IA1-20140401
	NYSDOH	Sample Date	4/25/12	4/21/12	4/24/12	4/1/14	4/1/14	4/1/14
Unit: µg/m3	Guideline	EPA Criteria	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample	Env. Sample
1,1,1-Trichloroethane	NA	22000	0.68 U	61 U	0.22 U	0.22 U	0.22 U	0.22 U
1,1,2,2-Tetrachloroethane	NA	0.42	0.86 U	77 U	0.27 U	0.27 U	0.27 U	0.27 U
1,1,2-Trichloroethane	NA	1.5	0.68 U	61 U	0.22 U	0.22 U	0.22 U	0.22 U
1,1-Dichloroethane	NA	5000	0.51 U	45 U	0.16 U	0.16 U	0.16 U	0.16 U
1,1-Dichloroethene	NA	2000	0.5 U	45 U	0.16 U	0.16 U	0.16 U	0.16 U
1,2-Dibromoethane	NA	0.11	0.96 U	86 U	0.31 U	0.31 U	0.31 U	0.31 U
1,2-Dichloroethane	NA	0.94	1 U	45 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethene, Total	NA	NA	**3.2**	**1500**	0.16 U	0.16 U	0.16 U	0.16 U
1,2-Dichloropropane	NA	40	1.2 U	52 U	0.37 U	0.37 U	0.37 U	0.37 U
1,2-Dichlorotetrafluoroethane	NA	NA	0.87 U	79 U	0.28 U	0.28 U	0.28 U	0.28 U
1,3,5-Trimethylbenzene	NA	60	**1.9** J	55 U	0.39 UJ	0.39 U	0.39 U	**0.47** J
1,3-Butadiene	NA	0.087	0.55 U	25 U	0.18 U	0.18 U	0.18 U	0.18 U
2,2,4-Trimethylpentane	NA	NA	**6.3**	53 U	**0.69**	**1.3**	**0.67**	**0.85**
4-Ethyltoluene	NA	NA	**1.5** J	55 U	0.2 UJ	0.2 U	0.2 U	**0.5** J
Allyl Chloride	NA	NA	0.78 U	88 U	0.25 U	0.25 U	0.25 U	0.25 U
Benzene	NA	3.1	**4.9**	36 U	**0.59**	**1.4**	**0.75**	**0.89**
Bromodichloromethane	NA	1.4	0.84 U	75 U	0.27 U	0.27 U	0.27 U	0.27 U
Bromoethene	NA	NA	1.1 U	49 U	0.35 U	0.35 U	0.35 U	0.35 U
Bromoform	NA	22	1.3 U	120 U	0.41 U	0.41 U	0.41 U	0.41 U
Bromomethane	NA	NA	0.97 U	44 U	0.31 U	0.31 U	0.31 U	0.31 U
Carbon Tetrachloride	NA	1.6	**1**	71 U	**0.35**	**0.54**	**0.58**	**0.51**
Chloroethane	NA	100000	0.66 U	74 U	0.21 U	0.21 U	0.21 U	0.21 U
Chloroform	NA	1.1	**1.4**	55 U	0.2 U	**0.26**	0.2 U	**1.3**
cis-1,2-Dichloroethene	NA	350	**3.2**	**1500**	0.16 U	0.16 U	0.16 U	0.16 U
cis-1,3-Dichloropropene	NA	6.1	0.57 U	51 U	0.18 U	0.18 U	0.18 U	0.18 U
Cyclohexane	NA	NA	**3.5**	39 U	**0.85**	**0.71**	**0.22**	**0.25**
Dibromochloromethane	NA	1	1.1 U	96 U	0.34 U	0.34 U	0.34 U	0.34 U
Dichlorodifluoromethane	NA	2000	**2.3**	140 U	**1.7**	**2.1**	**2.8**	**2.3**
Ethylbenzene	NA	22	**4.4**	49 U	**0.4**	**0.42**	**0.26**	**0.66**
M,P-Xylenes	NA	70000	**17**	120 U	**1.1**	**1.1**	**0.85**	**2**
Methylene Chloride	60	52	4.3 U	98 U	1.4 U	**6.4**	1.4 U	**2.6**
N-Heptane	NA	NA	**7.6**	46 U	**0.59**	**1**	**0.48**	**1.2**
N-Hexane	NA	2000	**11**	40 U	**0.81**	**3**	**0.58**	**1.1**
O-Xylene	NA	70000	**6.1**	49 U	**0.37**	**0.35**	**0.31**	**0.71**
Tert-Butyl Methyl Ether	NA	30000	0.45 U	41 U	0.14 U	0.14 U	0.14 U	0.14 U
Tetrachloroethene (PCE)	100	8.1	**10**	**8300**	**0.48**	**2.9**	**0.37**	**0.34**
Toluene	NA	4000	**29**	42 U	**3.7**	**6.1**	**1.7**	**6.4**
Trans-1,2-Dichloroethene	NA	700	0.5 U	45 U	0.16 U	0.16 U	0.16 U	0.16 U
Trans-1,3-Dichloropropene	NA	NA	0.57 U	51 U	0.18 U	0.18 U	0.18 U	0.18 U
Trichloroethene (TCE)	5	0.22	**1.4**	**370**	**0.74**	0.21 U	0.21 U	0.21 U
Trichlorofluoromethane	NA	7000	**1.9**	63 U	**0.91**	**1.7**	**1.4**	**1.2**
Vinyl Chloride	NA	2.8	0.64 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
Xylenes, Total	NA	70000	**24**	49 U	**1.5**	**1.5**	**1.2**	**2.8**

Table 7
VOCs in Soil Vapor Intrusion Samples
Crystal Cleaners, Pelham, New York

		Structure:	B09	B09	B09
		Sample Type:	Indoor	Sub-Slab	Outdoor
		Sample ID:	B09-IA51-20140401	B09-SS1-20140401	B09-OA1-20140401
	NYSDOH	Sample Date	4/1/14	4/1/14	4/1/14
Unit: µg/m3	Guideline	EPA Criteria	Env. Duplicate	Env. Sample	Env. Sample
1,1,1-Trichloroethane	NA	22000	0.22 U	1.1 U	0.22 U
1,1,2,2-Tetrachloroethane	NA	0.42	0.27 U	1.4 U	0.27 U
1,1,2-Trichloroethane	NA	1.5	0.22 U	1.1 U	0.22 U
1,1-Dichloroethane	NA	5000	0.16 U	0.81 U	0.16 U
1,1-Dichloroethene	NA	2000	0.16 U	0.79 U	0.16 U
1,2-Dibromoethane	NA	0.11	0.31 U	1.5 U	0.31 U
1,2-Dichloroethane	NA	0.94	0.32 U	0.81 U	0.32 U
1,2-Dichloroethene, Total	NA	NA	0.16 U	**1.3**	0.16 U
1,2-Dichloropropane	NA	40	0.37 U	0.92 U	0.37 U
1,2-Dichlorotetrafluoroethane	NA	NA	0.28 U	1.4 U	0.28 U
1,3,5-Trimethylbenzene	NA	60	0.39 U	**5.4**	0.39 U
1,3-Butadiene	NA	0.087	0.18 U	0.44 U	0.18 U
2,2,4-Trimethylpentane	NA	NA	**0.72**	**1.7**	**0.8**
4-Ethyltoluene	NA	NA	**0.26** J	**6.6**	0.2 U
Allyl Chloride	NA	NA	0.25 U	1.6 U	0.25 U
Benzene	NA	3.1	**0.82**	**3.4**	**0.81**
Bromodichloromethane	NA	1.4	0.27 U	1.3 U	0.27 U
Bromoethene	NA	NA	0.35 U	0.87 U	0.35 U
Bromoform	NA	22	0.41 U	2.1 U	0.41 U
Bromomethane	NA	NA	0.31 U	0.78 U	0.31 U
Carbon Tetrachloride	NA	1.6	**0.53**	1.3 U	**0.51**
Chloroethane	NA	100000	0.21 U	1.3 U	0.21 U
Chloroform	NA	1.1	**1.2**	0.98 U	0.2 U
cis-1,2-Dichloroethene	NA	350	0.16 U	**1.3**	0.16 U
cis-1,3-Dichloropropene	NA	6.1	0.18 U	0.91 U	0.18 U
Cyclohexane	NA	NA	**0.25**	**1.2**	**0.19**
Dibromochloromethane	NA	1	0.34 U	1.7 U	0.34 U
Dichlorodifluoromethane	NA	2000	**2.3**	2.5 U	**2.8**
Ethylbenzene	NA	22	**0.48**	0.87 U	**0.29**
M,P-Xylenes	NA	70000	**1.3**	**30**	**0.85**
Methylene Chloride	60	52	**2.6**	1.7 U	1.4 U
N-Heptane	NA	NA	**1.1**	**8**	**0.46**
N-Hexane	NA	2000	**1.1**	**41**	**0.74**
O-Xylene	NA	70000	**0.44**	**12**	**0.29**
Tert-Butyl Methyl Ether	NA	30000	0.14 U	0.72 U	0.14 U
Tetrachloroethene (PCE)	100	8.1	**0.34**	**10**	**0.41**
Toluene	NA	4000	**5.8**	**22**	**1.5**
Trans-1,2-Dichloroethene	NA	700	0.16 U	0.79 U	0.16 U
Trans-1,3-Dichloropropene	NA	NA	0.18 U	0.91 U	0.18 U
Trichloroethene (TCE)	5	0.22	0.21 U	**1.1**	0.21 U
Trichlorofluoromethane	NA	7000	**1.2**	1.1 U	**1.4**
Vinyl Chloride	NA	2.8	0.2 U	0.51 U	0.2 U
Xylenes, Total	NA	70000	**1.8**	**42**	**1.1**

Table 7
VOCs in SVI Samples
Crystal Cleaners, Pelham, New York

EPA Criteria: EPA, 2002; generic screening level for shallow soil gas; risk = $1x10^{6}$

Dup - Field duplicate sample
U - Not detected
J - Estimated

Detections are bolded
Exceedances are highlighted
NYSDOH guideline values apply to indoor and outdoor air samples.

Table 8
Soil Vapor Intrusion Data Comparison to NYSDOH Matrices
Crystal Cleaners, Pelham, New York

Unit: µg/m3					Concentration Range		Matrix
Parameter	Structure	Indoor	Sub-Slab	Outdoor	Indoor	Sub-Slab	Recommendation
PCE	B01	1.8 (1.2)	1.4U	0.45U (1.9)	<3	<100	No further action
Matrix 2	B02	0.62			<3	NA	NA
	B03	33			30 to <100	NA	NA
	B04	11 (10)	9800	0.27U	3 to <30	1000 and above	Mitigate
	B05	0.27U (0.27U)	52	0.27U	<3	<100	No further action
	B06	5.5 (5.6)	5	0.27U	3 to <30	<100	Take actions to identify sources and reduce exposures
	B07	10	8300	0.48	3 to <30	1000 and above	Mitigate
	B08	2.9	NA	0.37	<3	NA	NA
	B09	0.34 (0.34)	10	0.41	<3	<100	No further action
TCE	B01	3 (3.1)	1.1U	0.36U (2.9)	1 to <5	<5	Take actions to identify sources and reduce exposures
Matrix 1	B02	0.62			0.25 to <1	NA	NA
	B03	7.2			5 and above	NA	NA
	B04	0.93 (0.96)	560	0.23	0.25 to <1	250 and above	Mitigate
	B05	1.1 (1.1)	1.1U	0.59	1 to <5	<5	Take actions to identify sources and reduce exposures
	B06	1.4 (1.3)	1.2	0.67	1 to <5	<5	Take actions to identify sources and reduce exposures
	B07	1.4	370	0.74	1 to <5	250 and above	Mitigate
	B08	0.21U	NA	0.21U	<0.25	NA	NA
	B09	0.21U (0.21U)	1.1	0.21U	<0.25	<5	No further action

Dup - Field duplicate sample
U - Not detected
J - Estimated
NA - Not available

Table 9
Properties of the Site Chemicals of Concern
Crystal Cleaners, Pelham, New York

CAS No.	Chemical	Org. Car. partition coefficient K_{oc} (cm^3/g)	Log K_{oc} (unitless)	Diffusivity in air D_a (cm^2/s)	Diffusivity in water D_w (cm^2/s)	Pure component water sol S (mg/L)	Henry's Law Constant H' (unitless)	Normal boiling point (bp) T_B (^oC)	Density (Specific Gravity) ρ (g/cm^3)
127184	PCE	1.55E+02	2.19E+00	7.20E-02	8.20E-06	2.00E+02	7.53E-01	121.3	1.624
79016	TCE	1.66E+02	2.22E+00	7.90E-02	9.10E-06	1.47E+03	4.21E-01	87.2	1.466
156592	cis-1,2-DCE	3.55E+01	1.55E+00	7.36E-02	1.13E-05	3.50E+03	1.67E-01	60.5	1.284
75014	Vinyl chloride	1.86E+01	1.27E+00	1.06E-01	1.23E-05	8.80E+03	1.10E+00	-13.9	0.908
156605	trans-1,2-DCE	5.25E+01	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.84E-01	47.7	1.2565
75354	1,2-Dichloroethane	1.74E+01	1.24E+00	1.04E-01	9.90E-06	8.52E+03	4.00E-02	83.5	1.2351

Table adapted from NJDEP (2005; Table G-2)
Density from the Hazardous Substances Databank (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB)

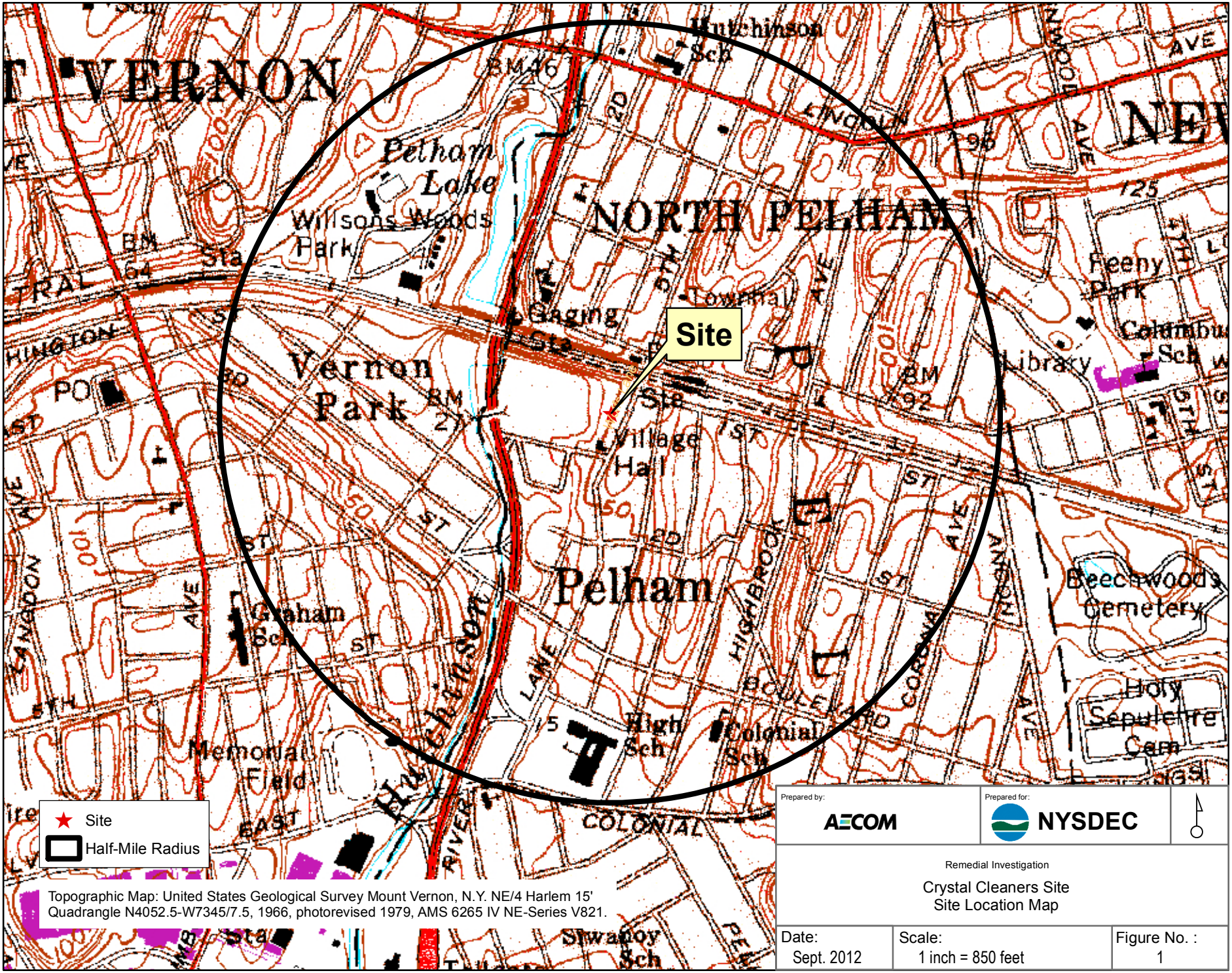
Table 10
Groundwater Flow and Contaminant Migration
Crystal Cleaners, Pelham, New York

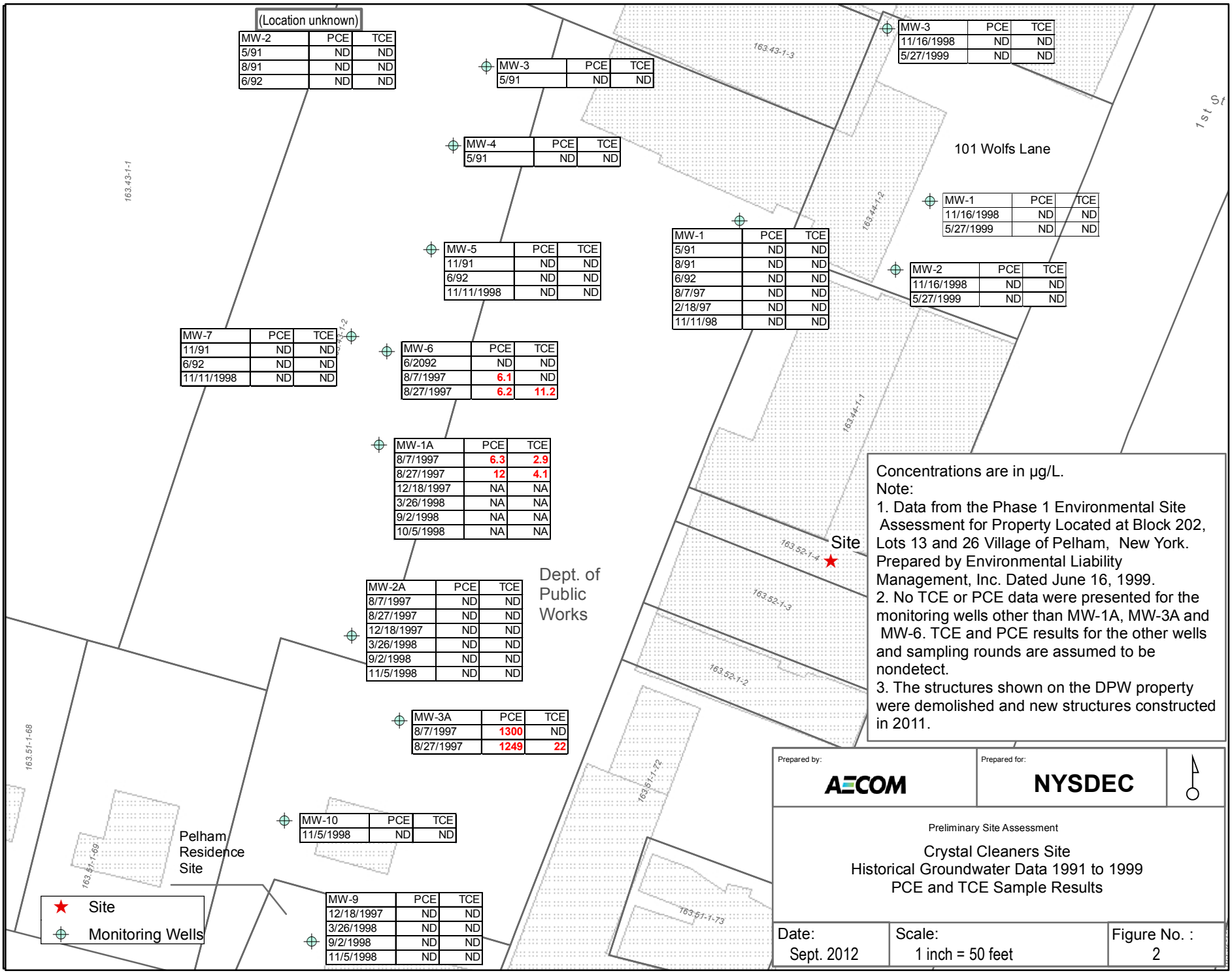
Contaminant	Horizontal Gradient (ft/ft)	Hydraulic Cond. (ft/day)	Effective Porosity	GW Flow (ft/day)	Partition K_{oc}	Carbon f_{oc}	Density P_b (g/cc)	Retardation R_d	Contaminant Transport ft/day	Contaminant Transport ft/year	Distance [1] (ft)	Time[2] (yrs)
PCE	0.01	10	0.375	0.27	155	0.002	1.5	2.24	0.12	43.5	1000	23.0
TCE	0.01	10	0.375	0.27	166	0.002	1.5	2.33	0.11	41.8	1000	23.9
cis-1,2-DCE	0.01	10	0.375	0.27	355	0.002	1.5	3.84	0.07	25.3	1000	39.5
Vinyl chloride	0.01	10	0.375	0.27	18.6	0.002	1.5	1.15	0.23	84.7	1000	11.8
trans-1,2-DCE	0.01	10	0.375	0.27	52.5	0.002	1.5	1.42	0.19	68.5	1000	14.6
1,2-Dichloroethane	0.01	10	0.375	0.27	17.4	0.002	1.5	1.14	0.23	85.4	1000	11.7

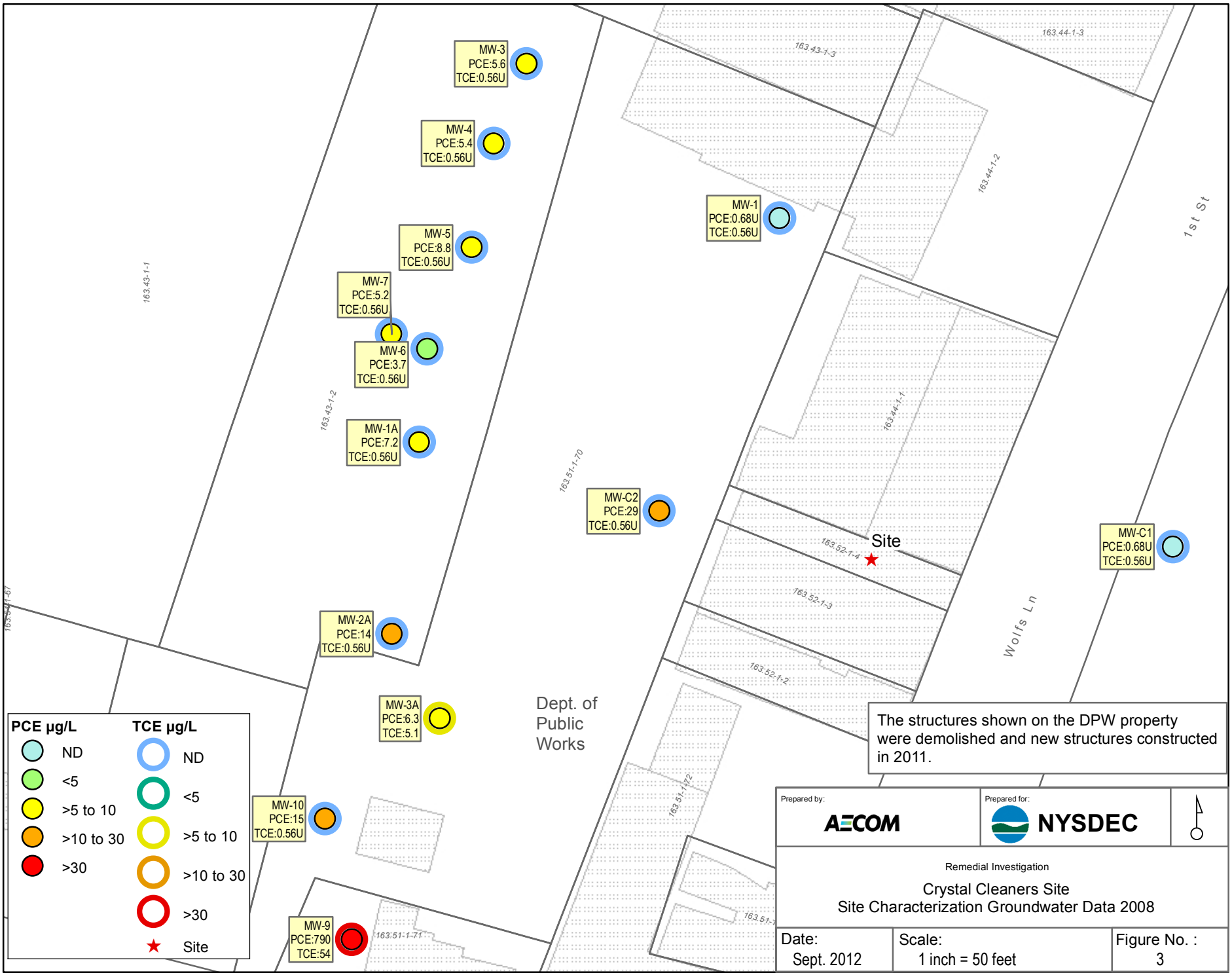
1. Approximate distance from well MW-04 to the Hutchingson River assuming groundwater flow is towards the southwest.
2. Estimated time of travel for distance.

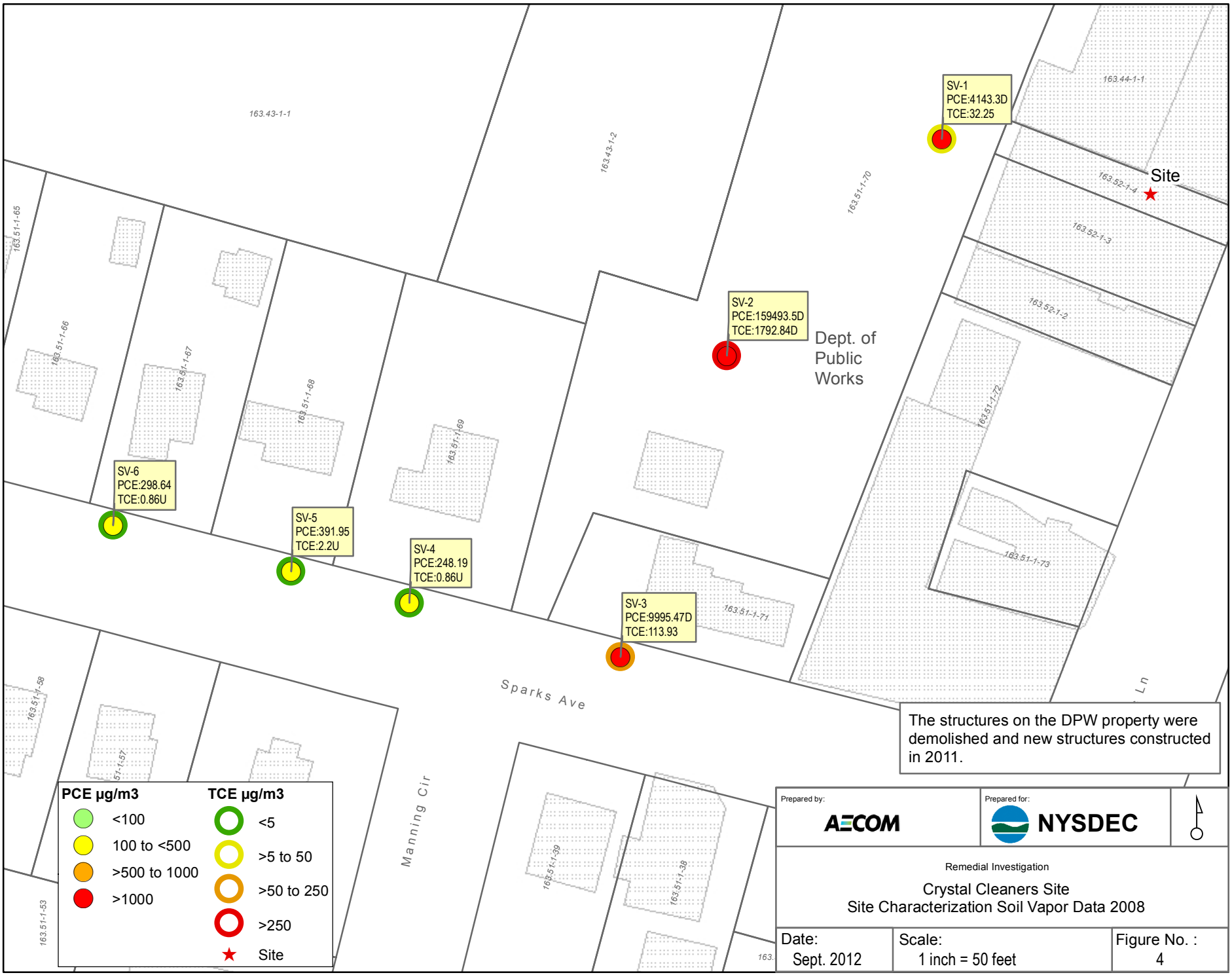
Table 11
Qualitative Human Health Exposure Assessment
Crystal Cleaners, Pelham, New York

Environmental Media & Exposure Route	Human Exposure Assessment
Ingestion of groundwater	Contaminated groundwater is not being used for drinking water, as the area is served by the public water supply. There are no known water supply wells in the area.
Direct contact with groundwater	People can come into contact if they complete ground-intrusive work at the site or off-site areas within the plume.
Direct contact with surface soils (and incidental ingestion)	People are not coming into contact because contaminated surface soils were not found.
Direct contact with subsurface soils (and incidental ingestion)	People can come into contact if they complete ground-intrusive work at the site.
Inhalation of air (exposures related to soil vapor intrusion)	A soil vapor intrusion evaluation was conducted in buildings in the vicinity of the site. NYSDEC and NYSDOH will determine the necessary remedial actions.


Site
Half-Mile Radius
Topographic Map: United States Geological Survey Mount Vernon, N.Y. NE/4 Harlem 15' Quadrangle N4052.5-W7345/7.5, 1966, photorevised 1979, AMS 6265 IV NE-Series V821.
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Site Location Map
Date:
Sept. 2012
Scale:
1 inch = 850 feet
Figure No. :
1


(Location unknown)
MW-2 | PCE | TCE
5/91 | ND | ND
8/91 | ND | ND
6/92 | ND | ND
MW-3 | PCE | TCE
5/91 | ND | ND
MW-4 | PCE | TCE
5/91 | ND | ND
MW-5 | PCE | TCE
11/91 | ND | ND
6/92 | ND | ND
11/11/1998 | ND | ND
MW-7 | PCE | TCE
11/91 | ND | ND
6/92 | ND | ND
11/11/1998 | ND | ND
MW-6 | PCE | TCE
6/2092 | ND | ND
8/7/1997 | 6.1 | ND
8/27/1997 | 6.2 | 11.2
MW-1A | PCE | TCE
8/7/1997 | 6.3 | 2.9
8/27/1997 | 12 | 4.1
12/18/1997 | NA | NA
3/26/1998 | NA | NA
9/2/1998 | NA | NA
10/5/1998 | NA | NA
MW-2A | PCE | TCE
8/7/1997 | ND | ND
8/27/1997 | ND | ND
12/18/1997 | ND | ND
3/26/1998 | ND | ND
9/2/1998 | ND | ND
11/5/1998 | ND | ND
MW-3A | PCE | TCE
8/7/1997 | 1300 | ND
8/27/1997 | 1249 | 22
MW-10 | PCE | TCE
11/5/1998 | ND | ND
MW-9 | PCE | TCE
12/18/1997 | ND | ND
3/26/1998 | ND | ND
9/2/1998 | ND | ND
11/5/1998 | ND | ND
MW-3 | PCE | TCE
11/16/1998 | ND | ND
5/27/1999 | ND | ND
MW-1 | PCE | TCE
5/91 | ND | ND
8/91 | ND | ND
6/92 | ND | ND
8/7/97 | ND | ND
2/18/97 | ND | ND
11/11/98 | ND | ND
MW-1 | PCE | TCE
11/16/1998 | ND | ND
5/27/1999 | ND | ND
MW-2 | PCE | TCE
11/16/1998 | ND | ND
5/27/1999 | ND | ND
101 Wolfs Lane
Dept. of Public Works
Site
Pelham Residence Site
163.43-1-1
163.43-1-2
163.43-1-3
163.44-1-1
163.44-1-2
163.51-1-68
163.51-1-69
163.51-1-72
163.51-1-73
163.52-1-1
163.52-1-2
163.52-1-3
Site
Monitoring Wells
Concentrations are in µg/L.
Note:
1. Data from the Phase 1 Environmental Site Assessment for Property Located at Block 202, Lots 13 and 26 Village of Pelham, New York. Prepared by Environmental Liability Management, Inc. Dated June 16, 1999.
2. No TCE or PCE data were presented for the monitoring wells other than MW-1A, MW-3A and MW-6. TCE and PCE results for the other wells and sampling rounds are assumed to be nondetect.
3. The structures shown on the DPW property were demolished and new structures constructed in 2011.
Prepared by:
AECOM
Prepared for:
NYSDEC
Preliminary Site Assessment
Crystal Cleaners Site
Historical Groundwater Data 1991 to 1999
PCE and TCE Sample Results
Date:
Sept. 2012
Scale:
1 inch = 50 feet
Figure No. :
2


MW-3
PCE:5.6
TCE:0.56U
MW-4
PCE:5.4
TCE:0.56U
MW-5
PCE:8.8
TCE:0.56U
MW-7
PCE:5.2
TCE:0.56U
MW-6
PCE:3.7
TCE:0.56U
MW-1A
PCE:7.2
TCE:0.56U
MW-2A
PCE:14
TCE:0.56U
MW-3A
PCE:6.3
TCE:5.1
MW-10
PCE:15
TCE:0.56U
MW-9
PCE:790
TCE:54
MW-1
PCE:0.68U
TCE:0.56U
MW-C2
PCE:29
TCE:0.56U
MW-C1
PCE:0.68U
TCE:0.56U
Site
Dept. of
Public
Works
1st St
Wolfs Ln
163.43-1-1
163.43-1-2
163.43-1-3
163.44-1-1
163.44-1-2
163.44-1-3
163.51-1-70
163.51-1-71
163.51-1-72
163.52-1-2
163.52-1-3
163.52-1-4
PCE µg/L
ND
<5
>5 to 10
>10 to 30
>30
TCE µg/L
ND
<5
>5 to 10
>10 to 30
>30
Site
The structures shown on the DPW property were demolished and new structures constructed in 2011.
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Site Characterization Groundwater Data 2008
Date:
Sept. 2012
Scale:
1 inch = 50 feet
Figure No. :
3



The structures on the DPW property were demolished and new structures constructed in 2011.

Prepared by: AECOM

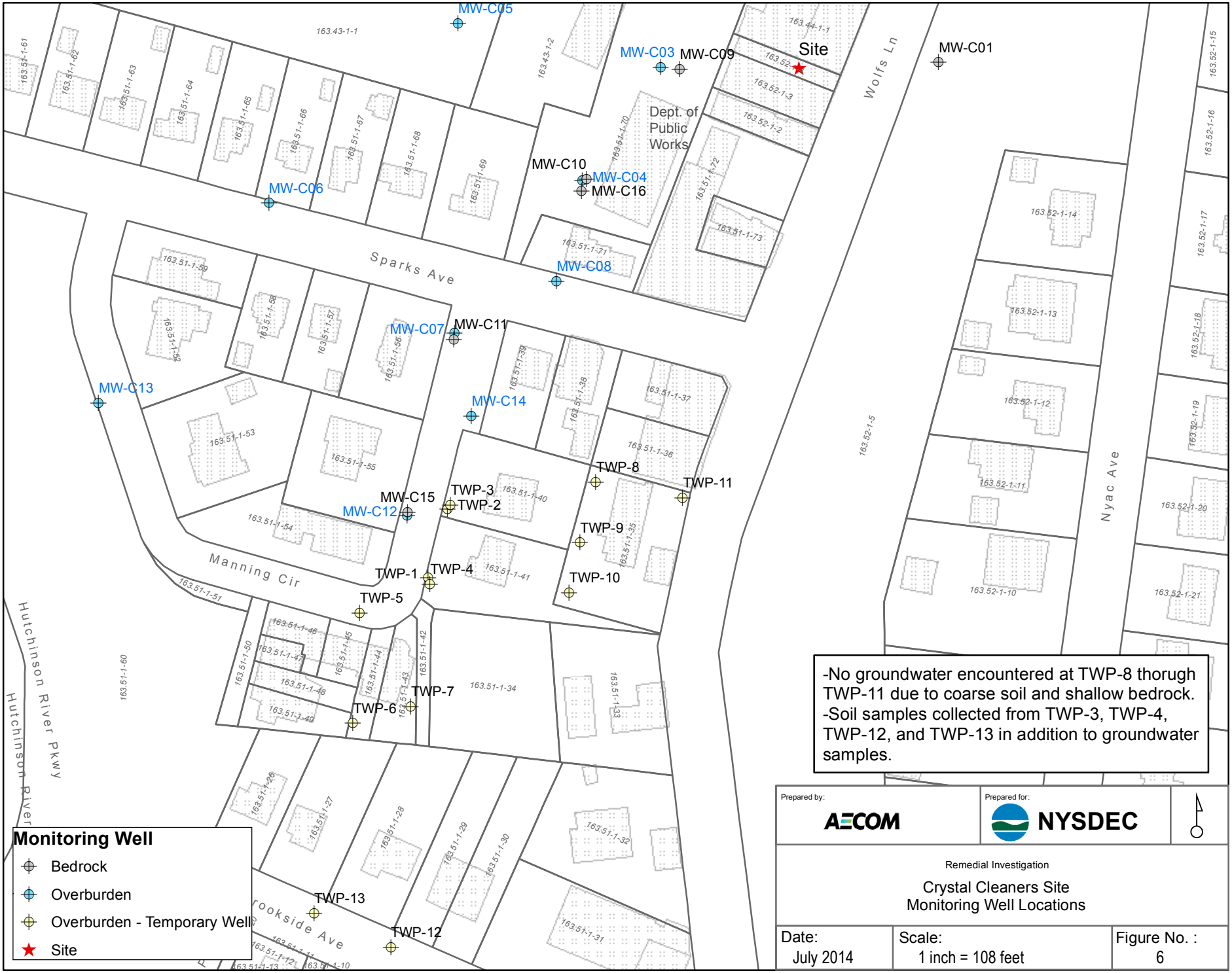
Prepared for: NYSDEC

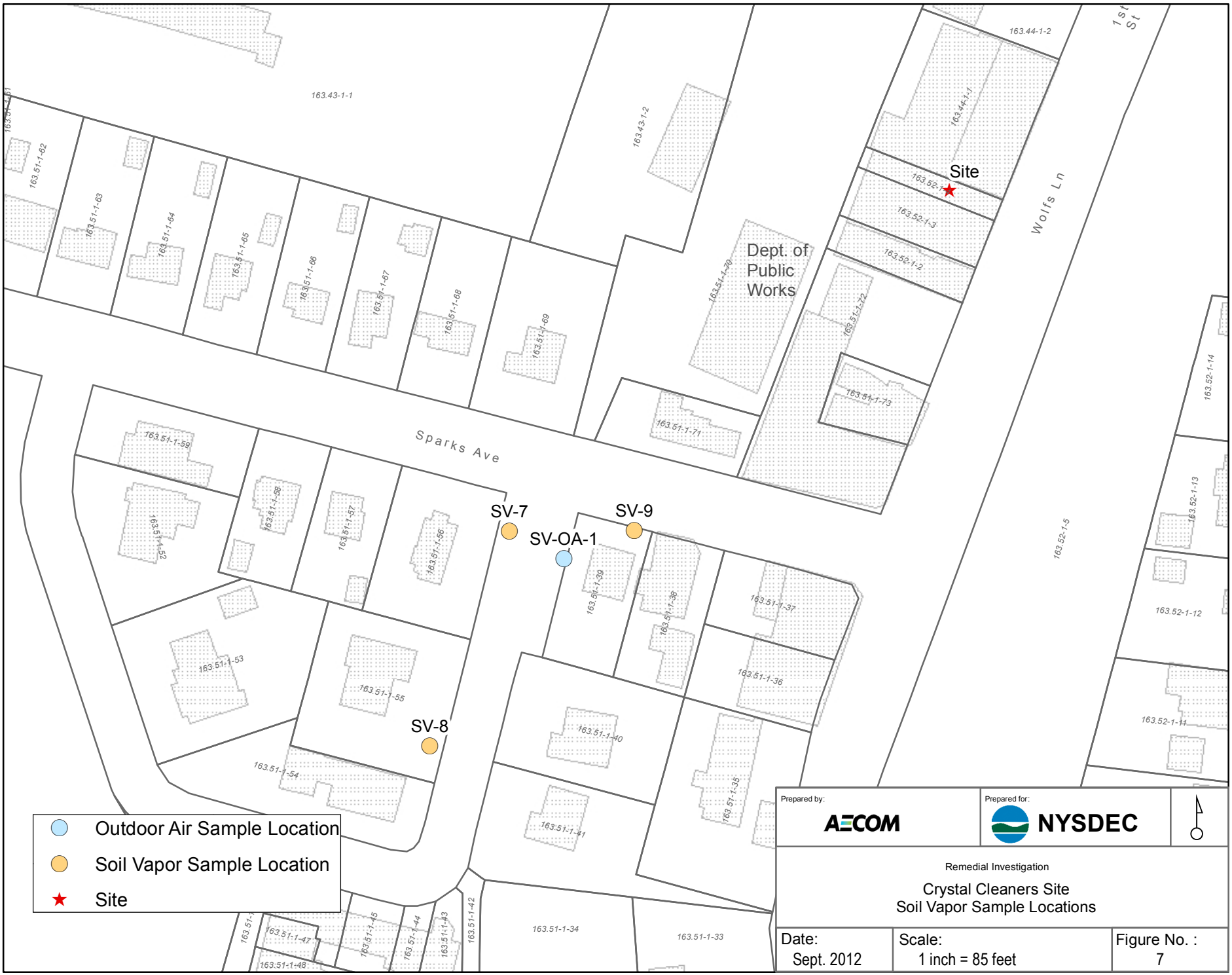
Remedial Investigation

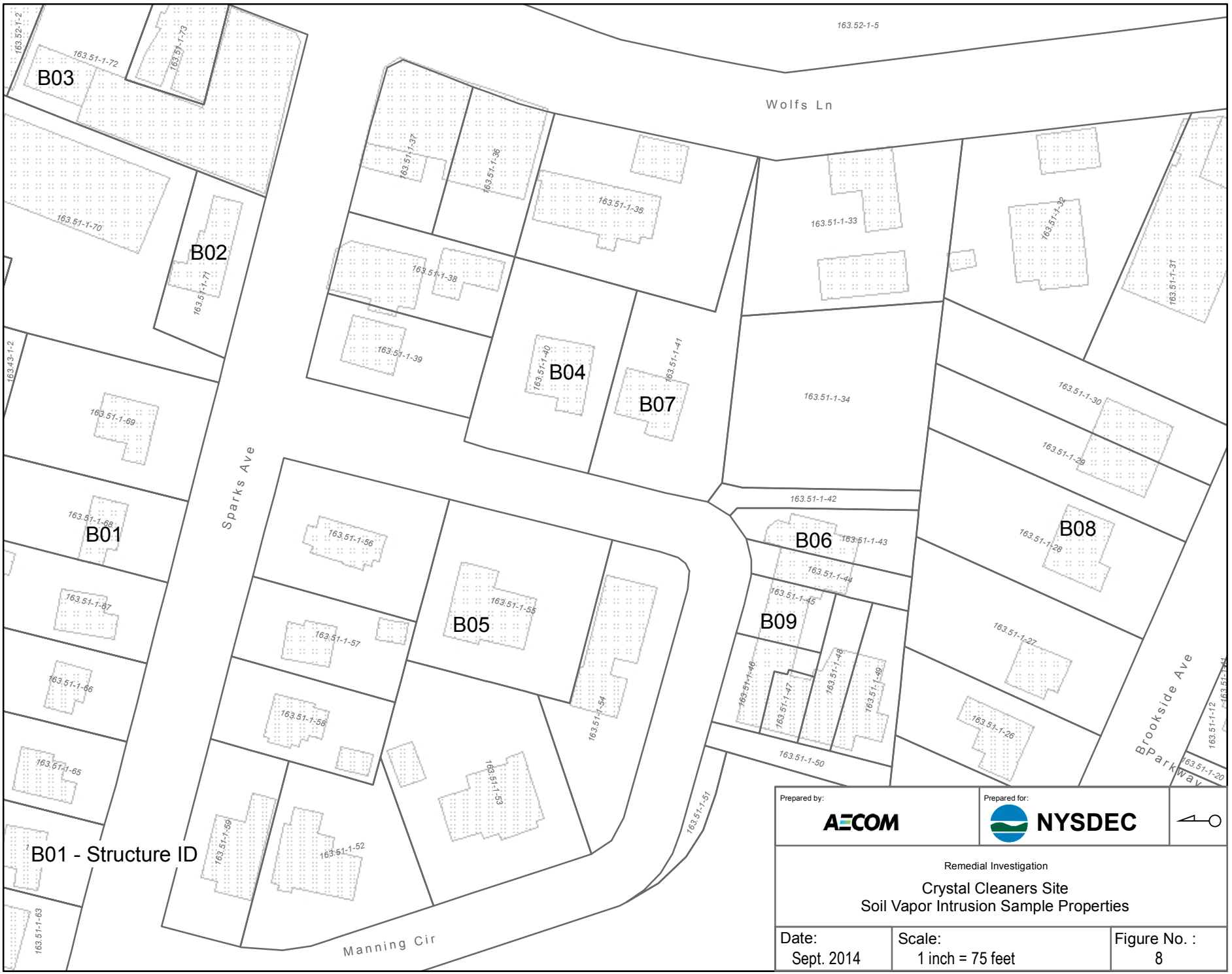
Crystal Cleaners Site
Site Characterization Soil Vapor Data 2008

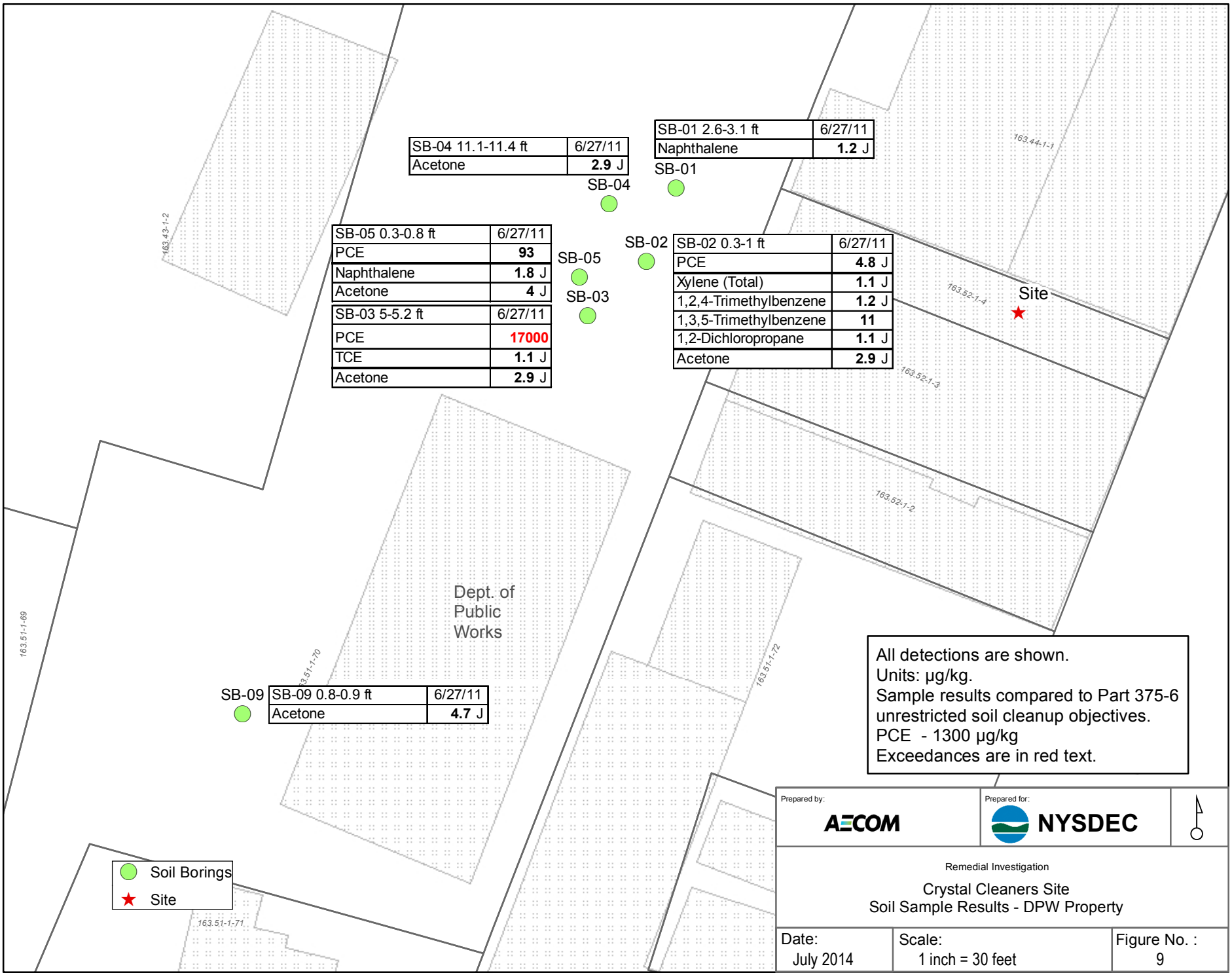
Date:	Scale:	Figure No. :
Sept. 2012	1 inch = 50 feet	4

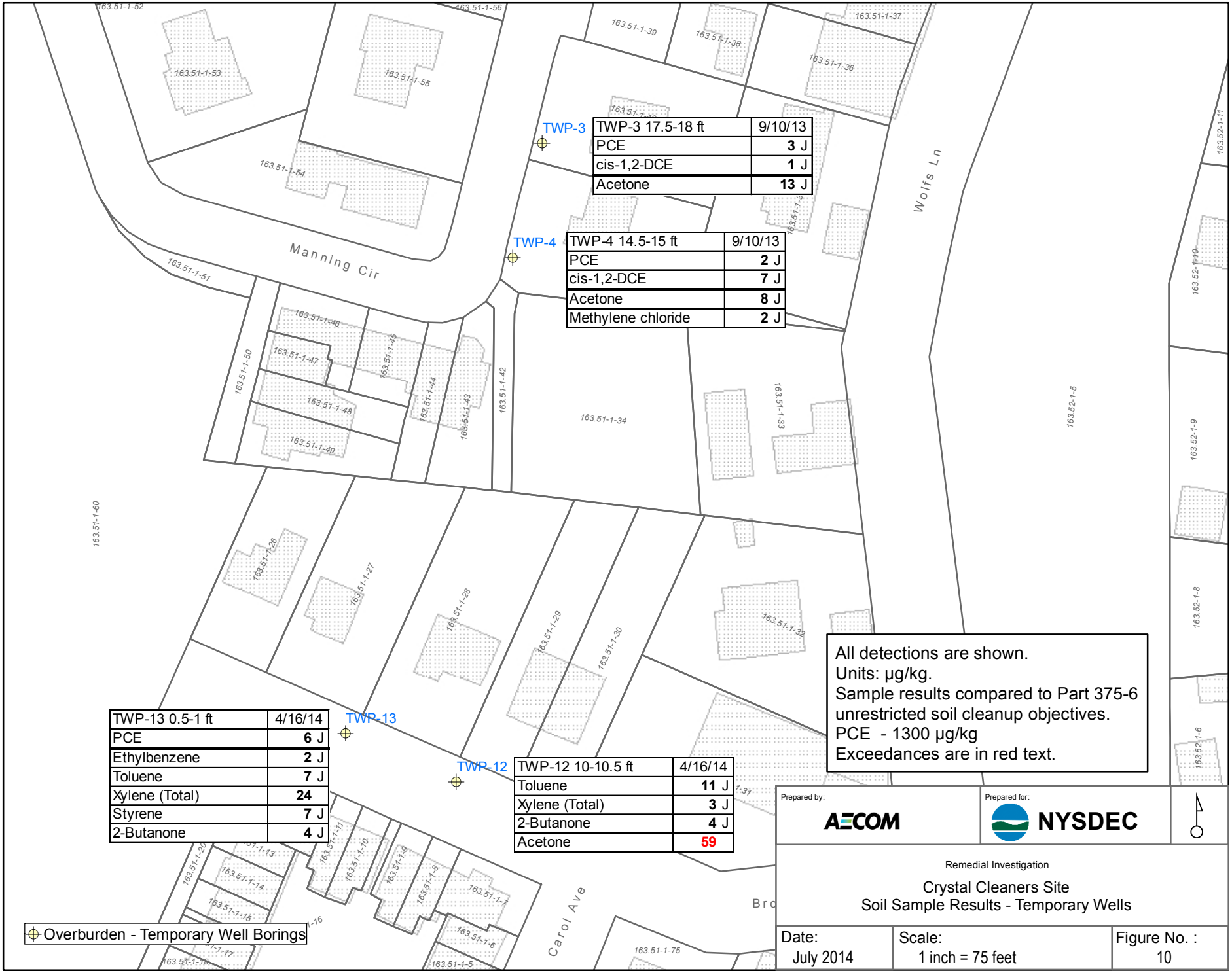

SB-01
SB-04
SB-02
SB-05
SB-03
SB-09
Site
Dumpsters, Concrete Pad, Utility Runs
Dept. of
Public
Works
163.44-1-1
163.43-1-2
163.52-1-4
163.52-1-3
163.52-1-2
163.51-1-70
163.51-1-72
Soil Borings
Site
Structure
Lots
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Soil Boring Locations
Date:
Sept. 2012
Scale:
1 inch = 21 feet
Figure No. :
5

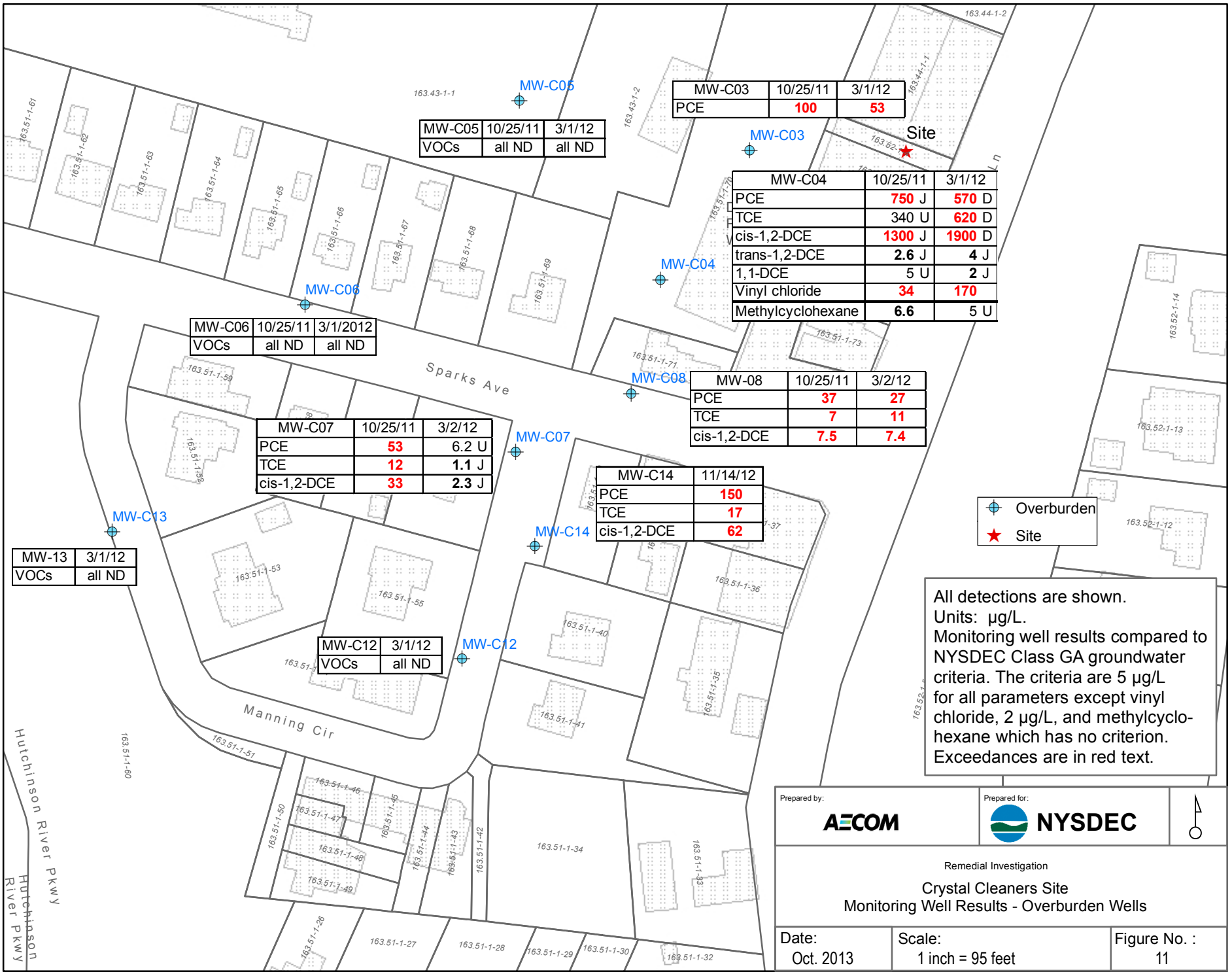

MW-C05
MW-C03
MW-C09
Site
MW-C01
Wolfs Ln
Dept. of Public Works
MW-C10
MW-C04
MW-C16
MW-C06
Sparks Ave
MW-C08
MW-C07
MW-C11
MW-C13
MW-C14
TWP-8
TWP-11
MW-C15
TWP-3
TWP-2
MW-C12
TWP-9
Manning Cir
TWP-1
TWP-4
TWP-10
TWP-5
Nyac Ave
Hutchinson River Pkwy
TWP-7
TWP-6
TWP-13
TWP-12
Brookside Ave
-No groundwater encountered at TWP-8 thorugh TWP-11 due to coarse soil and shallow bedrock.
-Soil samples collected from TWP-3, TWP-4, TWP-12, and TWP-13 in addition to groundwater samples.
Monitoring Well
Bedrock
Overburden
Overburden - Temporary Well
Site
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Monitoring Well Locations
Date:
July 2014
Scale:
1 inch = 108 feet
Figure No. :
6


Sparks Ave
Wolfs Ln
Dept. of Public Works
Site
SV-7
SV-9
SV-OA-1
SV-8
163.43-1-1
163.43-1-2
163.44-1-2
163.44-1-1
163.52-1-3
163.52-1-2
163.52-1-14
163.52-1-13
163.52-1-5
163.52-1-12
163.52-1-11
163.51-1-62
163.51-1-63
163.51-1-64
163.51-1-65
163.51-1-66
163.51-1-67
163.51-1-68
163.51-1-69
163.51-1-70
163.51-1-72
163.51-1-73
163.51-1-71
163.51-1-59
163.51-1-58
163.51-1-57
163.51-1-56
163.51-1-52
163.51-1-53
163.51-1-55
163.51-1-54
163.51-1-39
163.51-1-38
163.51-1-37
163.51-1-36
163.51-1-40
163.51-1-41
163.51-1-35
163.51-1-34
163.51-1-33
163.51-1-47
163.51-1-48
163.51-1-45
163.51-1-44
163.51-1-43
163.51-1-42
Outdoor Air Sample Location
Soil Vapor Sample Location
Site
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Soil Vapor Sample Locations
Date:
Sept. 2012
Scale:
1 inch = 85 feet
Figure No. :
7


B03
B02
B04
B07
B01
B05
B06
B09
B08
Wolfs Ln
Sparks Ave
Brookside Ave
Manning Cir
163.52-1-5
163.52-1-2
163.51-1-72
163.51-1-73
163.51-1-70
163.51-1-71
163.51-1-37
163.51-1-36
163.51-1-35
163.51-1-38
163.51-1-39
163.51-1-40
163.51-1-41
163.51-1-33
163.51-1-32
163.51-1-31
163.51-1-34
163.51-1-30
163.51-1-29
163.43-1-2
163.51-1-69
163.51-1-68
163.51-1-42
163.51-1-43
163.51-1-44
163.51-1-45
163.51-1-28
163.51-1-27
163.51-1-67
163.51-1-56
163.51-1-55
163.51-1-57
163.51-1-66
163.51-1-58
163.51-1-54
163.51-1-46
163.51-1-47
163.51-1-48
163.51-1-49
163.51-1-26
163.51-1-65
163.51-1-50
163.51-1-53
163.51-1-51
163.51-1-59
163.51-1-52
163.51-1-63
163.51-1-12
163.51-1-20
B01 - Structure ID
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Soil Vapor Intrusion Sample Properties
Date:
Sept. 2014
Scale:
1 inch = 75 feet
Figure No. :
8


SB-04 11.1-11.4 ft | 6/27/11
Acetone | 2.9 J
SB-04
SB-01 2.6-3.1 ft | 6/27/11
Naphthalene | 1.2 J
SB-01
SB-05 0.3-0.8 ft | 6/27/11
PCE | 93
Naphthalene | 1.8 J
Acetone | 4 J
SB-05
SB-02
SB-02 0.3-1 ft | 6/27/11
PCE | 4.8 J
Xylene (Total) | 1.1 J
1,2,4-Trimethylbenzene | 1.2 J
1,3,5-Trimethylbenzene | 11
1,2-Dichloropropane | 1.1 J
Acetone | 2.9 J
SB-03
SB-03 5-5.2 ft | 6/27/11
PCE | 17000
TCE | 1.1 J
Acetone | 2.9 J
Site
163.44-1-1
163.43-1-2
163.52-1-4
163.52-1-3
163.52-1-2
163.51-1-69
163.51-1-70
163.51-1-72
163.51-1-71
Dept. of Public Works
SB-09
SB-09 0.8-0.9 ft | 6/27/11
Acetone | 4.7 J
Soil Borings
Site
All detections are shown.
Units: µg/kg.
Sample results compared to Part 375-6 unrestricted soil cleanup objectives.
PCE - 1300 µg/kg
Exceedances are in red text.
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Soil Sample Results - DPW Property
Date:
July 2014
Scale:
1 inch = 30 feet
Figure No. :
9


TWP-3
TWP-3 17.5-18 ft | 9/10/13
PCE | 3 J
cis-1,2-DCE | 1 J
Acetone | 13 J
TWP-4
TWP-4 14.5-15 ft | 9/10/13
PCE | 2 J
cis-1,2-DCE | 7 J
Acetone | 8 J
Methylene chloride | 2 J
TWP-13
TWP-13 0.5-1 ft | 4/16/14
PCE | 6 J
Ethylbenzene | 2 J
Toluene | 7 J
Xylene (Total) | 24
Styrene | 7 J
2-Butanone | 4 J
TWP-12
TWP-12 10-10.5 ft | 4/16/14
Toluene | 11 J
Xylene (Total) | 3 J
2-Butanone | 4 J
Acetone | 59
Manning Cir
Wolfs Ln
Carol Ave
163.51-1-51
163.51-1-52
163.51-1-53
163.51-1-54
163.51-1-55
163.51-1-56
163.51-1-34
163.51-1-36
163.51-1-37
163.51-1-39
163.51-1-42
163.51-1-43
163.51-1-44
163.51-1-45
163.51-1-46
163.51-1-47
163.51-1-48
163.51-1-49
163.51-1-50
163.51-1-60
163.51-1-26
163.51-1-27
163.51-1-28
163.51-1-29
163.51-1-30
163.51-1-33
163.52-1-5
163.52-1-9
163.52-1-8
163.52-1-6
163.52-1-11
163.52-1-10
All detections are shown.
Units: µg/kg.
Sample results compared to Part 375-6 unrestricted soil cleanup objectives.
PCE - 1300 µg/kg
Exceedances are in red text.
Overburden - Temporary Well Borings
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Soil Sample Results - Temporary Wells
Date: July 2014
Scale: 1 inch = 75 feet
Figure No. : 10



MW-C05	10/25/11	3/1/12
VOCs	all ND	all ND

MW-C03	10/25/11	3/1/12
PCE	100	53

MW-C04	10/25/11	3/1/12
PCE	750 J	570 D
TCE	340 U	620 D
cis-1,2-DCE	1300 J	1900 D
trans-1,2-DCE	2.6 J	4 J
1,1-DCE	5 U	2 J
Vinyl chloride	34	170
Methylcyclohexane	6.6	5 U

MW-C06	10/25/11	3/1/2012
VOCs	all ND	all ND

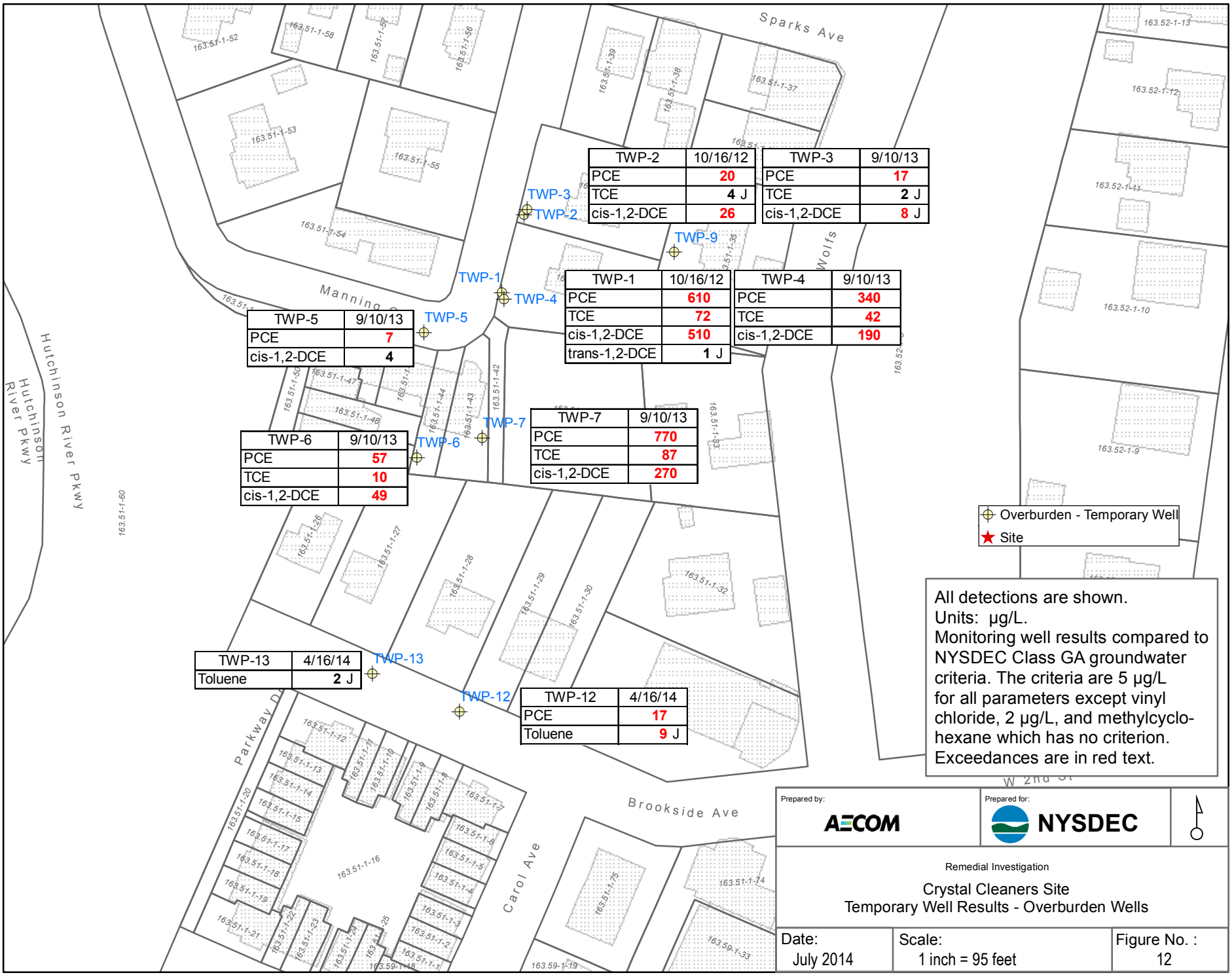
MW-08	10/25/11	3/2/12
PCE	37	27
TCE	7	11
cis-1,2-DCE	7.5	7.4

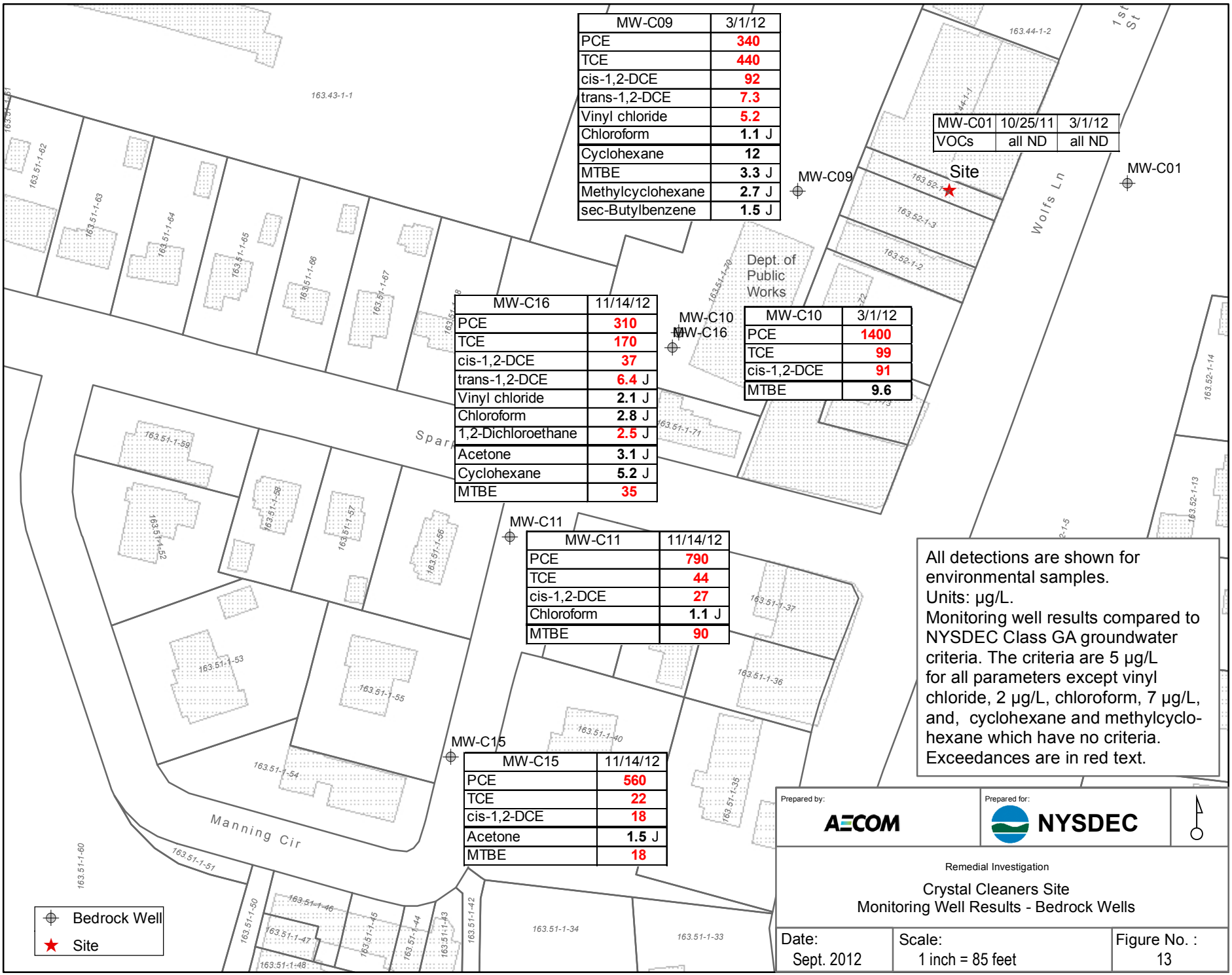
MW-C07	10/25/11	3/2/12
PCE	53	6.2 U
TCE	12	1.1 J
cis-1,2-DCE	33	2.3 J

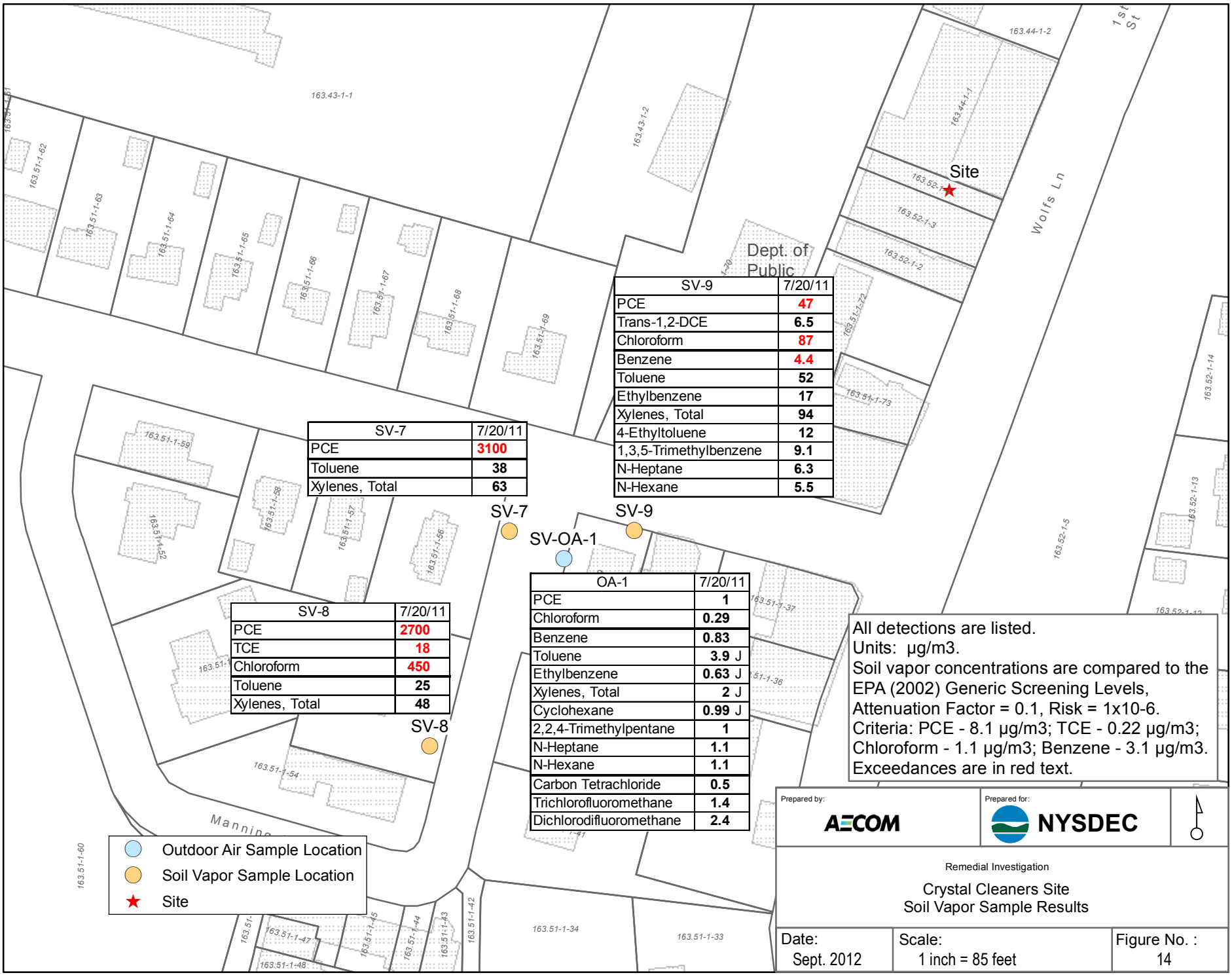
MW-C14	11/14/12
PCE	150
TCE	17
cis-1,2-DCE	62

MW-13	3/1/12
VOCs	all ND

MW-C12	3/1/12
VOCs	all ND


Sparks Ave
Manning
Hutchinson River Pkwy
Parkway Dr
Brookside Ave
Carol Ave
Wolfs
W 2nd St
TWP-1
TWP-2
TWP-3
TWP-4
TWP-5
TWP-6
TWP-7
TWP-9
TWP-12
TWP-13
TWP-2 | 10/16/12
PCE | 20
TCE | 4 J
cis-1,2-DCE | 26
TWP-3 | 9/10/13
PCE | 17
TCE | 2 J
cis-1,2-DCE | 8 J
TWP-1 | 10/16/12
PCE | 610
TCE | 72
cis-1,2-DCE | 510
trans-1,2-DCE | 1 J
TWP-4 | 9/10/13
PCE | 340
TCE | 42
cis-1,2-DCE | 190
TWP-5 | 9/10/13
PCE | 7
cis-1,2-DCE | 4
TWP-6 | 9/10/13
PCE | 57
TCE | 10
cis-1,2-DCE | 49
TWP-7 | 9/10/13
PCE | 770
TCE | 87
cis-1,2-DCE | 270
TWP-12 | 4/16/14
PCE | 17
Toluene | 9 J
TWP-13 | 4/16/14
Toluene | 2 J
Overburden - Temporary Well
Site
All detections are shown.
Units: µg/L.
Monitoring well results compared to NYSDEC Class GA groundwater criteria. The criteria are 5 µg/L for all parameters except vinyl chloride, 2 µg/L, and methylcyclohexane which has no criterion.
Exceedances are in red text.
Prepared by: AECOM
Prepared for: NYSDEC
Remedial Investigation
Crystal Cleaners Site
Temporary Well Results - Overburden Wells
Date: July 2014
Scale: 1 inch = 95 feet
Figure No. : 12


MW-C09 | 3/1/12
PCE | 340
TCE | 440
cis-1,2-DCE | 92
trans-1,2-DCE | 7.3
Vinyl chloride | 5.2
Chloroform | 1.1 J
Cyclohexane | 12
MTBE | 3.3 J
Methylcyclohexane | 2.7 J
sec-Butylbenzene | 1.5 J
MW-C01 | 10/25/11 | 3/1/12
VOCs | all ND | all ND
MW-C09
Site
MW-C01
Wolfs Ln
Dept. of Public Works
MW-C10
MW-C16
MW-C16 | 11/14/12
PCE | 310
TCE | 170
cis-1,2-DCE | 37
trans-1,2-DCE | 6.4 J
Vinyl chloride | 2.1 J
Chloroform | 2.8 J
1,2-Dichloroethane | 2.5 J
Acetone | 3.1 J
Cyclohexane | 5.2 J
MTBE | 35
MW-C10 | 3/1/12
PCE | 1400
TCE | 99
cis-1,2-DCE | 91
MTBE | 9.6
MW-C11
MW-C11 | 11/14/12
PCE | 790
TCE | 44
cis-1,2-DCE | 27
Chloroform | 1.1 J
MTBE | 90
MW-C15
MW-C15 | 11/14/12
PCE | 560
TCE | 22
cis-1,2-DCE | 18
Acetone | 1.5 J
MTBE | 18
Manning Cir
Bedrock Well
Site
All detections are shown for environmental samples.
Units: µg/L.
Monitoring well results compared to NYSDEC Class GA groundwater criteria. The criteria are 5 µg/L for all parameters except vinyl chloride, 2 µg/L, chloroform, 7 µg/L, and, cyclohexane and methylcyclohexane which have no criteria.
Exceedances are in red text.
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Monitoring Well Results - Bedrock Wells
Date:
Sept. 2012
Scale:
1 inch = 85 feet
Figure No. :
13



SV-7	7/20/11
PCE	3100
Toluene	38
Xylenes, Total	63

SV-9	7/20/11
PCE	47
Trans-1,2-DCE	6.5
Chloroform	87
Benzene	4.4
Toluene	52
Ethylbenzene	17
Xylenes, Total	94
4-Ethyltoluene	12
1,3,5-Trimethylbenzene	9.1
N-Heptane	6.3
N-Hexane	5.5

SV-8	7/20/11
PCE	2700
TCE	18
Chloroform	450
Toluene	25
Xylenes, Total	48

OA-1	7/20/11
PCE	1
Chloroform	0.29
Benzene	0.83
Toluene	3.9 J
Ethylbenzene	0.63 J
Xylenes, Total	2 J
Cyclohexane	0.99 J
2,2,4-Trimethylpentane	1
N-Heptane	1.1
N-Hexane	1.1
Carbon Tetrachloride	0.5
Trichlorofluoromethane	1.4
Dichlorodifluoromethane	2.4

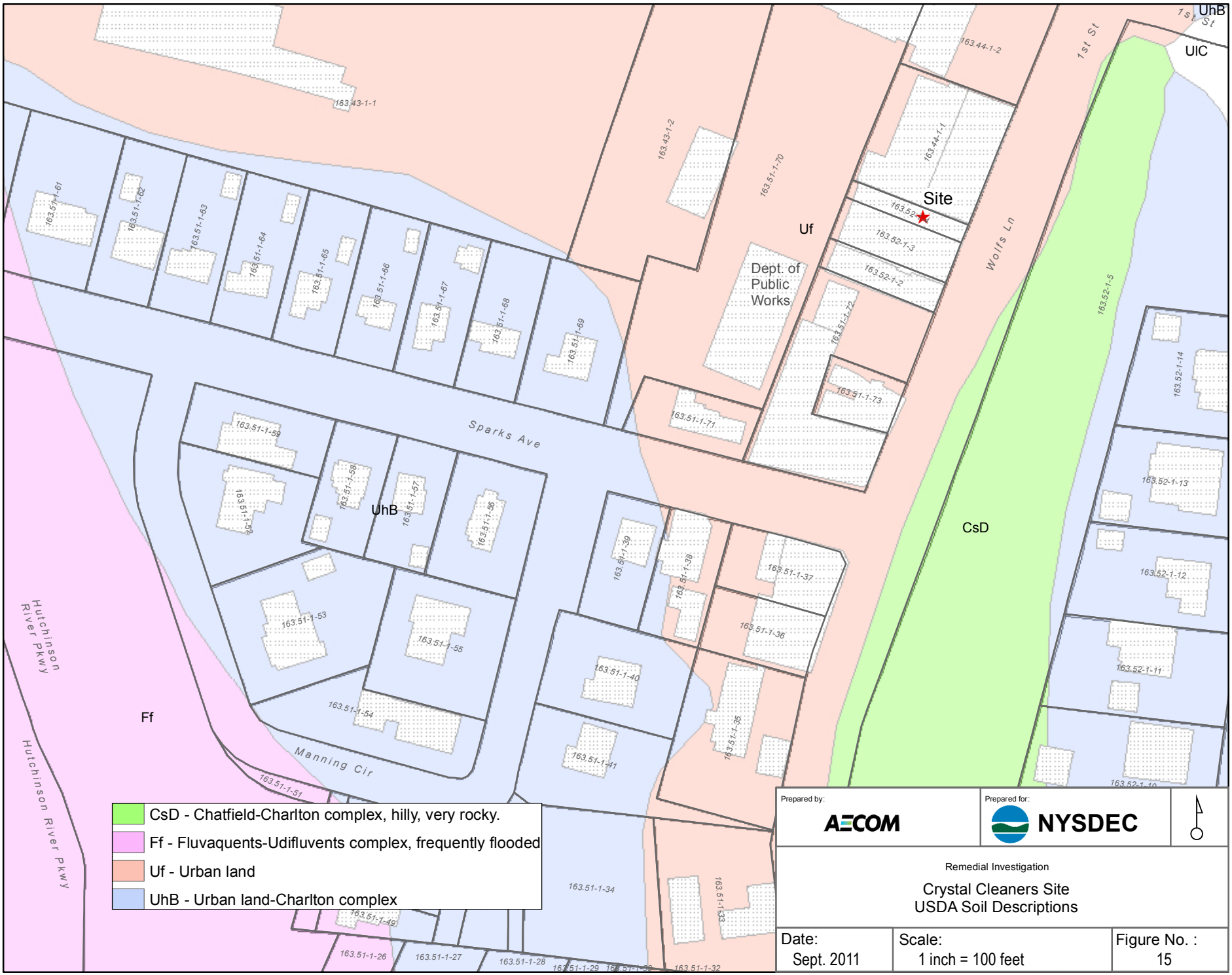
All detections are listed.
Units: µg/m3.
Soil vapor concentrations are compared to the EPA (2002) Generic Screening Levels, Attenuation Factor = 0.1, Risk = 1x10-6.
Criteria: PCE - 8.1 µg/m3; TCE - 0.22 µg/m3; Chloroform - 1.1 µg/m3; Benzene - 3.1 µg/m3.
Exceedances are in red text.

Prepared by: AECOM
Prepared for: NYSDEC

Remedial Investigation

Crystal Cleaners Site
Soil Vapor Sample Results

Date:	Scale:	Figure No. :
Sept. 2012	1 inch = 85 feet	14


Site
Uf
Dept. of Public Works
Wolfs Ln
1st St
UhB
UlC
CsD
Ff
UhB
Sparks Ave
Manning Cir
Hutchinson River Pkwy
Hutchinson River Pkwy
163.43-1-1
163.43-1-2
163.44-1-2
163.44-1-1
163.51-1-70
163.52
163.52-1-3
163.52-1-2
163.51-1-72
163.51-1-73
163.51-1-71
163.52-1-5
163.52-1-14
163.52-1-13
163.52-1-12
163.52-1-11
163.52-1-10
163.51-1-61
163.51-1-62
163.51-1-63
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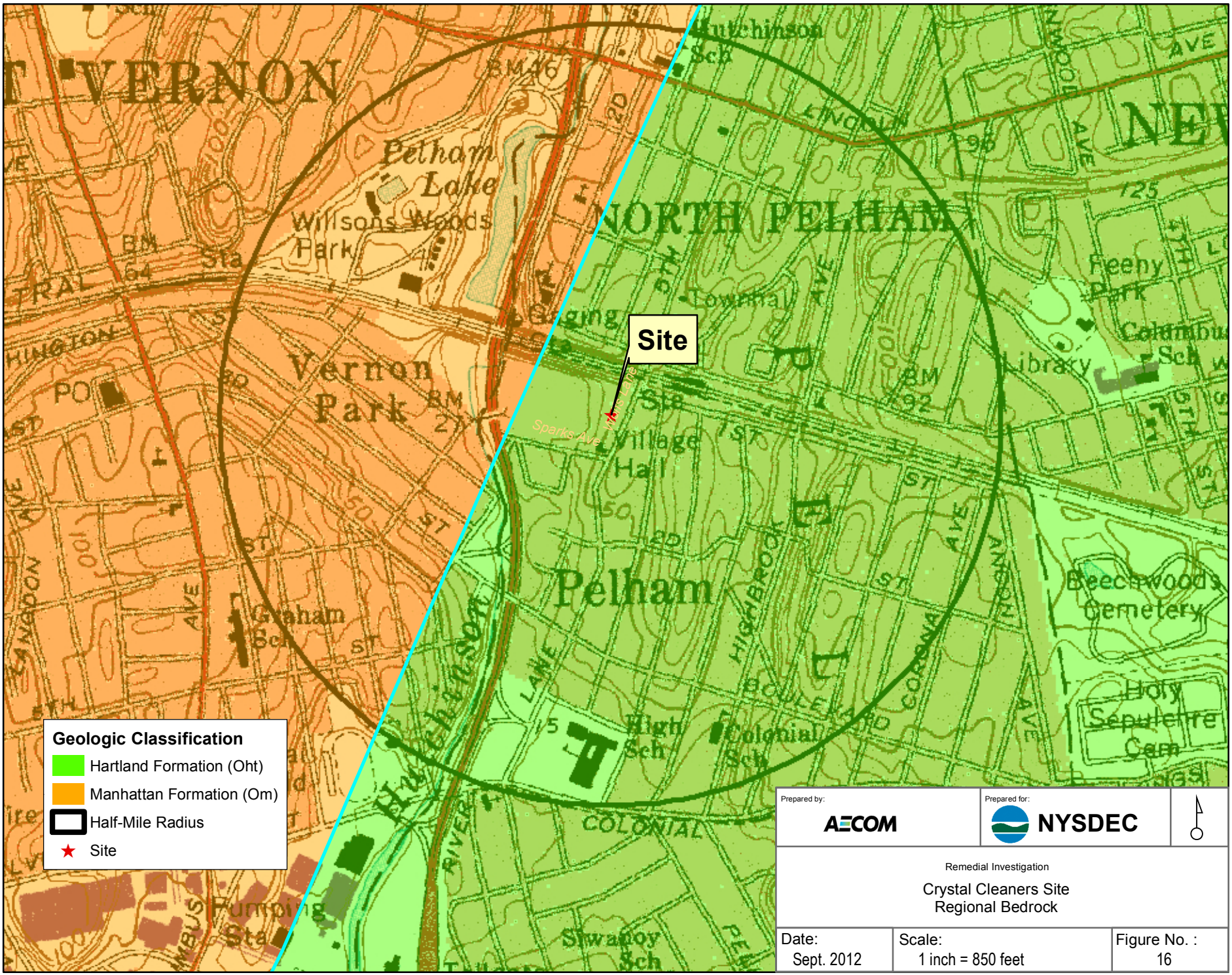
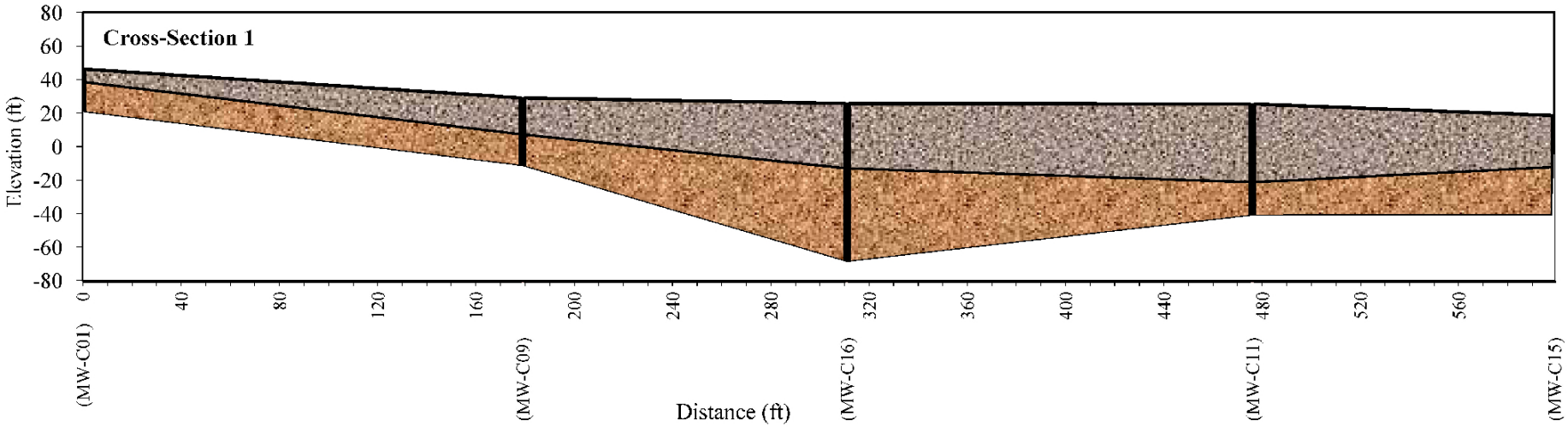
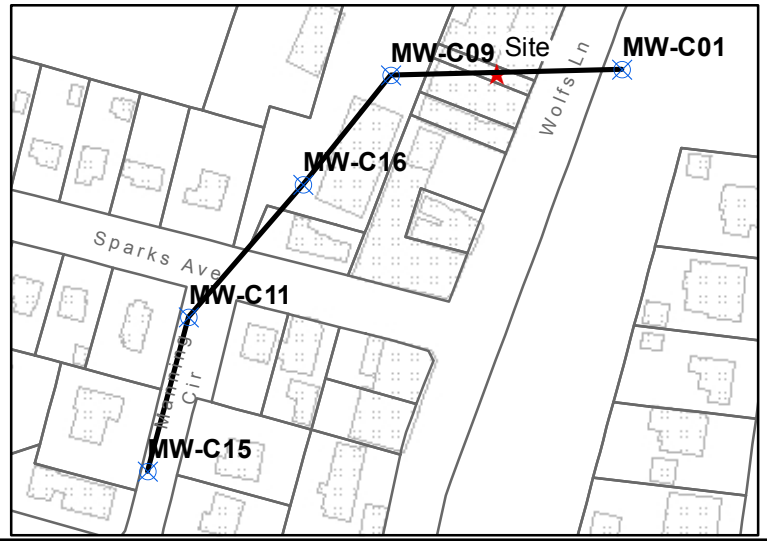
163.51-1-66
163.51-1-67
163.51-1-68
163.51-1-69
163.51-1-59
163.51-1-58
163.51-1-57
163.51-1-56
163.51-1-52
163.51-1-53
163.51-1-55
163.51-1-54
163.51-1-51
163.51-1-39
163.51-1-38
163.51-1-37
163.51-1-36
163.51-1-40
163.51-1-35
163.51-1-41
163.51-1-34
163.51-1-33
163.51-1-49
163.51-1-26
163.51-1-27
163.51-1-28
163.51-1-29
163.51-1-32
CsD - Chatfield-Charlton complex, hilly, very rocky.
Ff - Fluvaquents-Udifluvents complex, frequently flooded
Uf - Urban land
UhB - Urban land-Charlton complex
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
USDA Soil Descriptions
Date:
Sept. 2011
Scale:
1 inch = 100 feet
Figure No. :
15


Site
Geologic Classification
Hartland Formation (Oht)
Manhattan Formation (Om)
Half-Mile Radius
Site
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Regional Bedrock
Date:
Sept. 2012
Scale:
1 inch = 850 feet
Figure No. :
16

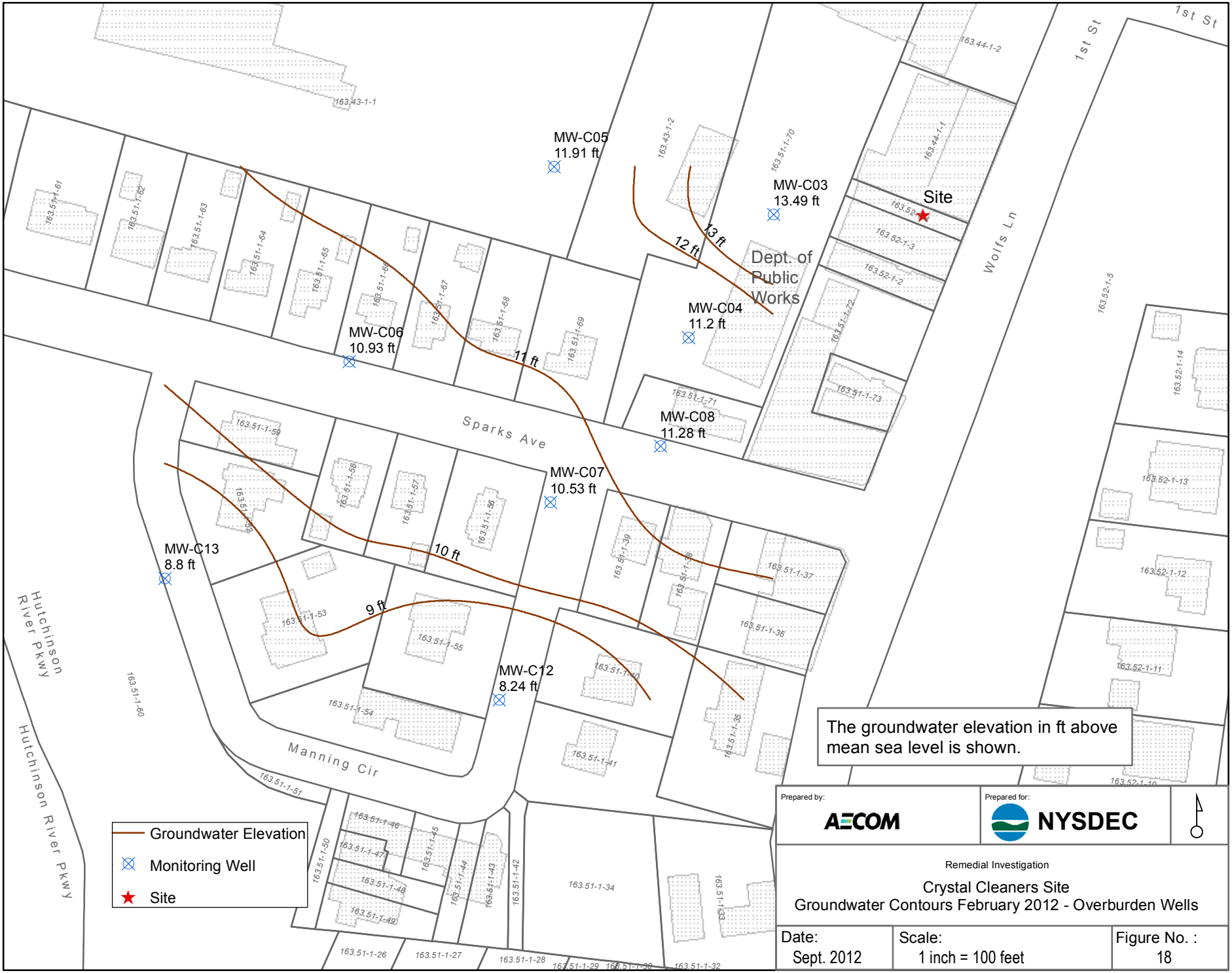


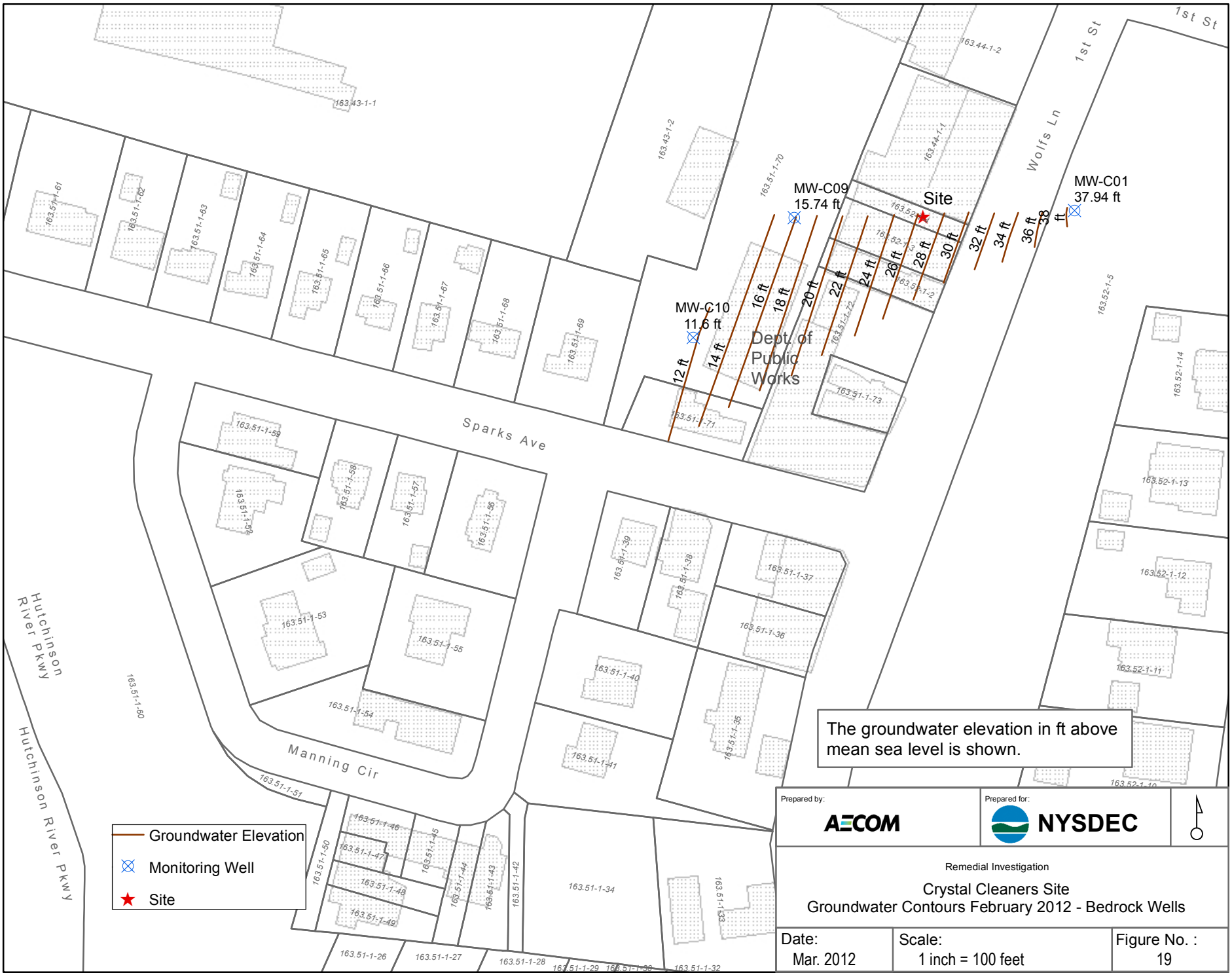


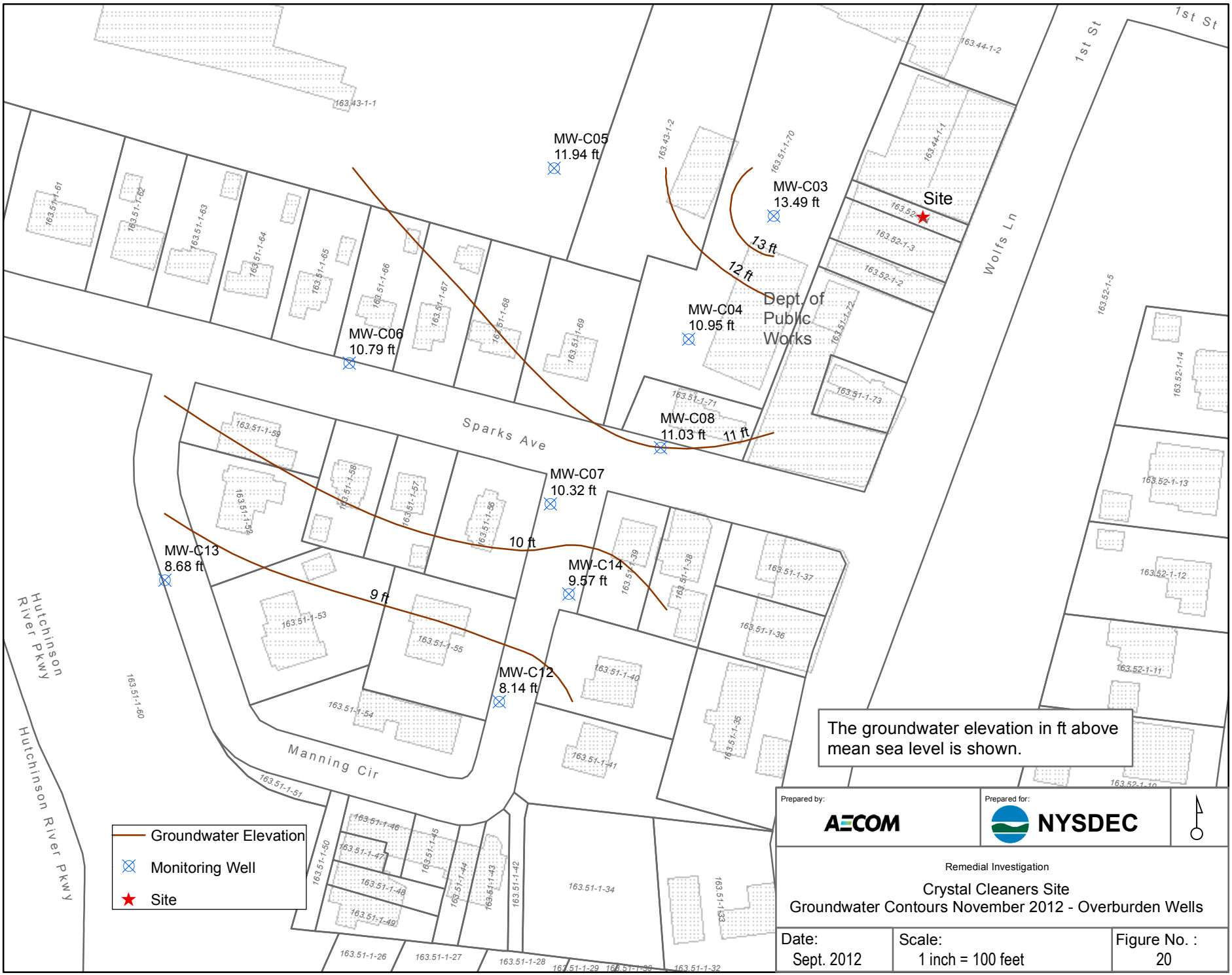
- Cores
- Covering Material
- Overburden (Till)
- Bedrock (Schist)

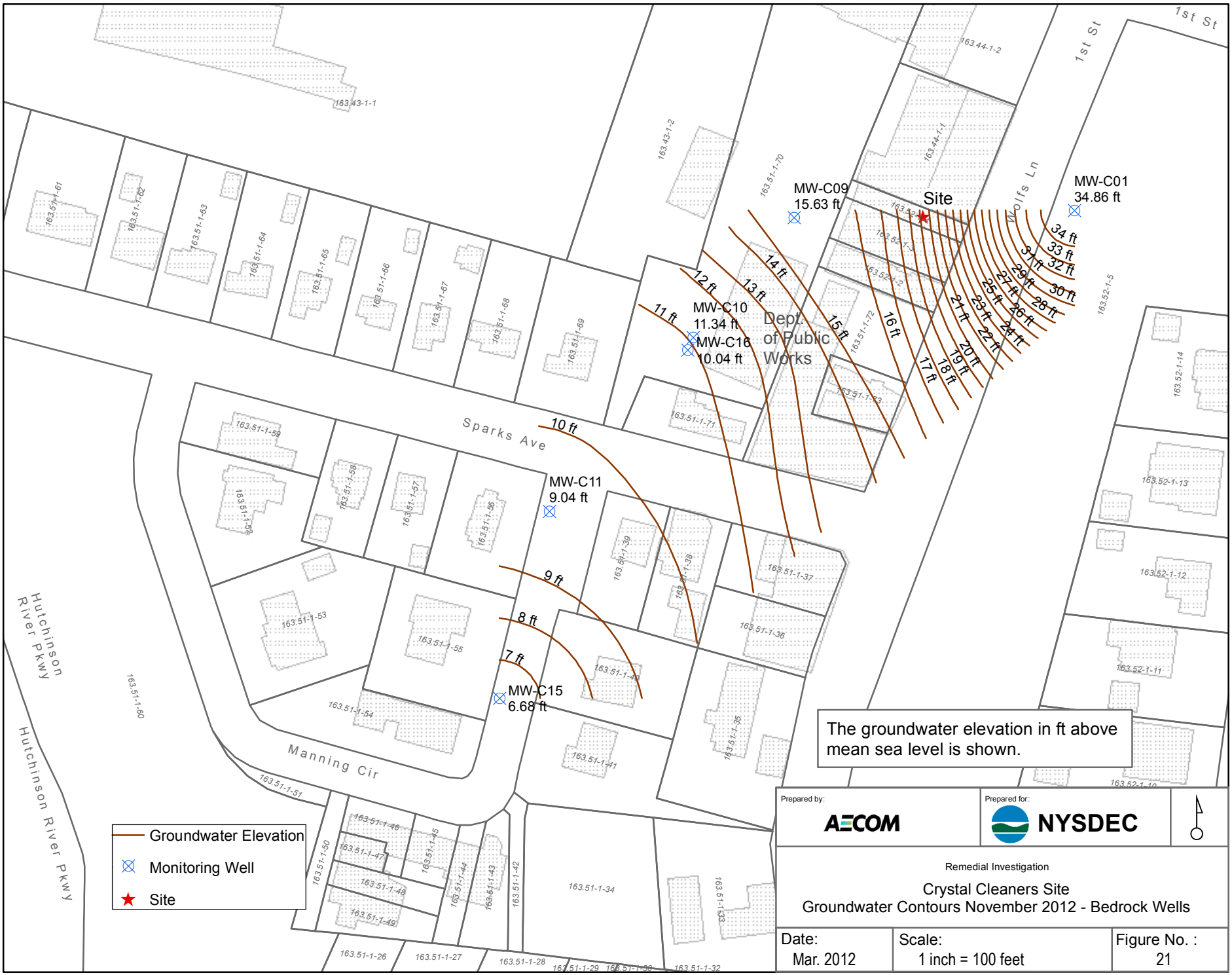
The groundwater elevation in ft above mean sea level is shown.

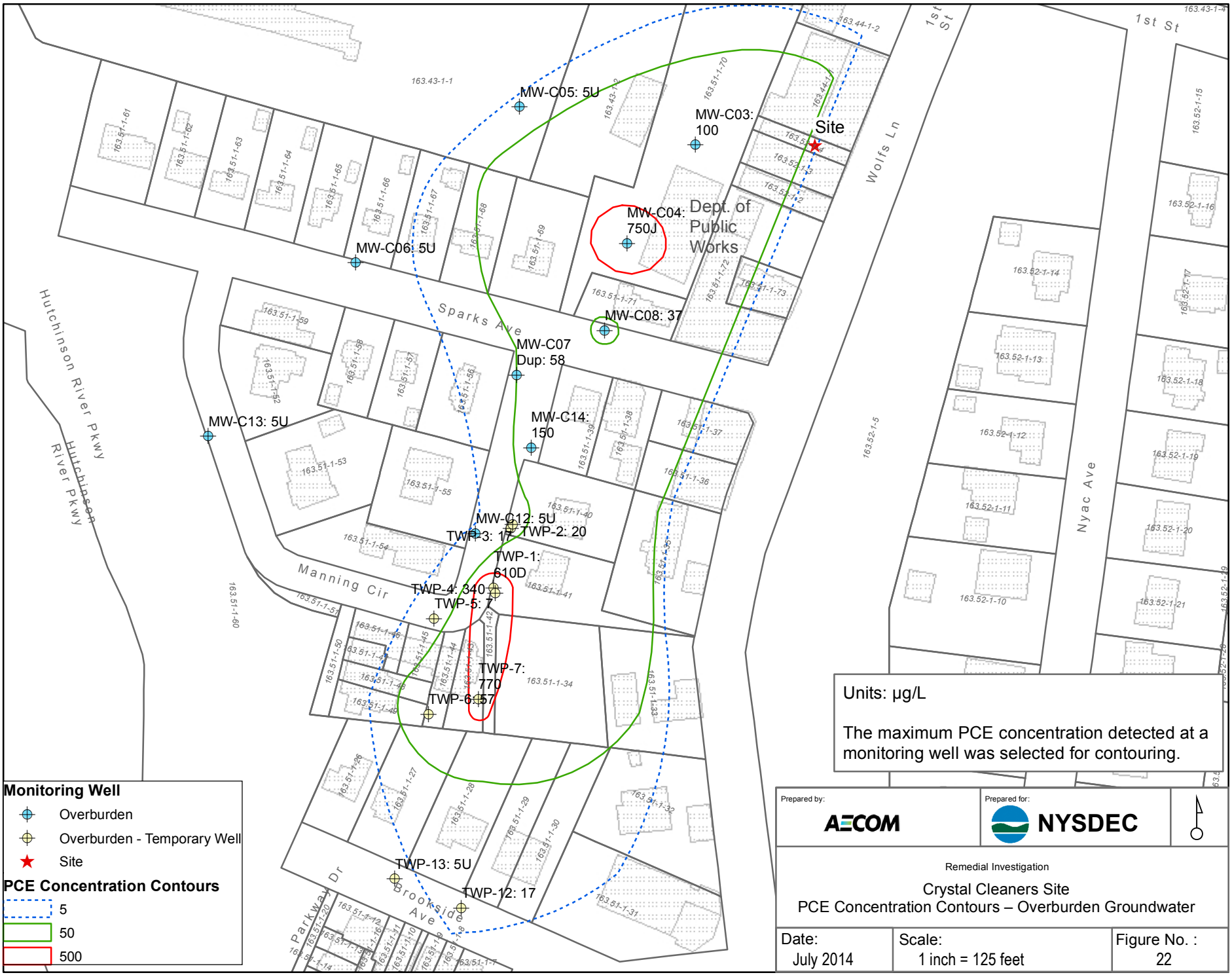
Prepared by: AECOM	Prepared for: NYSDEC	
Remedial Investigation Crystal Cleaners Site Geologic Cross-Section		
Date: Jan. 2013	Scale: 1 inch = 185 feet	Figure No. : 17

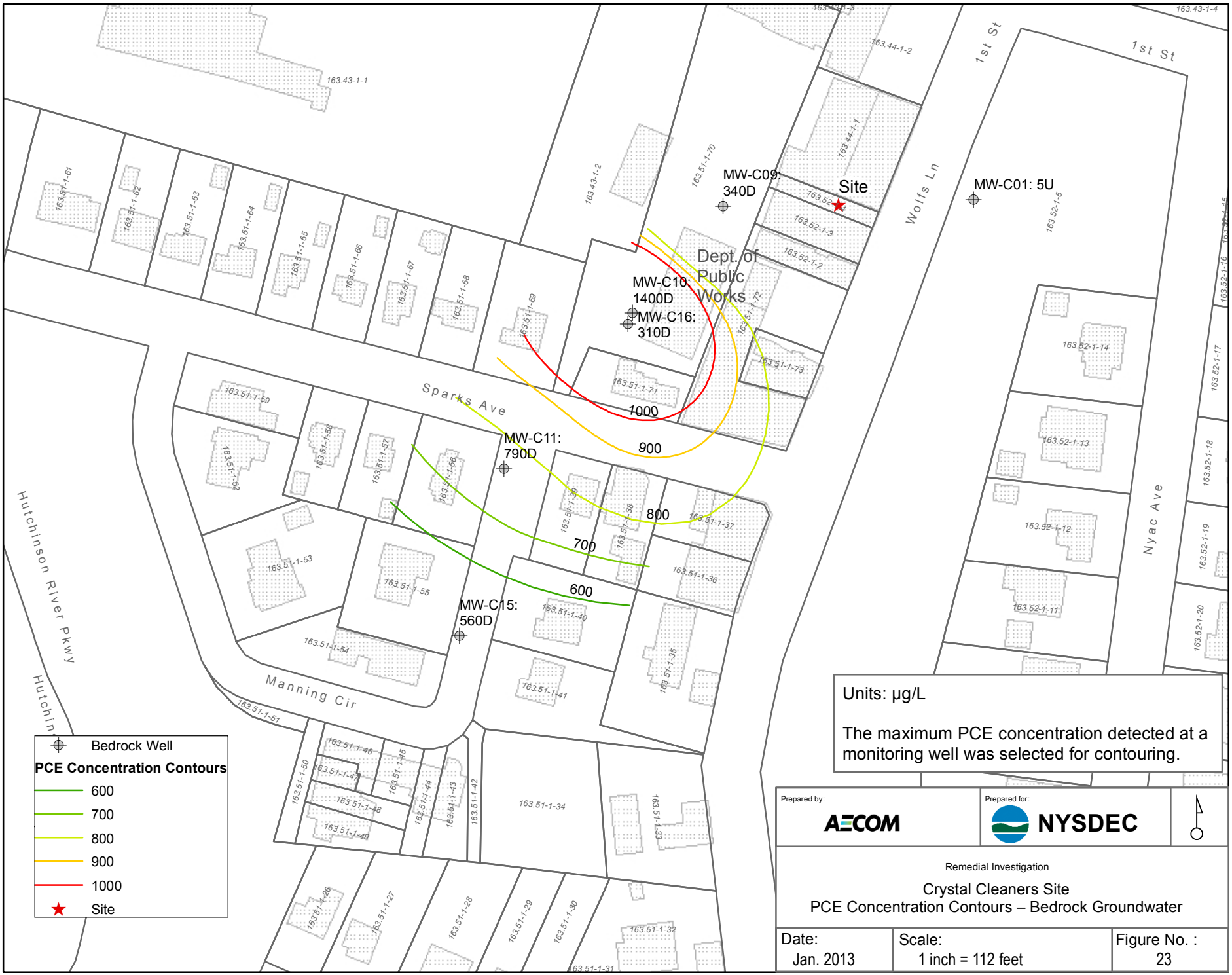

MW-C05
11.91 ft
MW-C03
13.49 ft
Site
MW-C04
11.2 ft
MW-C06
10.93 ft
MW-C08
11.28 ft
MW-C07
10.53 ft
MW-C13
8.8 ft
MW-C12
8.24 ft
13 ft
12 ft
11 ft
10 ft
9 ft
Dept. of Public Works
Sparks Ave
Manning Cir
Wolfs Ln
1st St
Hutchinson River Pkwy
Groundwater Elevation
Monitoring Well
Site
The groundwater elevation in ft above mean sea level is shown.
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Groundwater Contours February 2012 - Overburden Wells
Date:
Sept. 2012
Scale:
1 inch = 100 feet
Figure No. :
18

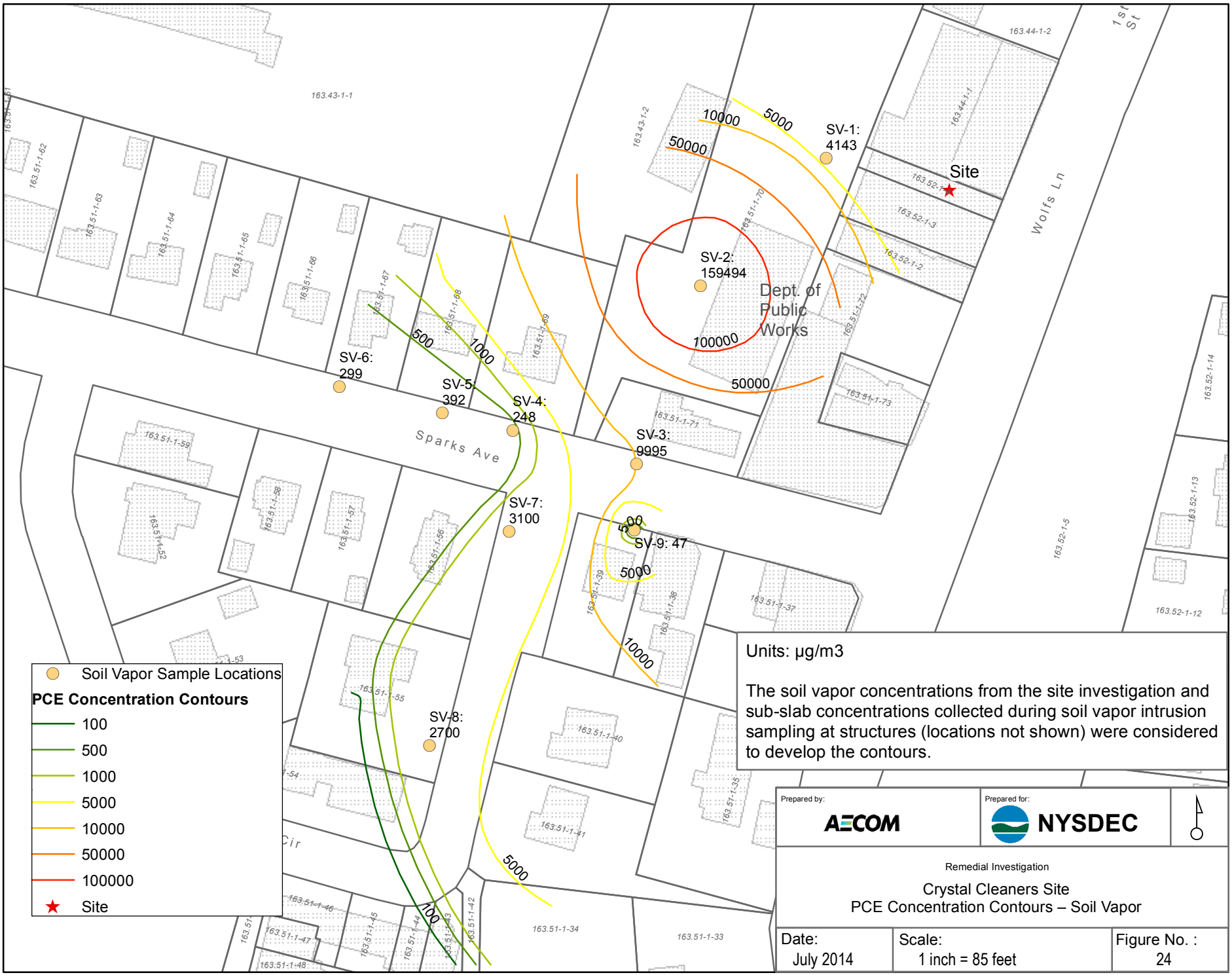

MW-C09
15.74 ft
Site
MW-C01
37.94 ft
MW-C10
11.6 ft
12 ft
14 ft
16 ft
18 ft
20 ft
22 ft
24 ft
26 ft
28 ft
30 ft
32 ft
34 ft
36 ft
38 ft
Dept. of Public Works
Sparks Ave
Manning Cir
Wolfs Ln
1st St
1st St
Hutchinson River Pkwy
Hutchinson River Pkwy
Groundwater Elevation
Monitoring Well
Site
The groundwater elevation in ft above mean sea level is shown.
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Groundwater Contours February 2012 - Bedrock Wells
Date:
Mar. 2012
Scale:
1 inch = 100 feet
Figure No. :
19


MW-C05
11.94 ft
MW-C03
13.49 ft
Site
13 ft
12 ft
MW-C04
10.95 ft
Dept. of
Public
Works
MW-C06
10.79 ft
MW-C08
11.03 ft
11 ft
MW-C07
10.32 ft
10 ft
MW-C13
8.68 ft
MW-C14
9.57 ft
9 ft
MW-C12
8.14 ft
Sparks Ave
Manning Cir
Wolfs Ln
1st St
Hutchinson River Pkwy
Hutchinson River Pkwy
The groundwater elevation in ft above mean sea level is shown.
Groundwater Elevation
Monitoring Well
Site
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Groundwater Contours November 2012 - Overburden Wells
Date:
Sept. 2012
Scale:
1 inch = 100 feet
Figure No. :
20


MW-C09
15.63 ft
Site
MW-C01
34.86 ft
MW-C10
11.34 ft
MW-C16
10.04 ft
Dept. of Public Works
MW-C11
9.04 ft
MW-C15
6.68 ft
Sparks Ave
Manning Cir
Hutchinson River Pkwy
Hutchinson River Pkwy
1st St
1st St
Wolfs Ln
10 ft
9 ft
8 ft
7 ft
11 ft
12 ft
13 ft
14 ft
15 ft
16 ft
17 ft
18 ft
19 ft
20 ft
21 ft
22 ft
23 ft
24 ft
25 ft
26 ft
27 ft
28 ft
29 ft
30 ft
31 ft
32 ft
33 ft
34 ft
Groundwater Elevation
Monitoring Well
Site
The groundwater elevation in ft above mean sea level is shown.
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
Groundwater Contours November 2012 - Bedrock Wells
Date:
Mar. 2012
Scale:
1 inch = 100 feet
Figure No. :
21


MW-C05: 5U
MW-C03: 100
Site
MW-C04: 750J
Dept. of Public Works
MW-C06: 5U
MW-C08: 37
MW-C07 Dup: 58
MW-C13: 5U
MW-C14: 150
MW-C12: 5U
TWP-3: 17
TWP-2: 20
TWP-1: 610D
TWP-4: 340
TWP-5: 7
TWP-7: 770
TWP-6: 57
TWP-13: 5U
TWP-12: 17
Sparks Ave
Manning Cir
Brookside Ave
Parkway Dr
Hutchinson River Pkwy
Wolfs Ln
1st St
Nyac Ave
Monitoring Well
Overburden
Overburden - Temporary Well
Site
PCE Concentration Contours
5
50
500
Units: µg/L
The maximum PCE concentration detected at a monitoring well was selected for contouring.
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
PCE Concentration Contours – Overburden Groundwater
Date:
July 2014
Scale:
1 inch = 125 feet
Figure No. :
22


MW-C09: 340D
Site
MW-C01: 5U
MW-C10: 1400D
MW-C16: 310D
Dept. of Public Works
MW-C11: 790D
MW-C15: 560D
1000
900
800
700
600
Sparks Ave
Manning Cir
Hutchinson River Pkwy
Wolfs Ln
1st St
Nyac Ave
Bedrock Well
PCE Concentration Contours
600
700
800
900
1000
Site
Units: µg/L
The maximum PCE concentration detected at a monitoring well was selected for contouring.
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
PCE Concentration Contours – Bedrock Groundwater
Date:
Jan. 2013
Scale:
1 inch = 112 feet
Figure No. :
23


SV-1: 4143
SV-2: 159494
SV-3: 9995
SV-4: 248
SV-5: 392
SV-6: 299
SV-7: 3100
SV-8: 2700
SV-9: 47
Site
Dept. of Public Works
Wolfs Ln
Sparks Ave
10000
5000
50000
100000
1000
500
100
Soil Vapor Sample Locations
PCE Concentration Contours
100
500
1000
5000
10000
50000
100000
Site
Units: µg/m3
The soil vapor concentrations from the site investigation and sub-slab concentrations collected during soil vapor intrusion sampling at structures (locations not shown) were considered to develop the contours.
Prepared by:
AECOM
Prepared for:
NYSDEC
Remedial Investigation
Crystal Cleaners Site
PCE Concentration Contours – Soil Vapor
Date:
July 2014
Scale:
1 inch = 85 feet
Figure No. :
24

Appendix A

Field Forms

SOIL EXPLORATION LOG

Boring No.: SB-01

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60188614		CONTRACTOR: Aztech Technologies, Inc.	DATE: June 21, 2011
LOCATION: Pelham, NY		DRILLERS NAME: Tony	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME / DEPTH	LABORATORY ANALYSES: VOA 8260B	
N/A	N/A / N/A	REFERENCE ELEVATION: NA	DEPTH OF BOREHOLE: 4 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 0815	39/48	0.0	0-4" Asphalt 4-39" Fill, dry, no odor
2			0.0	
3			0.0	
4			0.0	
5				End of boring - Refusal at 4 ft 08:27 Sample SB-01-37-39 collected at 37-39" Reattempted - Refusal at 1.5 ft
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: SB-02

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60188614		CONTRACTOR: Aztech Technologies, Inc.	DATE: June 21, 2011
LOCATION: Pelham, NY		DRILLERS NAME: Tony	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME / DEPTH	LABORATORY ANALYSES: VOA 8260B	
N/A	N/A / N/A	REFERENCE ELEVATION: NA	DEPTH OF BOREHOLE: 14 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 1030	29/60	147.0	0-2" Asphalt 2-27" Fill, dry, no odor
2			18.3	27-29" Brown medium sand with gravel, dry, no odor, no staining
3			2.0	
4			1.8	
5			1.3	
6	S2 1037	44/60	1.3	0-24" Brown medium sand with gravel, dry, no odor, no staining
7			0.6	24-30" Gravel, trace brown medium and coarse sand, no odor, no staining, wet
8			0.7	30-44" Brown medium sand with gravel, no odor, no staining, wet
9			0.6	
10			0.5	
11	S3 1043	33/48	0.0	0-6" Gravel, trace brown medium and coarse sand, no odor, no staining, wet
12			0.2	6-33" Brown medium sand with gravel, no odor, no staining, wet
13			0.1	
14			0.2	
15				End of boring - Refusal at 14 ft 10:35 Sample SB-02-03-12 collected at 3-12"
16				
17				
18				
19				
20				

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: SB-03

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60188614	CONTRACTOR: Aztech Technologies, Inc.		DATE: June 21, 2011
LOCATION: Pelham, NY	DRILLERS NAME: Tony		AECOM REP.: Celeste Foster
WATER LEVELS	SIZE AND TYPE OF EQUIPMENT: Geoprobe		
DATE / TIME / DEPTH	LABORATORY ANALYSES: VOA 8260B		
N/A / N/A / N/A	REFERENCE ELEVATION: NA	DEPTH OF BOREHOLE: 17 ft bgs	

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 0938	39/60	0.0	0-3" Asphalt 3-39" Fill, dry, no odor
2			0.0	
3			0.0	
4			0.6	
5			0.0	
6	S2 0948	32/60	11.2	0-32" Fill, dry, no odor
7			7.2	
8			0.0	
9			0.0	
10			0.0	
11	S3 0950	43/60	0.6	0-6" Fill, dry, no odor 6-13" Brown medium and coarse sand with gravel, no odor, no staining, dry
12			0.3	13-18" Brown medium and coarse sand with gravel, no odor, no staining, wet 18-36" Brown medium and fine sand, no odor, no staining, wet
13			0.0	36-43" Gravel, trace brown medium and fine sand no odor, no staining, wet
14			0.0	
15			0.0	
16	S5 955	17/24	0.0	0-4" Brown medium sand, gravel, no odor, no staining, wet 4-17" Gravel trace medium sand, coarse sand, no odor, no staining, wet
17			0.0	
18				End of boring - Refusal at 17 ft 09:43 Sample SB-03-60-62 collected at 60-62"
19				
20				

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: SB-04

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60188614		CONTRACTOR: Aztech Technologies, Inc.	DATE: June 21, 2011
LOCATION: Pelham, NY		DRILLERS NAME: Tony	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME / DEPTH	LABORATORY ANALYSES: VOA 8260B	
N/A	N/A / N/A	REFERENCE ELEVATION: NA	DEPTH OF BOREHOLE: 12.5 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 0900	37/60	0.0	0-4" Asphalt 4-13" Fill, black stain, fuel odor, dry 13-37" Fill, dry, no odor
2			0.0	
3			0.0	
4			0.0	
5			0.0	
6	S2 0905	47/60	0.0	0-47" Fill, dry, no odor
7			0.0	
8			0.0	
9			0.0	
10			0.0	
11	S3 920	22/30	0.0	0-17" Fill, dry, no odor 17-22" Fill, wet, no odor
12			0.0	
13			0.0	
14				End of boring - Refusal at 12.5 ft 09:27 Sample SB-04-133-137 collected at 133-137"
15				
16				
17				
18				
19				
20				

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: SB-05

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60188614		CONTRACTOR: Aztech Technologies, Inc.	DATE: June 21, 2011
LOCATION: Pelham, NY		DRILLERS NAME: Tony	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME / DEPTH	LABORATORY ANALYSES: VOA 8260B	
N/A	N/A / N/A	REFERENCE ELEVATION: NA	DEPTH OF BOREHOLE: 14 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 1050	24/60	1.0	0-2" Asphalt 2-24" Fill, dry, no odor
2			0.5	
3			0.3	
4			0.3	
5			0.0	
6	S2 1058	17/24	0.6 0.5	0-17" Fill, wet, no odor
7			0.2 0.0	
8				End of boring - Refusal at 14 ft 10:55 Sample SB-05-04-09 collected at 4-9"
9				
10				Reattempted, refusal at 9.5 ft, fill, wet at 5 feet
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: SB-09

PROJECT: Crystal Cleaners			PAGE 1 OF 2
PROJECT No.: 60188614		CONTRACTOR: Aztech Technologies, Inc.	DATE: June 21, 2011
LOCATION: Pelham, NY		DRILLERS NAME: Tony	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME / DEPTH	LABORATORY ANALYSES: VOA 8260B	
N/A	N/A / N/A	REFERENCE ELEVATION: NA	DEPTH OF BOREHOLE: 40.5 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 1200	37/60	3.5	0-2" Asphalt 2-11" Fill, dry, no odor 11-37" Brown coarse and medium sand, trace gravel, no odor, no staining, dry
2			0.1	
3			0.1	
4			0.1	
5			0.1	
6	S2 1205	39/60	0.0	0-39" Brown coarse and medium sand, trace gravel, no odor, no staining, dry
7			0.2	
8			0.1	
9			0.1	
10			0.0	
11	S3 1210	27/60	0.0	0-18" Brown coarse and medium sand, trace gravel, no odor, no staining, dry 18-27" Gravel, brown coarse and medium sand, no odor, no staining, wet
12			0.3	
13			0.1	
14			0.6	
15			1.7	
16	S4 1400	51/60	0.0	0-51" Black/grey medium and coarse sand with gravel, no odor, no staining, wet
17			0.1	
18			0.2	
19			0.3	
20			0.0	

Comments: Sample and MS and MSD collected at 1202 at 9-11" plus duplicate at 1203
SB-09-09-11, SB-09-09-11 MS, SB-09-09-11 MSD, SB-59-09-11

AECOM

SOIL EXPLORATION LOG

Boring No.: SB-09

PROJECT: Crystal Cleaners			PAGE 2 OF 2
PROJECT No.: 60188614		CONTRACTOR: Aztech Technologies, Inc.	DATE: June 21, 2011
LOCATION: Pelham, NY		DRILLERS NAME: Tony	ET REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME / DEPTH	LABORATORY ANALYSES: VOA 8260B	
N/A	N/A / N/A	REFERENCE ELEVATION: NA	DEPTH OF BOREHOLE: 40.5 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
21	S5 1410	43/60	0.0	0-43" Grey coarse sand with gravel, trace medium sand, no odor, no staining, wet
22			1.0	
23			0.1	
24			0.9	
25			0.0	
26	S6 1415	55/60	0.0	Grey coarse sand with gravel, trace medium sand, no odor, no staining, wet
27				
28				
29				
30				
31	S7 1600			
32				
33				
34				
35				
36				
37				
38				
39				
40				

Comments: End of Boring at 40.5 ft

AECOM

SOIL EXPLORATION LOG

Boring No.: SB-14

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental Corp	DATE: October 16, 012
LOCATION: Pelham, NY		DRILLERS NAME: Luke	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME	DEPTH	LABORATORY ANALYSES: VOA 8260B
10/16/12	0926	14 ft	REFERENCE ELEVATION: 21.18 ft NGVD 198{ DEPTH OF BOREHOLE: 15 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 0915	24/60	0.0	0-3" Top soil 3-24" Brown medium sand with gravel, no odor, dry
2			0.0	
3				
4				
5				
6	S2 0920	30/60	0.0	0-30" Brown medium sand with gravel, no odor, dry
7			0.0	
8			0.0	
9				
10				
11	S3 0925	28/60	0.0	0-14" Brown medium sand with gravel, no odor, dry 14-26" Reddish brown medium sand with white gravel, no odor, dry 26-28" Dark brown, medium sand with gravel, wet
12				
13				
14				
15				End of Boring at 15 ft
16				
17				
18				
19				
20				

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: TWP-3

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60188614		CONTRACTOR: Zebra Environmental	DATE: September 10, 2013
LOCATION: Pelham, NY		DRILLERS NAME: Matt	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME	DEPTH	LABORATORY ANALYSES: VOA 8260B
9/10/13	13:00	12 ft bgs	REFERENCE ELEVATION: NA DEPTH OF BOREHOLE: 20 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 1250	0/60		0-5" No recovery, rock at bottom, loose soil
2				
3				
4				
5				
6	S2 1255	28/60	0.0	0-4" Topsoil 4-6" Rock 6-28" Brown medium sand, 20% gravel
7			0.0	
8			0.0	
9			0.0	
10			0.0	
11	S3 1300	36/60	0.0	0-7" Brown medium sand, 20% gravel 7-16" Brown medium sand, 20% gravel 16-36" Coarse sand, 10% gravel, wet
12			0.0	
13			0.0	
14			0.0	
15			0.0	
16	S4 1308	52/60	0.0	0-25" Brown medium sand, 10% coarse sand 25-52" Brown coarse sand, 5% medium sand
17			0.0	
18			0.0	13:15 Soil sample TWP-3-17.5-18 collected at 17.5-18 ft 13:25 Groundwater sample TWP-3 collected at 17-18 ft
19			0.0	
20			0.0	
				End of boring at 20 ft

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: TWP-4

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental	DATE: September 10, 2013
LOCATION: Pelham, NY		DRILLERS NAME: Matt	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME	DEPTH	LABORATORY ANALYSES: VOA 8260B
9/10/13	12:12	11 ft bgs	REFERENCE ELEVATION: NA DEPTH OF BOREHOLE: 17 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1 2 3 4 5	S1 1203	42/60	0.0 1.6 0.5 1.2 1.6 1.3	0-2" Dark brown medium sand, 25% fine sand (Top soil) 2-21" Brown medium sand, 10% fine sand 21-42" Light brown medium sand
6 7 8 9 10	S2 1207	41/60	0.0 0.3 0.4 0.6 0.6 0.0 0.3 0.0 0.0	0-12" Light brown medium sand 12-41" Light brown medium sand, 10% coarse sand
11 12 13 14 15	S3 1212	33/60	0.0 0.1 0.3 0.1 0.1 0.0	0-10" Brown medium sand, 10% coarse sand, dry 10-14" Dark brown wet coarse sand, 10% medium sand 14-33" Dark brown medium sand, 25% coarse sand, wet
16 17				Drilled down to 17 ft to collect groundwater sample
18 19 20				End of boring at 17 ft 12:20 Soil sample TWP-4-14.5-15 collected at 14.5-15 ft 12:33 Turbidity 9.75 NTU 12:35 Groundwater sample TWP-4 collected at 15-17 ft 12:40 Groundwater sample TWP-54 collected at 15-17 ft

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: TWP-5

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental	DATE: September 10, 2014
LOCATION: Pelham, NY		DRILLERS NAME: Matt	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME	DEPTH	LABORATORY ANALYSES: VOA 8260B
9/10/13	10:00	12 ft bgs	REFERENCE ELEVATION: NA DEPTH OF BOREHOLE: 20 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 0948	24/60	8.9	0-6" Asphalt
			2.1	6-10" Brown sand, 20% gravel
			0.0	10-15" Light brown medium sand
2			0.0	15-32" Brown fine sand, 20% fines, moist
			0.2	32-36" Brown medium sand, 10% gravel
3			0.3	
4				
5				
6	S2 0953	36/60	1.0	0-5" Brown medium sand, 10% gravel
			0.0	5-36" Brown medium sand, 10% coarse sand
			0.0	
7			0.2	
			0.1	
8			0.0	
9				
10				
11	S3 1000	38/60	0.0	0-24" Brown medium sand, 10% coarse sand
			0.0	24-38" Brown medium sand, 10% coarse sand, wet
			1.0	
12			0.0	
			0.0	
13			0.0	
14				
15				
16	S4 1008	26/60	0.0	0-26" Brown medium sand, 10% coarse sand, wet
			0.0	
			0.0	
17			0.0	
				10:29 Turbidity 12.5 NTU
18				10:30 Groundwater sample TWP-5 collected at 17-18 ft
19				
20				
				End of boring at 20 ft

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: TWP-6

PROJECT: Crystal Cleaners			PAGE 1 OF 2
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental	DATE: September 10, 2014
LOCATION: Pelham, NY		DRILLERS NAME: Matt	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME	DEPTH	LABORATORY ANALYSES: VOA 8260B
9/10/13	10:52	9 ft bgs	REFERENCE ELEVATION: NA DEPTH OF BOREHOLE: 15 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 1040	31/60	0.0	0-5" Asphalt
			0.0	5-9" Brown fine sand, moist
			0.0	9-10" Large piece of gravel
2			0.0	10-20" Brown medium sand, 20% gravel
			0.0	20-31" Brown medium sand
3				
4				
5				
6	S2 1047	44/60	0.7	0-5" Brown medium sand
			2.4	5-8" Asphalt
			0.0	8-19" Brown coarse sand, 10% medium sand
7			0.0	19-42" Brown coarse sand, moist
			0.0	
8			0.0	
			0.0	
9			0.0	
10				
11	S3 1052	38/60	0.0	0-3" Brown medium sand, 10% gravel
			0.9	3-6" 3-6" asphalt
			0.0	6-38" Brown coarse sand, wet
12			0.0	
			0.0	
13			0.0	
14				
15				
16				End of boring at 15 ft
17				
				11:04 Turbidity 1 NTU
18				11:05 Groundwater sample TWP-6 collected at 14-15 ft
19				
20				

Comments:

SOIL EXPLORATION LOG

Boring No.: TWP-7

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental	DATE: September 10, 2014
LOCATION: Pelham, NY		DRILLERS NAME: Matt	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME	DEPTH	LABORATORY ANALYSES: VOA 8260B
9/10/13	11:43	10 ft	REFERENCE ELEVATION: NA DEPTH OF BOREHOLE: 15 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 1120	30/60	0.0 0.0 0.0 0.0 0.0 0.0	0-10" Asphalt 10-30" Light brown medium sand
2				
3				
4				
5				
6	S2 1138	36/60	0.0 0.0 0.0 0.0 0.4 1.1	0-12" Light brown medium sand 12-21" Light brown medium sand, 10% coarse sand 21-23" Light brown medium sand, 50% coarse sand 23-24" Light brown coarse sand, 10% medium sand 24-36" Light brown coarse sand, 10% medium sand, wet
7				
8				
9				
10	S3 1143	50/60	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0-5" Brown medium sand, wet 5-50" Brown coarse sand, wet
11				
12				
13				
14				
15				End of boring at 15 ft
16				
17				11:54 Turbidity 14.1 NTU
18				11:55 Groundwater sample TWP-7 collected at 14-15 ft
19				
20				

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: TWP-8

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental	DATE: April 16, 2014
LOCATION: Pelham, NY		DRILLERS NAME: Carlos	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME / DEPTH	LABORATORY ANALYSES: VOA 8260B	
N/A	N/A / N/A	REFERENCE ELEVATION: NA	DEPTH OF BOREHOLE: 8 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1–5	S1	0/60	0.0	Asphalt and gravel
5–8	S2	0/60	0.0	Gravel
8–20				End of boring - refusal at 8 ft Second attempt - refusal at 4 ft

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: TWP-9

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental	DATE: April 16, 2014
LOCATION: Pelham, NY		DRILLERS NAME: Carlos	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME	DEPTH	LABORATORY ANALYSES: VOA 8260B
N/A	N/A	N/A	REFERENCE ELEVATION: NA DEPTH OF BOREHOLE: 9 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 1240	12/60	0.0	0-6" Gravel 6-10" Brown coarse to medium sand 10-12" Gravel
2				
3				
4				
5	S2 1245	18/60	0.0	0-7" Brown medium sand 7-14 White stone 14-18" Pulverized rock
6				
7				
8				
9				End of boring - refusal at 9 ft First attempt - refusal at 8 ft
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: TWP-10

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental	DATE: April 16, 2014
LOCATION: Pelham, NY		DRILLERS NAME: Carlos	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME / DEPTH	LABORATORY ANALYSES: VOA 8260B	
N/A	N/A / N/A	REFERENCE ELEVATION: NA	DEPTH OF BOREHOLE: 18 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 1315	10/60	0.0 0.0	0-6" Asphalt 6-10" Gravel
2				
3				
4				
5	S2 1320	28/60	0.0 0.0 0.0 0.0	0-28" Brown medium sand and gravel
6				
7				
8				
9				
10	S3 1325	36/60	0.0 0.0 0.0 0.0 0.0 0.0	0-8" Brown medium sand and gravel 8-18" Brown medium sand 18-21" White rock 21-36" Brown medium sand and white rock
11				
12				
13				
14				
15	S4 1330	23/36	0.0 0.0 0.0 0.0 0.0 0.0	0-23" Brown medium sand and white rock
16				
17				
18				End of boring - refusal at 18 ft
19				
20				

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: TWP-11

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental	DATE: April 16, 2014
LOCATION: Pelham, NY		DRILLERS NAME: Carlos	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME	DEPTH	LABORATORY ANALYSES: VOA 8260B
N/A	N/A	N/A	REFERENCE ELEVATION: NA DEPTH OF BOREHOLE: 2 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1	0/60	NA	
2				End of boring - refusal at 2 ft with drill steel on second attempt First attempt with macrocore - refusal at 1 ft
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: TWP-12

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental	DATE: April 16, 2014
LOCATION: Pelham, NY		DRILLERS NAME: Carlos	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME	DEPTH	LABORATORY ANALYSES: VOA 8260B
4/16/14	10:00	11.5 ft bgs	REFERENCE ELEVATION: NA DEPTH OF BOREHOLE: 17.5 ft bgs

Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 0930	14/60	0.3 0.3 0.3	0-2" Asphalt 2-3" Gravel 3-14" Brown medium sand, some fines, dry, no odor
2				
3				
4				
5				
6	S2 0945	33/60	0.4 0.0 0.0 0.0 0.6 0.0	0-25" Brown fine sand, moist 25-33" Brown medium sand, trace gravel
7				
8				
9				
10				
11	S3 1000	34/60	0.8 0.2 0.0 0.0 0.0 0.0	0-18" Brown medium sand, trace gravel 18-28" Brown coarse sand, wet 28-34" Brown medium sand, wet
12				
13				
14				
15				
16	S4 1015	32/60	0.0 0.0 0.0 0.0 0.0	0-28" Brown coarse sand, trace medium sand, wet 28-32"Gravel, some medium sand, trace fine sand
17				
18				End of boring - refusal at 17.5 ft
19				10:35-11:10 Purge 11:10 Groundwater sample TWP-12 collected at 12-17 ft
20				15:45 Soil sample TW-12-10 collected at 10-10.5 ft

Comments:

AECOM

SOIL EXPLORATION LOG

Boring No.: TWP-13

PROJECT: Crystal Cleaners			PAGE 1 OF 1
PROJECT No.: 60269812		CONTRACTOR: Zebra Environmental	DATE: April 16, 2014
LOCATION: Pelham, NY		DRILLERS NAME: Carlos	AECOM REP.: Celeste Foster
WATER LEVELS		SIZE AND TYPE OF EQUIPMENT: Geoprobe	
DATE	TIME	DEPTH	LABORATORY ANALYSES: VOA 8260B
4/16/14	10:25	10 ft bgs	REFERENCE ELEVATION: NA DEPTH OF BOREHOLE: 20 ft bgs

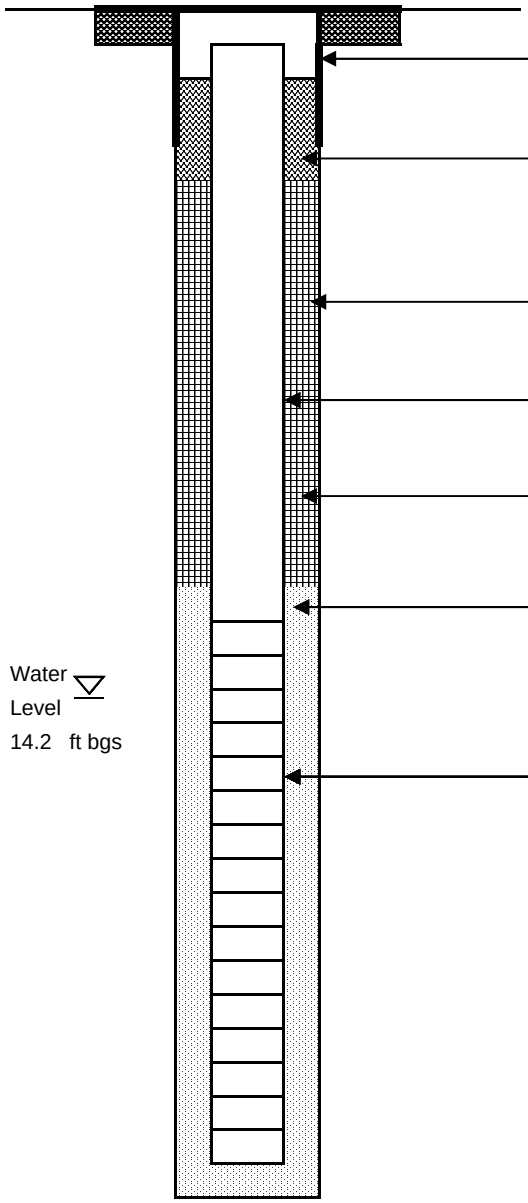
Depth (ft)	Sample Number &Time	Rec. (in)	PID Readings (ppm)	SAMPLE DESCRIPTION, REMARKS, AND STRATUM CHANGES
1	S1 1015	35/60	4.9	0-2" Asphalt
			2.6	6-11" Light brown medium sand, some fine sand
			1.7	11-14" Dark brown medium sand, some fine sand
2			0.9	14-18" Light brown medium to fine sand
			0.6	18-20" Corsite
3				20-32" Brown fine sand, some medium sand
				32-35" Brown medium sand and gravel
4				
5				
6	S2 1020	42/60	0.0	0-33" Brown fine sand, moist
			0.0	33-36" Gray to black coarse gravel
			0.0	36-42" Brown medium sand, some fines
7			0.0	
			0.0	
8			0.0	
			0.0	
9				
10				
11	S3 1025	54/60	0.0	0-25" Light brown medium sand, some fines, wet
			0.0	25-50" Light brown coarse sand, wet
			0.0	50-54" Light brown, medium sand, trace fine sand, wet
12			0.0	
			0.0	
13			0.0	
			0.0	
14			0.0	
			0.0	
15				
16	S4 1030	60/60	0.0	0-25" Light brown, coarse sand, some medium sand, wet
			0.0	25-60" Gray medium sand, some fine sand, wet
			0.0	
17			0.0	
			0.0	
18			0.0	
			0.0	11:20-11:35 Purge
19			0.0	11:35 Groundwater sample TWP-13 collected at 15-20 ft
			0.0	16:00 Soil sample TW-13-1 collected at 1-1.5 ft
20			0.0	16:05 Soil sample TW-63-10 collected at 1-1.5 ft
				End of boring at 20 ft

Comments:

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C03**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech Technologies	Driller: Chris
Surface Elevation: 28.49 ft NGVD 1988 Top of PVC Casing Elevation: 28 ft	Easting: 682429.35 NY State Plane NAD 83 Northing: 756949.67 NY State Plane NAD 83	
Date of Construction: September 13, 2011	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -1.0 ft bgs

Cement -1.5 ft to -1.0

Borehole diameter 6.0 inches

Riser Pipe from -17.2 ft to -0.75 ft

Bentonite seal from -5.0 ft to -1.5

Filter pack from -17.2 ft to -5.0 ft

Sand Size 0

Well screen from -17.2 ft to -7.2 ft

Diameter 2 inches

Slot size 10

Type PVC sch 40

Bottom Cap at -17.2 ft

Bottom of Borehole at -17.2 ft

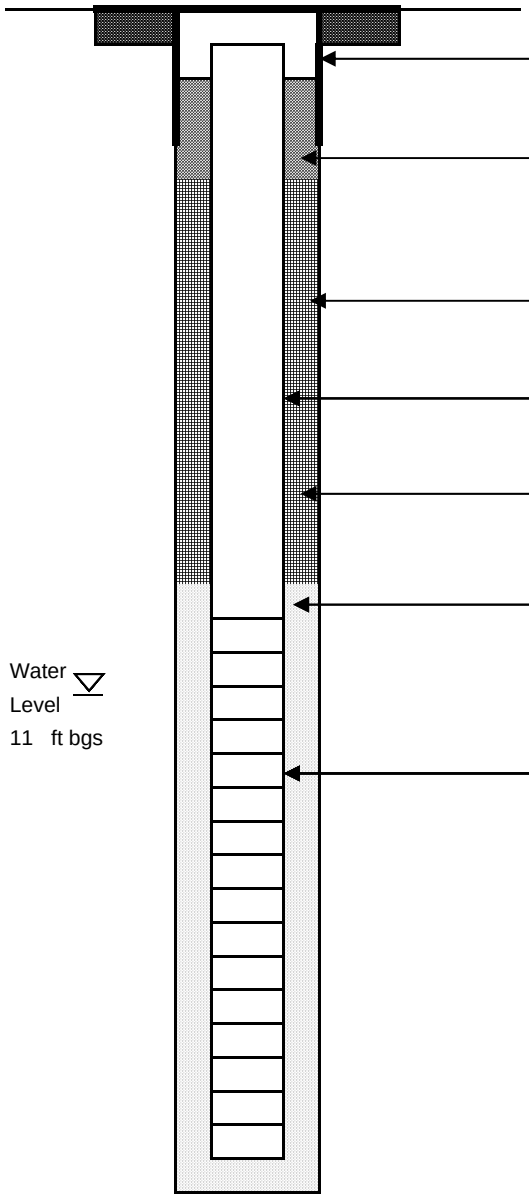
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C06**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech Technologies	Driller: Chris
Surface Elevation: 22.69 ft NGVD 1988 Top of PVC Casing Elevation: 22.28 ft	Easting: 682091.43 NY State Plane NAD 83 Northing: 756832.45 NY State Plane NAD 83	
Date of Construction: September 28, 2011	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -1.0 ft bgs

Cement -1.5 ft to -1.0

Borehole diameter 6.0 inches

Riser Pipe from -18.0 ft to -0.5 ft

Bentonite seal from -6.0 ft to -1.5

Filter pack from -18.0 ft to -6.0 ft

Sand Size 0

Well screen from -8.0 ft to -18.0 ft

Diameter 2 inches

Slot size 10

Type PVC

Bottom Cap at -18.0 ft

Bottom of Borehole at -18.0 ft

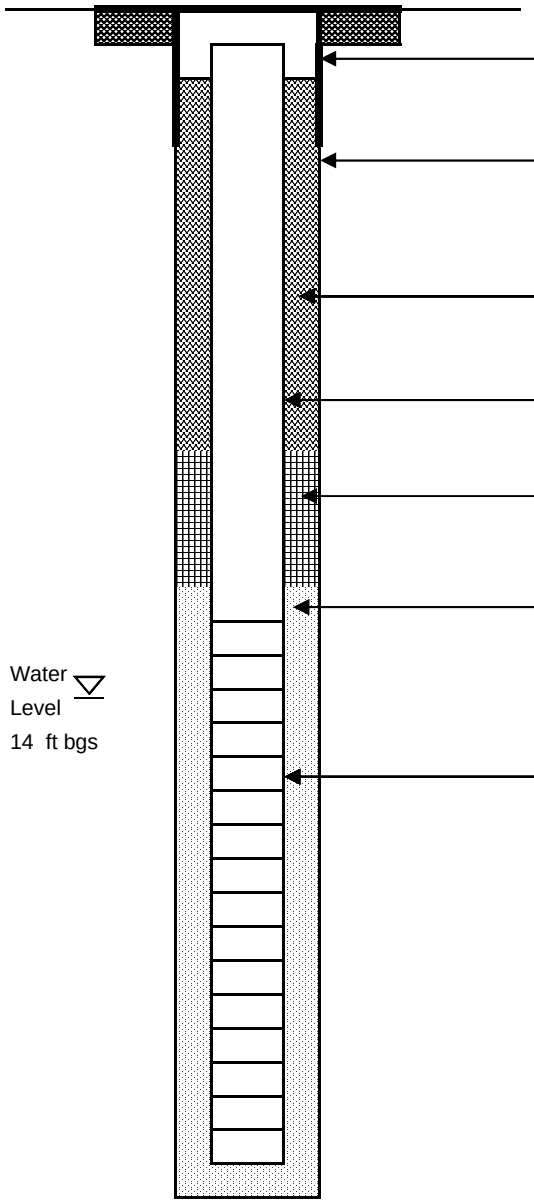
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C04**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech Technologies	Driller: Chris
Surface Elevation: 25.73 ft NGVD 1988 Top of PVC Casing Elevation: 25.54 ft	Easting: 682361.61 NY State Plane NAD 83 Northing: 756851.68 NY State Plane NAD 83	
Date of Construction: September 12, 2011	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -1.0 ft bgs

Borehole diameter 6.0 inches

Cement-bentonite grout from -7.0 ft to -2.0 ft

Riser Pipe from -22.0 ft to -0.75 ft

Bentonite seal from -10.0 ft to -7.0

Filter pack from -22.0 ft to -10.0 ft

Sand Size 0

Well screen from -22.0 ft to -12.0 ft

Diameter 2 inches

Slot size 10

Type PVC sch 40

Bottom Cap at -22.0 ft

Bottom of Borehole at -22.0 ft

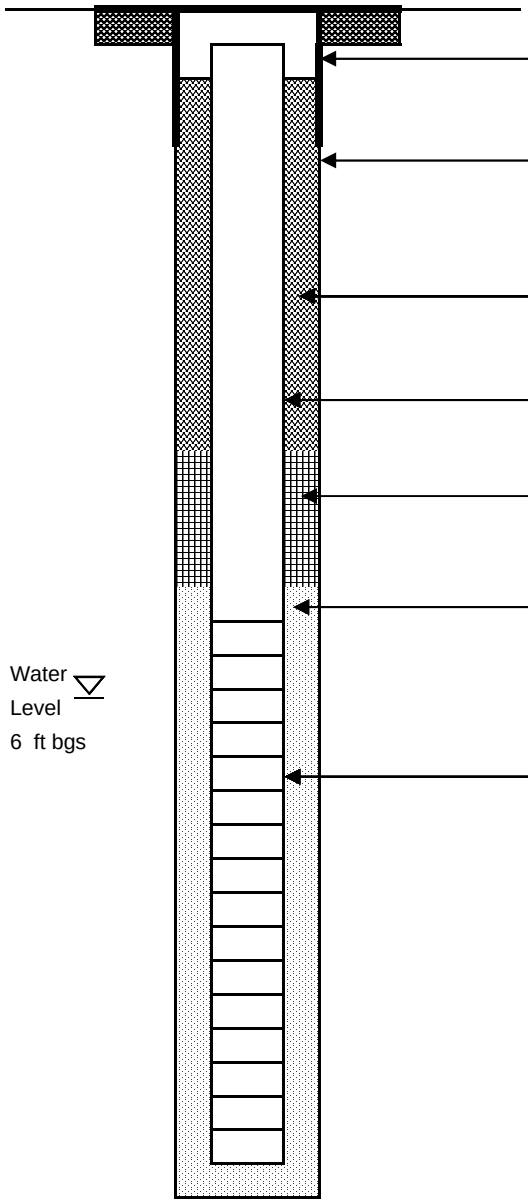
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C05**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech Technologies	Driller: Tony
Surface Elevation: 18.38 ft NGVD 1988 Top of PVC Casing Elevation: 18.05 ft	Easting: 682254.39 NY State Plane NAD 83 Northing: 756987.59 NY State Plane NAD 83	
Date of Construction: September 15, 2011	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -1.0 ft bgs

Borehole diameter 6 inches

Bentonite grout from -6.5 ft to -0.5 ft

Riser Pipe from -22.0 ft to -0.5 ft

Bentonite seal from -9.8 ft to -6.5

Filter pack from -22.0 ft to -9.8 ft

Sand Size 0

Well screen from -22.0 ft to -12.0 ft

Diameter 2 inches

Slot size 10

Type PVC sch 40

Bottom Cap at -22.0 ft

Bottom of Borehole at -22.0 ft

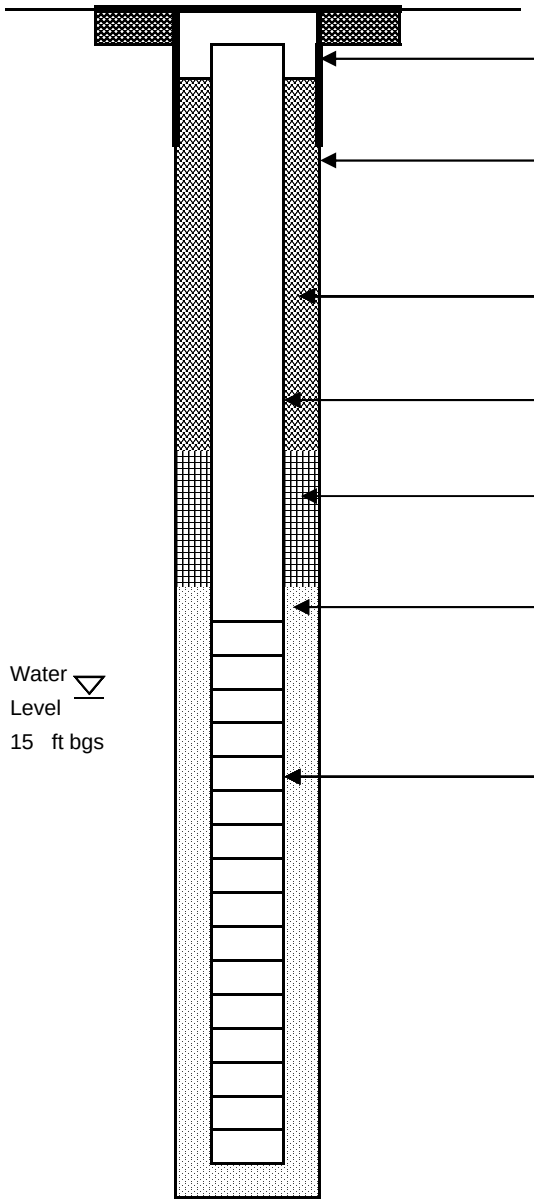
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C07**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech Technologies	Driller: Tony
Surface Elevation: 26.25 ft NGVD 1988 Top of PVC Casing Elevation: 26 ft	Easting: 682251.66 NY State Plane NAD 83 Northing: 756720.64 NY State Plane NAD 83	
Date of Construction: June 23, 2011	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -1.0 ft bgs

Borehole diameter 6 inches

Cement-bentonite grout from -14.0 ft to -1.0 ft

Riser Pipe from -30.0 ft to -0.5 ft

Bentonite seal from -17.0 ft to -14.0

Filter pack from -29.0 ft to -17.0 ft

Sand Size 0

Well screen from -29.0 ft to -19.0 ft

Diameter 2 inches

Slot size 10

Type PVC

Bottom Cap at -29.0 ft

Bottom of Borehole at -30.0 ft

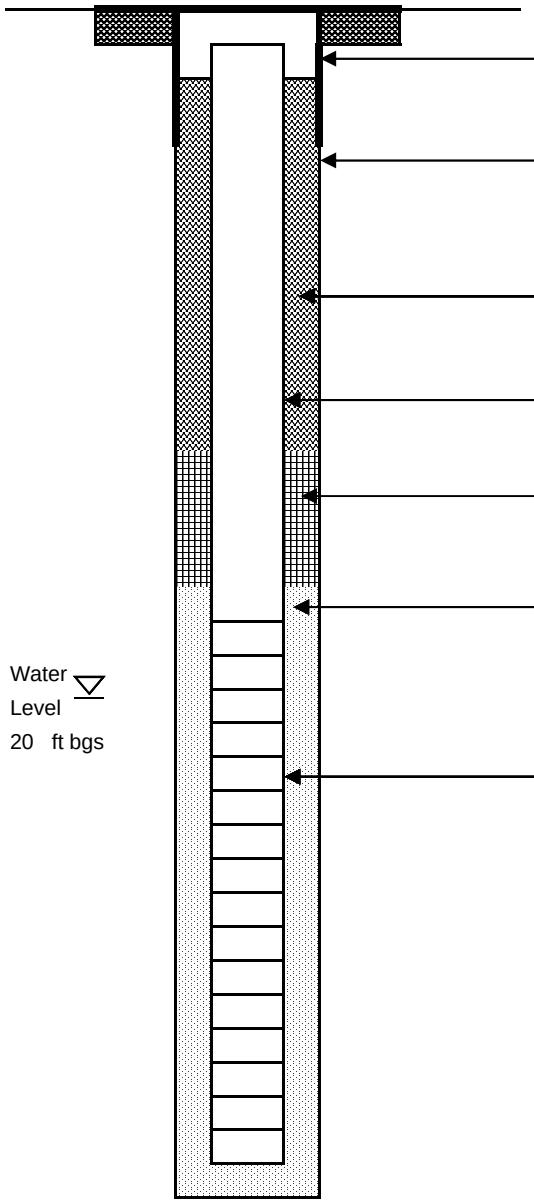
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C08**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech Technologies	Driller: Tony
Surface Elevation: 32.31 ft NGVD 1988 Top of PVC Casing Elevation: 32.13 ft	Easting: 682339.24 NY State Plane NAD 83 Northing: 756765.13 NY State Plane NAD 83	
Date of Construction: June 23, 2011	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -1.0 ft bgs

Borehole diameter 2.0 inches

Cement-bentonite grout from -2.0 ft to -1.0 ft

Riser Pipe from -23.0 ft to -0.5 ft

Bentonite seal from -15.0 ft to -2.0

Filter pack from -23.0 ft to -15.0 ft

Sand Size 0

Well screen from -23.0 ft to -18.0 ft

Diameter 1 inches

Slot size 10

Type PVC

Bottom Cap at -23.0 ft

Bottom of Borehole at -23.0 ft

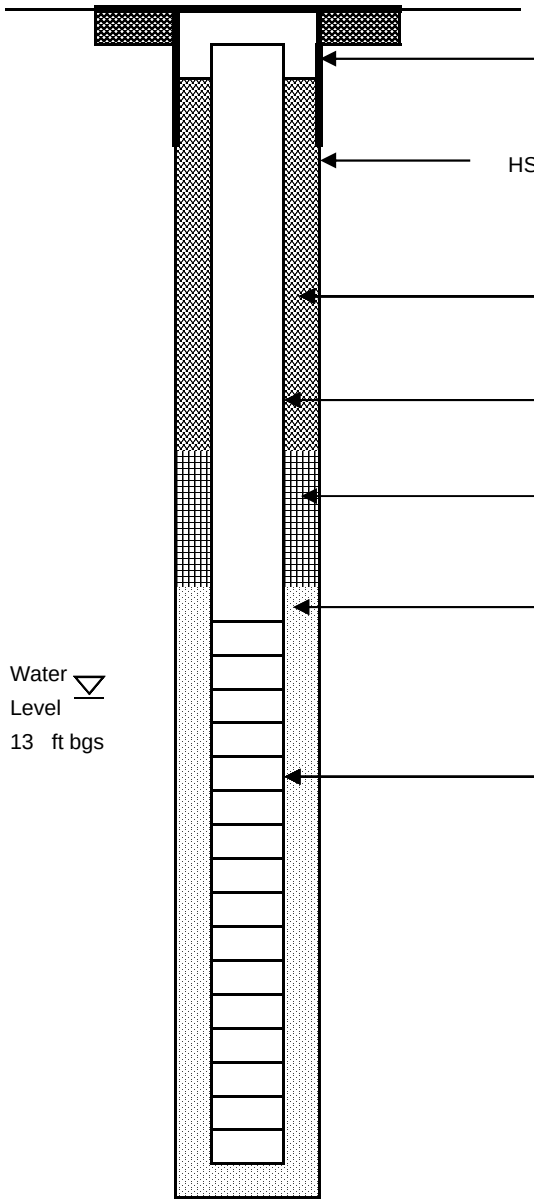
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C09**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech Technologies	Driller: Chris
Surface Elevation: 29.25 ft NGVD 1988 Top of PVC Casing Elevation: 28.85 ft	Easting: 682445.59 NY State Plane NAD 83 Northing: 756948.19 NY State Plane NAD 83	
Date of Construction: February 2, 2012	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -1.0 ft bgs

HS Auger Borehole diameter 6 inches

Top of Rock -31.0 ft bgs

Bentonite grout from -27.0 ft to -0.5 ft

Riser Pipe from -31.0 ft to -0.25 ft

Bentonite seal from -27.0 ft to -28.9

Rock Core diameter 4.25 inches

Filter pack from -41.0 ft to -28.9 ft

Sand Size 1

Well screen from -41.0 ft to -31.0 ft

Diameter 2 inches

Slot size 10

Type PVC

Bottom Cap at -41.0 ft

Bottom of Borehole at -41.0 ft

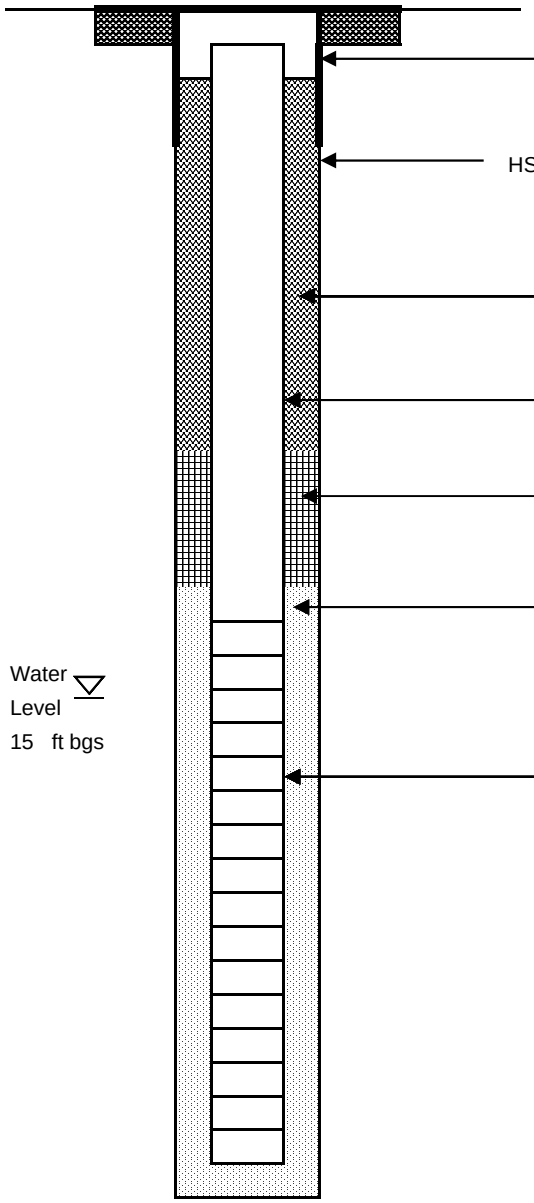
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C10**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech Technologies	Driller: Chris
Surface Elevation: 25.88 ft NGVD 1988 Top of PVC Casing Elevation: 25.67 ft	Easting: 682365.34 NY State Plane NAD 83 Northing: 756853.04 NY State Plane NAD 83	
Date of Construction: February 4, 2012	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -1.0 ft bgs

HS Auger Borehole diameter 6 inches

Top of Rock -43.5 ft bgs

Bentonite grout from -41.0 ft to -0.5 ft

Riser Pipe from -43.5 ft to -0.25 ft

Bentonite seal from -41.0 ft to -42.5

Rock Core diameter 4.25 inches

Filter pack from -48.5 ft to -42.5 ft

Sand Size 1

Well screen from -48.5 ft to -43.5 ft

Diameter 2 inches

Slot size 10

Type PVC

Bottom Cap at -48.5 ft

Bottom of Borehole at -49.0 ft

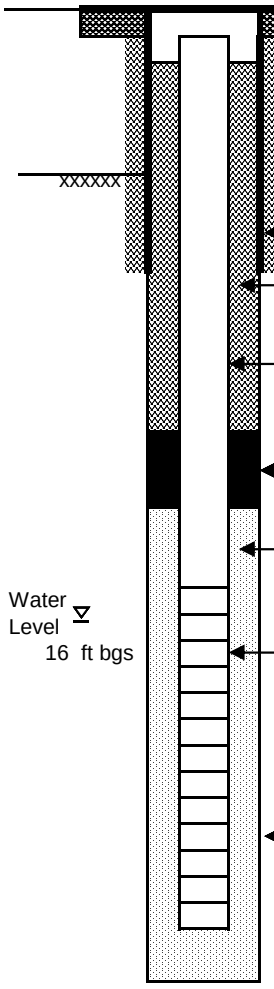
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

Well No. MW-C11

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60269812	Subcontractor: Parratt Wolff, Inc.	
Surface Elevation: 25.69 ft NGVD 1988	Driller: Glenn	
Top of PVC Casing Elevation: 25.42 ft NGVD 1988	Easting: 682250.91 NY State Plane NAD 83 Northing: 756714.67 NY State Plane NAD 83	
Date of Completion: October 3, 2012	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing 0.0 ft bgs

Borehole diameter 6.25 inches

Top of Rock 47.0 ft bgs

4-inch ID steel casing -52.0 ft to 0.0 ft

Cement-bentonite grout from -55.0 ft to -0.5 ft

Riser Pipe from -67.0 ft to -0.5 ft
Diameter 2 inches
Type PVC sch 40

Bentonite seal from -55.0 ft to -51.0 ft

Filter pack from -67.0 ft to -55.0 ft

Sand Size 2

Well screen from -67.0 ft to -57.0 ft
Diameter 2 inches
Slot size 10
Type PVC

Borehole diameter 5.88 inches

Bottom Cap at -67.0 ft

Bottom of Borehole at -67.0 ft

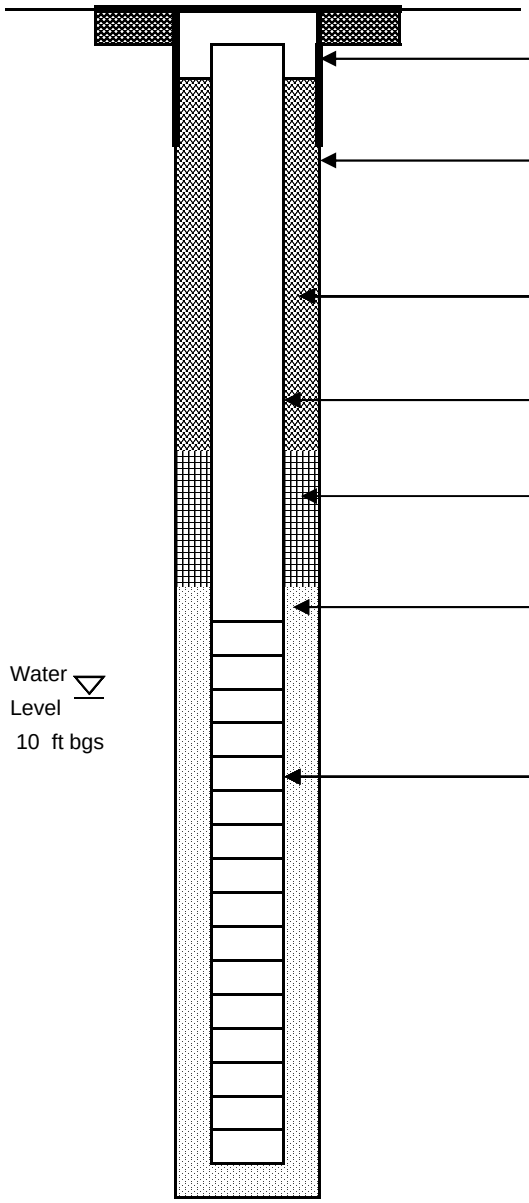
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C12**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech Technologies	Driller: Chris
Surface Elevation: 18.8 ft NGVD 1988 Top of PVC Casing Elevation: 18.55 ft	Easting: 682210.84 NY State Plane NAD 83 Northing: 756563.19 NY State Plane NAD 83	
Date of Construction: January 31, 2012	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -1.0 ft bgs

Borehole diameter 4 1/4 inches

Bentonite grout from -3.7 ft to -0.50 ft

Riser Pipe from -8.0 ft to -0.25 ft

Bentonite seal from -5.8 ft to -3.8

Filter pack from -18.0 ft to -5.8 ft

Sand Size 1

Well screen from -18.0 ft to -8.0 ft

Diameter 2 inches

Slot size 10

Type PVC

Bottom Cap at -18.0 ft

Bottom of Borehole at -18.0 ft

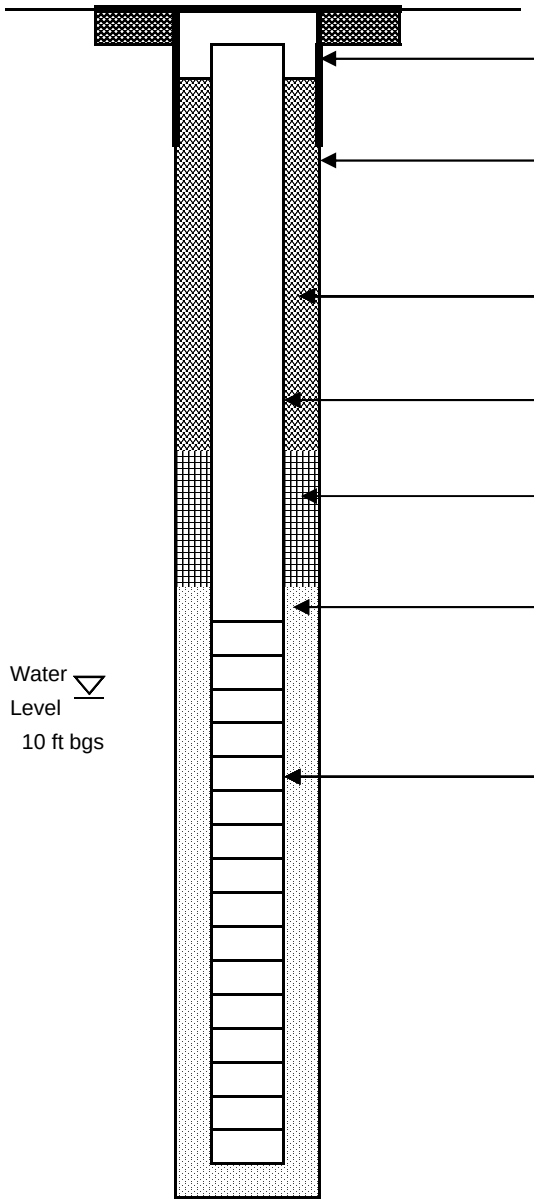
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C13**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech Technologies	Driller: Chris
Surface Elevation: 18.82 ft NGVD 1988 Top of PVC Casing Elevation: 18.43 ft	Easting: 681944.75 NY State Plane NAD 83 Northing: 756660.07 NY State Plane NAD 83	
Date of Construction: January 31, 2012	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -1.0 ft bgs

Borehole diameter 4 1/4 inches

Bentonite grout from -3.0 ft to -0.5 ft

Riser Pipe from -7.7 ft to -0.25 ft

Bentonite seal from -3.0 ft to -6.0

Filter pack from -17.7 ft to -6.0 ft

Sand Size 1

Well screen from -17.7 ft to -7.7 ft

Diameter 2 inches

Slot size 10

Type PVC

Bottom Cap at -18.0 ft

Bottom of Borehole at -18.0 ft

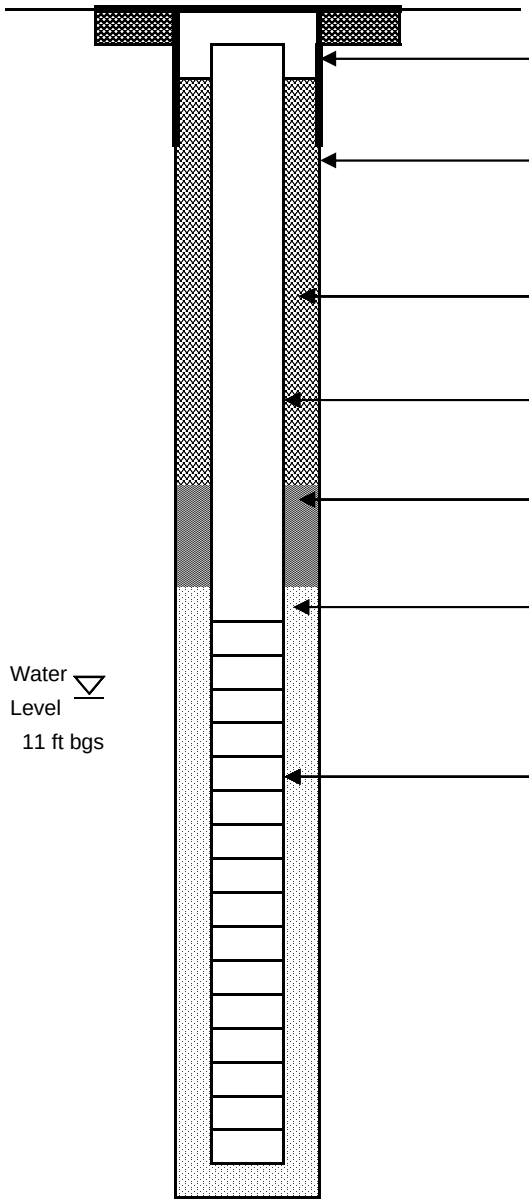
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

MONITORING WELL CONSTRUCTION LOG **Well No. MW-C14**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Zebra Environmental	Driller: Luke
Surface Elevation: 21.18 ft NGVD 1988 Top of PVC Casing Elevation: 20.86 ft	Easting: 682266.05 NY State Plane NAD 83 Northing: 756648.85 NY State Plane NAD 83	
Date of Construction: October 16, 2012	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing -0.5 ft bgs

Borehole diameter 4 inches

Bentonite grout from -8.0 ft to -1.0 ft

Riser Pipe from -12.0 ft to -0.50 ft

Bentonite seal from -10.0 ft to -8.0 ft

Filter pack from -22.0 ft to -10.0 ft

Sand Size 2

Well screen from -22.0 ft to -12.0 ft

Diameter 2 inches

Slot size 20

Type PVC

Bottom Cap at -22.0 ft

Bottom of Borehole at -22.0 ft

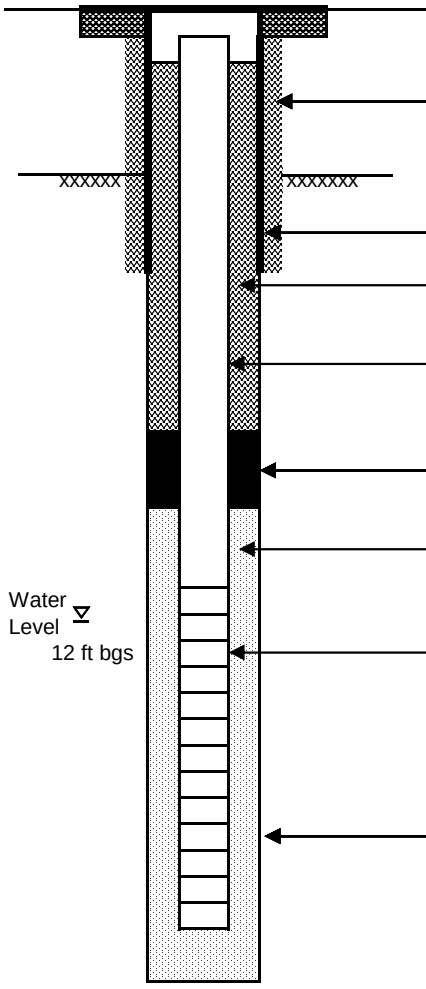
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

Well No. MW-C15

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60269812	Subcontractor: Parratt Wolff, Inc.	
Surface Elevation: 18.82 ft NGVD 1988	Driller: Glenn	
Top of PVC Casing Elevation: 18.4 ft NGVD 1988	Easting: 682211.18 NY State Plane NAD 83 Northing: 756566 NY State Plane NAD 83	
Date of Completion: October 5, 2012	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing 0.0 ft bgs

Borehole diameter 6.25 inches

Top of Rock 31.0 ft bgs

4-inch ID steel casing 0.0 ft to -40.0 ft

Cement-bentonite grout from -0.5 ft to -40.0 ft

Riser Pipe from -0.5 ft to -60.0 ft
Diameter 2 inches
Type PVC sch 40

Bentonite seal from -48.0 ft to -44.0 ft

Filter pack from -60.0 ft to -44.0 ft

Sand Size 0

Well screen from -60.0 ft to -50.0 ft
Diameter 2 inches
Slot size 10
Type PVC sch 40

Borehole diameter 3.88 inches

Bottom Cap at -60.0 ft

Bottom of Borehole at -60.0 ft

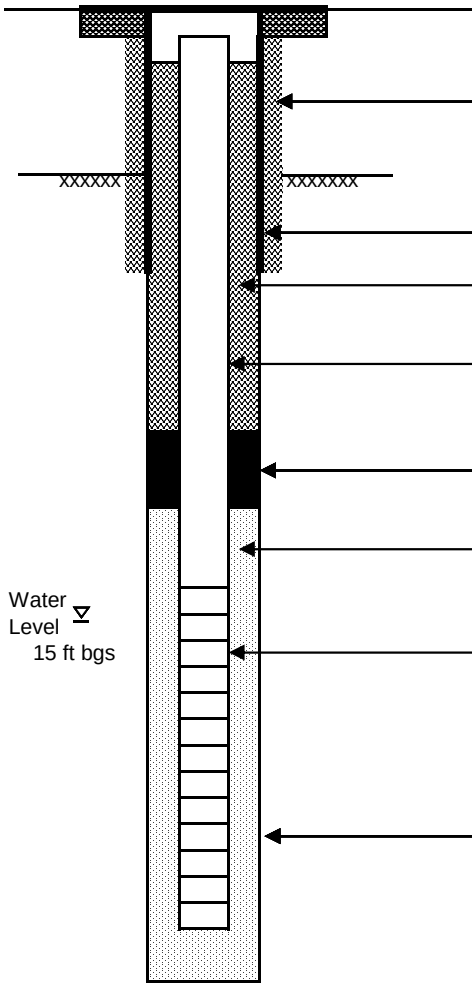
Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

Well No. MW-C16

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60269812	Subcontractor: Parratt Wolff, Inc.	
Surface Elevation: 26 ft NGVD 1988	Driller: Glenn	
Top of PVC Casing Elevation: 25.51 ft NGVD 1988	Easting: 682361.01 NY State Plane NAD 83 Northing: 756842.78 NY State Plane NAD 83	
Date of Completion: September 25, 2012	AECOM Rep.: Celeste Foster	



Locking protective flushmount with concrete pad

Ground Surface 0.0 ft

Well casing 0.0 ft bgs

Borehole diameter 8.25 inches

Top of Rock -44.0 ft bgs

6-inch ID steel casing 0.0 ft to -44.0 ft

4-inch ID steel casing 0.0 ft to -80.0 ft

Cement-bentonite grout from -0.5 ft to -79.0 ft

Riser Pipe from -0.5 ft to -85.0 ft
Diameter 2 inches
Type PVC sch 40

Bentonite seal from -83.0 ft to -79.0 ft

Filter pack from -95.0 ft to -83.0 ft

Sand Size 0

Well screen from -95.0 ft to -85.0 ft
Diameter 2 inches
Slot size 10
Type PVC sch 40

Borehole diameter 3.88 inches

Bottom Cap at -95.0 ft

Bottom of Borehole at -95.0 ft

Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

AECOM

WELL NO. MW-C03

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: September 16, 2011		5. DATE WELL COMPLETED: October 5, 2011
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Aztech	7. SIGNATURE OF INSPECTOR:		

ONE WELL VOLUME : 0.4 WELL TD: 17.00 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
15:45	14.43	0.01							Pump on (Wattera)
16:45	--	0.01							
18:00	--	0.01							Poor recharge, water below
									pump
10/5/11									
17:21	14.31	1							Pump on (Monsoon)
17:22		1							~1 gallon pumped, very turbid
									Well dry
									Unable to pump
									due to very slow recharge

Pump Type: Wattera, Monsoon

0.01321

AECOM

WELL NO. MW-C04

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: September 16, 2011		5. DATE WELL COMPLETED: September 16, 2011
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Aztech	7. SIGNATURE OF INSPECTOR:		

ONE WELL VOLUME : 1.5 WELL TD: 22 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
10:05	13.10	1.25							Pump on
10:10		1.25							
10:11		0							Pump clogged
10:31	15.71	1.25	59.45	11.49	14.23	7.76	-85.8	650	
10:35		0							Pump clogged
10:36		0							Pump on
10:42	15.54	1.25	59.84	10.19	11.62	7.04	-43.6	700	
10:52	15.09	1.25	60.33	10.17	5.50	6.89	-40.2	200	
11:00	15.21	1.25	60.19	10.11	2.63	5.93	-43.0	750	
11:12	15.32	1.25	59.80	10.01	6.08	6.94	-45.4	550	
11:40	15.15	1.25	60.04	9.73	6.55	7.12	-78.6	210	
11:45	15.00	1.25	59.00	9.87	5.01	7.01	-22.0	450	
11:50									Pump off
11:55	13.16								

Pump Type: Submersible

AECOM

WELL NO. MW-C05

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: September 16, 2011		5. DATE WELL COMPLETED: September 16, 2011
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Aztech	7. SIGNATURE OF INSPECTOR:		

ONE WELL VOLUME : 2.8 WELL TD: 22 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
7:45	4.76								Pump on
8:00	4.76	1.25	60.50	16.25	2.60	6.27	173.3	50	
8:10	4.76	1.25	61.45	46.13	2.89	6.30	164.0	95	
8:20	4.76	1.25	64.89	45.07	7.07	6.28	152.4	700	
8:30	4.76	1.25	63.94	43.88	2.30	6.25	140.7	700	
8:50	4.76	1.25	65.03	44.11	3.71	6.36	144.0	500	
9:00	4.76	1.25	64.19	43.70	2.32	6.34	141.2	360	
9:05	4.76	1.25	64.80	44.50	2.04	6.33	140.7	110	
9:09	4.76	1.25	62.80	45.20	5.02	6.33	140.8	85	
9:13	4.76	1.25	64.94	44.53	3.87	6.33	140.9	65	
9:18	4.76	1.25	65.26	44.20	1.92	6.31	141.4	34	

Pump Type: Submersible

AECOM

WELL NO. MW-C06

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: October 5, 2011		5. DATE WELL COMPLETED: October 5, 2011
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Aztech	7. SIGNATURE OF INSPECTOR:		

ONE WELL VOLUME : 1.1 WELL TD: 17.2 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
15:07	10.50								Static Level
15:15	10.70	0.5							Pump on
15:30	10.68	0.2							
15:45	10.70	0.2						1345	
16:00	10.70	0.5						766	
16:15	10.81	0.5						90	
16:20	10.81	0.5						75.1	
16:25	10.81	0.5						58.7	
16:26	10.81	0.5						50.9	
16:30	10.80	0.5						49.7	

Pump Type: Monsoon

AECOM

WELL NO. MW-C07

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: September 16, 2011		5. DATE WELL COMPLETED: September 16, 2011
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Aztech	7. SIGNATURE OF INSPECTOR:		

ONE WELL VOLUME : 2.2 WELL TD: 28.6 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:30	15.40								Static Level
13:15	15.40								Pump on
13.25	15.40	0.1	62.63	3.829	7.36	7.65	-99.5	>1000	
13:45	15.40	0.1	61.03	3.786	5.34	11.40	145	380	
14:00	15.40	0.1	60.51	3.735	5.07	12.52	144.7	500	
14:25	15.40	0.1	59.35	3.728	6.13	16.67	154	320	
14:30	15.42								

Pump Type: Wattera

AECOM

WELL NO. MW-C08

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: September 16, 2011		5. DATE WELL COMPLETED: September 16, 2011
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Aztech	7. SIGNATURE OF INSPECTOR:		

ONE WELL VOLUME : 0.1 WELL TD: 21.90 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
14:25	19.63	0.4							Pump on
15:00	19.69	0.4	63.04	4.24	7.43	7.4	96.1	360	
15:30	19.69	0.4	64.35	4.317	9.17	7.6	104.2	400	
16:00	19.69	0.4	64.21	4.309	10.22	7.63	-23	100	
16:10	19.69	0.4	64.75	4.373	7.72	7.71	-20	450	
16:20	19.69	0.4	63.38	4.40	8.05	7.78	-21.3	290	
16:30	19.69	0.4	63.02	2.248	7.71	7.26	-21.6	450	

Pump Type: Wattera

AECOM

WELL NO. MW-C09

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: February 6, 2012		5. DATE WELL COMPLETED: February 6, 2012
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Aztech	7. SIGNATURE OF INSPECTOR:		

ONE WELL VOLUME : 4.4 WELL TD: 40.2 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
14:04	13.00								
14:20									Pump on
14:30	30.40	0.75						851	
14:55	26.65	1.0							
15:00	30.02	1.0						340	
15:05	-	0.5						133	
15:07	-	0							Dry
15:15	28.05	0.25							Pump on
15:25	36.45	0.25						22.8	

Pump Type: Grundfos

AECOM

WELL NO. MW-C10

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: February 4, 2012		5. DATE WELL COMPLETED: February 6, 2012
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Aztech	7. SIGNATURE OF INSPECTOR:		

ONE WELL VOLUME : 7.9 WELL TD: 48.4 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
2/4/12									
16:00									1/2 drum pumped, clear
2/6/12									
15:40	14.72								Static reading
15:43									Pump on
15:48	16.01	2						5.44	
15:51	16.01	2						5.01	

Pump Type: Grundfos

AECOM

WELL NO. MW-C11

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60268912	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: 10/8/12		5. DATE WELL COMPLETED: 10/8/12
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Parratt Wolff, Inc.			

ONE WELL VOLUME : 6.6 WELL TD: 66.55 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
15:25	26.20	0.5							Pump on
15:40	58.10	0.5						74.1	
15:55	57.90	0.5						59.8	
16:10	57.50	0.5						27.8	
16:25	56.80	0.5						54.4	

Pump Type: Whale

AECOM

WELL NO. MW-C12

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: February 6, 2012		5. DATE WELL COMPLETED: February 6, 2012
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Aztech	7. SIGNATURE OF INSPECTOR:		

ONE WELL VOLUME : 1.2 WELL TD: 17.6 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:24	10.07								
12:30		0.5						1597	Pump on
12:40	11.82	0.5						289	
12:50	11.35	0.5						1582	
13:00	11.08	0.5						1437	
13:05	11.08	1.0						153	
13:07	11.08	1.0						86.3	
13:10	11.08	1.0						48.1	
13:20	11.08	1.0						19.5	

Pump Type: Grundfos

AECOM

WELL NO. MW-C13

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: February 6, 2012		5. DATE WELL COMPLETED: February 6, 2012
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Aztech	7. SIGNATURE OF INSPECTOR:		

ONE WELL VOLUME : 1.2 WELL TD: 17.1 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
10:15	9.48								
10:21	9.50	0.5							Pump on
10:40	13.92	0.25						5909	
10:50									Pump off
11:00	11.50								Pump on
11:10	11.50	0.25						5827	Dry
11:25	11.35	0.25							Pump on
11:35	12.62	0.25						1343	
11:45								1755	
11:55	15.58	0.25						68.0	
12:00	15.57	0.25						20.4	

Pump Type: Grundfos

AECOM

WELL NO. MW-C14

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60268912	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: 10/23/12		5. DATE WELL COMPLETED: 10/23/12
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Zebra Environmental Corp.			

ONE WELL VOLUME : 1.1 WELL TD: 22 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
14:10	15.00								Static water level
14:25	15.00	0.5						260	Pump on
14:30	15.00	0.5						153	
14:45	15.00	0.5						182	
15:00	15.00	0.5						87	
15:05	15.00	0.5						137	
15:10	15.00	0.5						68	
15:25	15.00	0.5						45	

Pump Type: Whale

AECOM

WELL NO. MW-C15

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60268912	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: 10/8/12		5. DATE WELL COMPLETED: 10/8/12
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Parratt Wolff, Inc.			

ONE WELL VOLUME : 7.7 WELL TD: 59.65 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:45	12.28	0.26						65	
13:05	17.82	0.26						85	
13:21	20.23	0.26						116	
13:23	28.10	0							Pump silted up, rinsed pump
13:28	15.15	0							
13:45	20.12	0.22						118	
13:52	25.45	0.22						99	
14:02	31.05	0.22						81	
14:18	37.28	0.22						35	
14:33	42.15	0.22						221	
14:48	48.78	0.22						118	
15:03	50.01	0.22						41	

Pump Type: Whale

AECOM

WELL NO. MW-C16

WELL DEVELOPMENT FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60268912	SHEET: 1 OF SHEETS: 1
1. LOCATION: Pelham, NY	4. DATE WELL STARTED: 10/8/12		5. DATE WELL COMPLETED: 10/8/12
2. CLIENT: NYSDEC	6. NAME OF INSPECTOR: Celeste Foster		
3. DRILLING COMPANY: Parratt Wolff, Inc.			

ONE WELL VOLUME : 13.7 WELL TD: 94.7 PUMP INTAKE: along screen

Time	Depth to Water (ft)	Purge Rate (gal/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (C)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
11:10	10.55								
11:30	19.40	0.5						15.5	
11:35	27.15	0.5						16.6	
11:40	42.05	0.5						68.3	
11:45	43.28	0.5						121	
11:55	59.10	0.5						169	
12:05	59.26	0.5						49	
12:15	68.50	0.5						402	
12:25	74.70	0.5						158	
12:35	77.00	0.5						98.2	
12:50	70.25	0.5						48.8	

Pump Type: Hurricane

AECOM

WELL NO. MW-C01

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1
LOCATION: Pelham NY		DATE WELL STARTED: 10/19/11	DATE WELL COMPLETED: 10/19/11
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 3.0 WELL TD: 26 PUMP INTAKE DEPTH: 21

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:29	7.52								
12:35									Pump on
12:50	7.55	200	15.3	0.635	4.1	5.18	156	-5.0	
13:00	7.55	180	15.4	0.628	3.99	5.16	181	677.0	
13:10	7.55	180	15.4	0.626	3.56	5.12	195	222.0	
13:20	7.54	180	15.4	0.627	3.48	5.11	202	115.0	
13:30	7.54	180	15.4	0.629	3.46	5.04	206	75.3	
13:40	7.54	180	15.4	0.631	3.41	5.11	209	54.4	
13:45	7.54	180	15.4	0.632	3.43	5.11	311	46.8	
13:50									Collected samples MW-C01 and
									MW-C01F (filtered metals)

Pump Type: Bladder

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C03

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1 SHEETS
LOCATION: Pelham NY		DATE WELL STARTED: 10/19/11	DATE WELL COMPLETED: 10/20/11
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 2.8 WELL TD: 17 PUMP INTAKE DEPTH: 12

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
10/19/11									
15:40	14.39								
15:45									Pump on
16:05	14.58	10-20	21.16	0.715	2.32	6.57	-10	-5.0	
16:20	14.70	10-20	20.96	0.663	2.59	6.23	34	-5.0	
16:35	14.76	10-20	20.82	0.615	2.43	6.16	56	-5.0	
16:40	14.80	10-20	20.74	0.601	2.32	6.15	61	-5.0	
16:56	14.81	10-20	20.57	0.577	1.75	6.18	72	-5.0	
17:10	14.83	10-20	20.43	0.568	1.56	6.10	80	-5.0	
17:15									Pump off; left in well
10/20/11									
8:39	14.39	16							Pump on
8:48	14.60	16	18.7	0.583	4.48	6.33	45	-5.0	
8:53	14.60	16							
9:13	14.00	16	19.0	0.562	3.33	6.32	32	-5.0	
9:38	14.75	25	19.2	0.566	3.35	6.34	37	-5.0	
9:53	14.67	20	19.2	0.557	3.20	6.33	39	-5.0	
10:10	14.73	20	19.0	0.549	3.09	6.30	32	-5.0	
10:20	14.75	20	18.6	0.549	3.03	6.29	39	-5.0	
10:25									Collected samples MW-C03 and
									MW-C03F (filtered metals)

Pump Type: Bladder

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C04

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1
LOCATION: Pelham NY		DATE WELL STARTED: 10/18/11	DATE WELL COMPLETED: 10/18/11
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 1.3 WELL TD: 22 PUMP INTAKE DEPTH: 17

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:40	13.89								
13:03									Pump on
13:15	13.93	275	17.40	5.36	0.00	6.36	-12	37.8	
13:22	13.93	275	17.40	5.30	0.00	6.42	-15	23.1	
13:35	13.93	275	17.38	5.33	0.00	6.5	-21	16.4	
13:50	13.93	275	17.38	5.40	0.00	6.54	-30	21.6	
13:55	13.93	275	17.35	5.49	0.00	6.55	-33	21.6	
14:00			17.36	5.51	0.00	6.57	-38	20.80	
14:15									Collected samples MW-C04 and
									MW-C04F (filtered metals)

Pump Type: Bladder

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C05

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1
LOCATION: Pelham NY		DATE WELL STARTED: 10/19/11	DATE WELL COMPLETED: 10/19/11
CLIENT: NYSDEC		NAME OF INSPECTOR: Pete Lawler	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 2.7 WELL TD: 22 PUMP INTAKE DEPTH: 17

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
8:51	5.45								
9:05									Pump on
9:12	5.47	80	18.91	41.0	1.11	5.89	168	-41.0	
9:22	5.47	120	19.42	48.6	0.00	5.83	155	-5.0	
9:32	5.47	120	19.34	47.8	0.00	5.84	147	813.0	
9:42	5.48	120	19.44	46.1	0.00	5.86	147	449.0	
9:52	5.48	120	19.46	45.0	0.00	5.87	138	254.0	
10:05	5.48	120	19.41	45.0	0.00	5.87	134	166.0	
10:15	5.49	120	19.37	45.3	0.00	4.56	134	134.0	
10:25	5.48	120	19.21	46.7	0.00	5.84	132	67.9	
10:35	5.49	120	19.02	47.0	0.00	5.84	131	46.9	
10:45									Collected samples MW-C05 and
									MW-C05F (filtered metals)

Pump Type: Bladder

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C06

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1 SHEETS
LOCATION: Pelham NY		DATE WELL STARTED: 10/19/11	DATE WELL COMPLETED: 10/19/11
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 1.0 WELL TD: 17.2 PUMP INTAKE DEPTH: 12.2

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
14:25	10.77								
14:33									Pump on
14:45	10.80	250	19.4	0.777	3.28	6.56	34	830	
14:55	10.80	250	19.4	0.838	2.90	6.57	4	1130	
15:05	10.80	250	19.5	0.828	2.76	6.55	0	55.1	
15:13	10.80	250	19.5	0.818	2.75	6.54	0	39.7	
15:23	10.80	250	19.4	0.810	2.71	6.56	-2	28	
15:30									Collected samples MW-C06 and
									MW-C06F (filtered metals)

Pump Type: Bladder

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C07

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1
LOCATION: Pelham NY		DATE WELL STARTED: 10/18/11	DATE WELL COMPLETED: 10/18/11
CLIENT: NYSDEC		NAME OF INSPECTOR: Pete Lawler	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 2.2 WELL TD: 28.6 PUMP INTAKE DEPTH: 23.6

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
8:55	15.02								
9:10									Pump on
9:15	15.02	300	16.34	2.48	0.00	5.61	203	166	
9:30	15.04	300	16.11	3.11	0.00	5.68	197	79.9	
9:45	15.02	250	16.15	3.36	0.00	5.83	188	47.5	
10:00	15.02	250	16.24	3.47	0.00	5.87	183	31.1	
10:15	15.00	250	16.28	3.56	0.00	5.88	180	27.9	
10:20	15.02	250	16.31	3.59	0.00	5.88	179	22.4	
10:26									Collected samples MW-C07
									and MW-C07F (filtered metals)
10:36									Collected samples MW-C57
									and MW-C57F (filtered metals)

Pump Type: Bladder

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C08

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1 SHEETS
LOCATION: Pelham NY		DATE WELL STARTED: 10/18/11	DATE WELL COMPLETED: 10/18/11
CLIENT: NYSDEC		NAME OF INSPECTOR: Peter Lawler	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 0.1 WELL TD: 21.9 PUMP INTAKE DEPTH: 19.4

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:08	20.32								
12:17	20.32								Pump on
12:40	20.32	10	20.8	4.78	8.41	6.37	189	-5.0	
13:00	20.32	40	19.4	5.18	7.85	6.33	178	442.0	
13:20	20.32	30	20.1	5.42	6.15	6.29	156	237.0	
13:40	20.32	20	20.3	5.48	6.03	6.30	148	170.0	
14:00	20.32	30	20.9	5.50	6.01	6.31	130	86.6	
14:20	20.32	30	20.8	5.53	5.86	6.30	128	45.0	
14:25									Collected samples MW-C08 and
									MW-C08F (filtered metals)

Pump Type: 0.75 inch Bladder Pump

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C01

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1
LOCATION: Pelham NY		DATE WELL STARTED: 2/23/12	DATE WELL COMPLETED: 2/23/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 2.9 WELL TD: 26 PUMP INTAKE DEPTH: 21

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
18:51	8.17								Static water level
18:53	8.20	275							Pump on
19:00	8.21	275	11.0	0.515	4.43	5.76	159	-5.0	
19:10	8.2	250	10.4	0.513	5.31	5.107	155	-5.0	
19:20	8.15	250	10.8	0.502	6.54	5.59	187	-5.0	
19:30	8.18	250	11.1	0.494	8.78	5.67	206	-5.0	
19:40	8.18	250	11.0	0.471	9.04	5.62	228	-5.0	
19:50	8.17	250	11.0	0.476	9.61	5.86	107	-5.0	
20:00	8.17	250	10.3	0.474	8.97	5.91	101	-5.0	
20:10	8.17	250	11.2	0.460	12.61	5.93	131	-5.0	
20:15	8.17	220	11.1	0.457	12.32	5.49	143	-5.0	
20:20	8.18	220	10.9	0.451	12.20	5.91	158	-5.0	
20:30	8.18	220	10.9	0.442	11.00	5.81	177	-5.0	
20:40	8.18	220	10.9	0.432	10.21	5.73	190	-5.0	
20:50	8.18	220	10.9	0.425	10.01	5.09	198	-5.0	
20:55									Collected sample MW-C01

Pump Type: Bladder pump

Analytical Parameters: VOCs

AECOM

WELL NO. MW-C03

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1
LOCATION: Pelham NY		DATE WELL STARTED: 2/22/12	DATE WELL COMPLETED: 2/22/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 0.4 WELL TD: 17.1 PUMP INTAKE DEPTH: 12.1

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
17:00	14.51								Static water level
17:05	14.51								Pump on
17:10	14.81	100	13.68	0.807	2.81	6.06	118	>1000	
17:30	14.80	100	12.38	0.788	2.39	6.02	156	263.0	
17:50	15.00	100	12.54	0.790	2.40	6.07	156	148.0	
18:10	14.92	50	11.8	0.869	1.54	6.10	146	91.8	
18:30	14.80	50	10.9	0.868	1.81	6.09	149	64.8	
18:40	14.78	50	10.3	0.864	2.19	6.08	146	70.8	
18:50	14.75	50	9.7	0.861	2.52	6.09	143	125.0	
19:05	14.90	50	11.8	0.808	2.56	6.10	53.1	150.0	
19:10									Collected sample MW-C03

Pump Type: Bladder

Analytical Parameters: VOCs

AECOM

WELL NO. MW-C04

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
LOCATION: Pelham NY		DATE WELL STARTED: 2/22/12	DATE WELL COMPLETED: 2/22/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 1.2 WELL TD: 21.65 PUMP INTAKE DEPTH: 16.7

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
15:17	14.34								Static water level
15:18									Pump on
15:28	14.34	250	15.2	2.81	2.08	7.32	-36	791	
15:42	14.34	250	15.2	2.79	3.10	7.38	-5	563.0	
15:55	14.34	250	15.2	2.79	3.35	7.40	5	308.0	
16:05	14.35	250	15.3	2.80	3.20	7.39	5	264	
16:20	14.34	250	15.2	2.80	3.06	7.38	2	201.0	
16:30	14.34	250	15.2	2.80	2.71	7.38	-4	175.0	
16:40	14.34	250	15.2	2.80	2.85	7.40	-8	152.0	
16:50	14.34	250	15.1	2.80	3.37	7.40	-8	92.2	
17:00	14.34	200	15.1	2.80	3.43	7.41	-8	91.2	
17:10	14.34	200	15.1	2.81	3.33	7.41	-8	68.1	
17:20	14.34	250	15.1	2.82	2.98	7.40	-8	55.4	
17:25									Collected sample MW-C04

Pump Type: Bladder

Analytical Parameters: VOCs

AECOM

WELL NO. MW-C05

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1
LOCATION: Pelham NY		DATE WELL STARTED: 2/23/12	DATE WELL COMPLETED: 2/23/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster, Brian Cacciopoli	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 2.6 WELL TD: 22 PUMP INTAKE DEPTH: 17.0

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
17:15	6.14	7							Static water level
17:20	6.14	225							Pump on
17:25	6.16	225	14.07	54.5	0.00	6.16	95	101	
17:35	6.16	225	13.97	51.0	0.00	6.23	98	83.5	
17:45	6.14	230	13.87	49.8	0.00	6.26	100	74.9	
17:55	6.14	225	13.77	50.3	0.00	6.27	99	53.9	
18:05	6.15	225	13.77	51.0	0.00	6.28	98	32.5	
18:15									Collected sample MW-C05

Pump Type: Bladder

Analytical Parameters: VOCs

AECOM

WELL NO. MW-C06

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
LOCATION: Pelham NY		DATE WELL STARTED: 2/23/12	DATE WELL COMPLETED: 2/23/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster, Brian Cacciopoli	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 1.0 WELL TD: 17.2 PUMP INTAKE DEPTH: 12.2

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
15:00	11.35								Static water level
15:15	11.37	250							Pump on
15:20	11.38	230	13.94	1.47	0.00	6.59	45	-5	
15:30	11.37	225	14.16	1.13	0.00	6.48	71	78.7	
15:40	11.37	225	13.72	1.00	0.00	6.60	74	32.1	
15:50	11.37	225	13.78	0.96	0.00	6.69	71	21.7	
16:00	11.37	225	13.66	0.93	0.00	6.74	71	20.3	
16:10	11.37	225	13.45	0.90	0.00	6.74	70	25.80	
16:20									Collected sample MW-C06

Pump Type: Bladder

Analytical Parameters: VOCs

AECOM

WELL NO. MW-C07

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF SHEETS: 1
LOCATION: Pelham NY		DATE WELL STARTED: 2/22/12	DATE WELL COMPLETED: 2/22/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 2.1 WELL TD: 28.6 PUMP INTAKE DEPTH: 23.6

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:00	15.47								Static water level
12:00	15.47	275							Pump on
12:20	15.51	275	16.1	3.41	0.00	6.14	175	326.0	
12:30	15.52	275	16.1	3.54	0.00	6.17	173	192.0	
12:40	15.52	225	16.2	3.56	0.00	6.19	173	146.0	
13:00	15.48	225	16.1	3.66	0.00	6.18	174	73.5	
13:10	15.48	225	16.1	3.67	0.00	6.19	173	71.8	
13:20	15.48	225	16.1	3.67	0.00	6.19	173	68.0	
13:30	15.49	225	16.0	3.68	0.00	6.20	171	37.9	
13:40	15.49	225	16.0	3.68	0.00	6.21	171	33.6	
13:45									Collected sample MW-C07

Pump Type: Bladder

Analytical Parameters: VOCs

AECOM

WELL NO. MW-C08

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1 SHEETS
LOCATION: Pelham NY		DATE WELL STARTED: 2/22/12	DATE WELL COMPLETED: 2/22/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 0.1 WELL TD: 21.65 PUMP INTAKE DEPTH: 19.2

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:50	20.85								Static water level
14:42									Pump on
15:00	20.85	100	14.22	3.86	4.85	6.32	219	470.0	
15:20	20.85	100	13.88	4.16	3.26	6.44	184	76.3	
15:30	20.85	100	13.87	4.19	3.19	6.52	164	30.7	
15:40	20.85	100	13.89	20.00	2.71	6.55	162	26.8	
15:50	20.85	100	13.68	99.9	2.65	6.50	166	28.7	
16:00	20.85	100	13.60	99.9	2.61	6.48	164	30.6	
16:10	20.85	100	13.64	99.9	2.54	6.51	162	30.2	
16:15									Collected sample MW-C08

Pump Type: 0.75 inch Bladder Pump

Analytical Parameters: VOCs

AECOM

WELL NO. MW-C09

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1
LOCATION: Pelham NY		DATE WELL STARTED: 2/23/12	DATE WELL COMPLETED: 2/23/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 4.4 WELL TD: 40.1 PUMP INTAKE DEPTH: 35.1

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:55	13.11								Static water level
15:55									Pump on
13:10	13.51	50	15.8	2.31	1.79	6.87	33	216.0	
13:30	13.75	50	14.7	2.33	0.00	6.65	27	37.1	
13:40	14.00	25	14.7	2.33	0.00	6.64	25	23.7	
13:50	14.20	25	14.6	2.34	0.00	6.64	20	35.7	
									Pump shut off
15:00	13.51								Pump on
15:10	13.71	30	12.4	2.35	1.31	6.64	29	35.2	
15:30	13.92	30	12.1	2.36	0.49	6.63	24	33.8	
15:40	14.01	50	12.3	2.34	0.00	6.62	23	40.2	
15:50	14.08	50	12.9	2.33	0.00	6.66	22	23.1	
16:15	14.15	50	12.8	2.34	0.26	6.69	29	19.1	
17:00									Collected samples MW-C09 and
17:15									MW-C09F (filtered metals)

Pump Type: Bladder

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C10

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1 SHEETS
LOCATION: Pelham NY		DATE WELL STARTED: 2/23/12	DATE WELL COMPLETED: 2/23/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster, Brian Cacciopoli	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 5.6 WELL TD: 48.45 PUMP INTAKE DEPTH: 46.0

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:40	14.07								Static water level
12:40	14.07	250							Pump on
13:00	14.05	250	15.06	2.04	3.56	6.30	154	16.6	
13:10	14.06	250	14.97	2.04	3.56	6.46	149	8.5	
13:20	14.06	250	14.64	2.04	3.59	6.50	148	6.0	
13:30	14.06	250	14.94	2.04	3.60	6.53	148	7.6	
13:40									Collected samples MW-C10 and
14:10									MW-C10F (filtered metals)

Pump Type: Bladder

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C12

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1 SHEETS
LOCATION: Pelham NY		DATE WELL STARTED: 2/23/12	DATE WELL COMPLETED: 2/23/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 1.2 WELL TD: 17.4 PUMP INTAKE DEPTH: 12.4

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
8:05	10.31								Static water level
8:20	10.35	225							Pump on
8:25	10.37	250	12.49	2.65	5.20	6.28	173	-5.0	
8:30	10.34	230	12.57	2.61	5.13	6.29	177	-5.0	
8:35	10.35	230	12.62	2.61	4.97	6.29	181	-5.0	
8:40	10.35	230	12.72	2.62	4.75	6.29	185	953	
8:45	10.35	230	12.77	2.62	4.67	6.29	187	816	
8:50	10.34	230	12.80	2.63	4.40	6.28	189	737	
8:55	10.35	230	12.83	2.64	4.21	6.28	190	668	
9:00	10.36	230	12.89	2.65	4.00	6.27	192	599	
9:05	10.34	230	12.93	2.66	3.83	6.27	194	459	
9:10	10.33	225	12.94	2.66	3.75	6.26	195	339	
9:15	10.33	225	12.95	2.66	3.74	6.26	196	251	
9:20	10.35	225	12.98	2.66	3.75	6.27	197	193	
9:25	10.35	225	13.05	2.66	3.77	6.27	198	169	
9:30	10.34	225	13.20	2.65	3.76	6.27	198	97.9	
9:35	10.34	225	13.33	2.64	3.79	6.27	198	82.1	
9:45	10.35	225	13.32	2.62	3.88	6.27	198	56.3	
9:55	10.35	225	13.20	2.62	3.96	6.28	199	32.9	
10:05									Collected samples MW-C12 and
13:30									MW-C12F (Filtered)

Pump Type: Bladder

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C13

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60188614	SHEET: 1 OF 1
LOCATION: Pelham NY		DATE WELL STARTED: 2/23/12	DATE WELL COMPLETED: 2/23/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Aztech			

ONE WELL VOLUME : 1.2 WELL TD: 17.0 PUMP INTAKE DEPTH: 12.0

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
8:45	9.63								Static water level
8:45									Pump on
9:00	9.65	210	12.2	1.69	0.95	7.06	16	-5.0	
9:10	9.65	210	12.3	1.70	1.05	7.03	23	-5.0	
9:20	9.65	210	12.9	1.71	1.62	6.96	38	475.0	
9:30	9.65	210	12.5	1.71	2.02	6.92	46	297.0	
9:40	9.65	210	12.6	1.72	2.25	6.85	56	138.0	
9:50	9.65	210	12.8	1.72	2.69	6.82	61	57.2	
10:00	9.65	210	12.9	1.73	2.66	6.80	64	44.2	
10:10	9.65	210	12.8	1.73	2.60	6.77	65	32.3	
10:15									Collected samples MW-C13,
10:25									duplicate MW-C63 and
10:50									MW-C07F (filtered metals)

Pump Type: Bladder

Analytical Parameters: VOCs, Metals, Filtered metals, Total Sulfides, COD, TOC, Dissolved Gases, BOCs, Nitrogen (Ammonia), Total Phosphorus, Alkalinity, Ion Chromotography, BOD

AECOM

WELL NO. MW-C11

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60269812	SHEET: 1 OF 1 SHEETS
LOCATION: Pelham NY		DATE WELL STARTED: 11/15/12	DATE WELL COMPLETED: 11/15/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Parratt Wolff, Inc.			

ONE WELL VOLUME : 8.1 WELL TD: 66.3 PUMP INTAKE DEPTH: 61.3

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
13:15	16.38								Static water level
13:25		220							Pump on
13:40	18.47	220	15.28	7.05	3.55	6.6	111	0.0	
13:55	19.82	220	15.75	6.81	2.95	6.81	114	0.0	
14:10	20.51	220	15.74	6.87	2.98	6.82	115	0.0	
14:25	20.68	210	15.75	6.82	2.92	6.82	119	0.0	
14:40	20.55	200	15.69	6.81	2.67	6.82	122	0.0	
14:55	20.50	200	14.73	6.84	3.03	6.84	130	0.0	
15:10	20.50	200	14.45	6.83	3.22	6.83	136	0.0	
15:25		200	14.19	6.85	3.26	6.81	143	0.0	
15:35									Collected sample MW-C11

Pump Type: Bladder pump

Analytical Parameters: VOCs

AECOM

WELL NO. MW-C14

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60269812	SHEET: 1 OF 1 SHEETS
LOCATION: Pelham NY		DATE WELL STARTED: 11/15/12	DATE WELL COMPLETED: 11/15/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Parratt Wolff, Inc.			

ONE WELL VOLUME : 1.7 WELL TD: 22 PUMP INTAKE DEPTH: 17

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
12:30	11.29								Static water level
12:35		200							Pump on
12:50	11.3	200	15.18	3.02	0.31	6.70	209	713	
13:05	11.3	200	15.56	3.08	0.41	6.82	170	349	
13:20	11.3	200	16.06	3.11	0.45	6.91	126	122	
13:35	11.3	200	16.16	3.13	0.14	6.96	109	90.1	
13:50	11.3	200	16.14	3.13	0.11	6.97	108	86.1	
14:05	11.3	200	16.12	3.14	0.14	7.03	112	54.8	
14:20	11.3	200	16.01	3.15	0.03	7.06	109	39.6	
14:35	11.3	200	15.90	3.15	0.03	7.09	108	28.0	
14:45									Collected sample MW-C14

Pump Type: Bladder pump

Analytical Parameters: VOCs

AECOM

WELL NO. MW-C15

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60269812	SHEET: 1 OF 1 SHEETS
LOCATION: Pelham NY		DATE WELL STARTED: 11/15/12	DATE WELL COMPLETED: 11/15/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Parratt Wolff, Inc.			

ONE WELL VOLUME : 7.9 WELL TD: 60 PUMP INTAKE DEPTH: 55

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
11:35	11.72								Static water level
11:50		200							Pump on
12:05	15.52	200	14.64	4.01	6.43	5.84	212	942	
12:20	15.43	200	14.93	4.14	2.21	6.96	28	>1000	
12:35	15.15	200	15.10	4.17	1.13	7.2	-42	>1000	
12:50	15.07	200	15.06	4.16	1.15	7.26	50	>1000	
13:05	15	200	14.93	4.19	1.22	7.21	-58	>1000	
13:20	14.87	200	14.85	4.23	1.79	7.24	-57	825	
13:35	14.83	200	14.71	4.26	2.46	7.25	-51	561	
13:50	14.80	200	14.73	4.26	2.44	7.25	-50	512	
14:00								512	Collected sample MW-C15

Pump Type: Bladder pump

Analytical Parameters: VOCs

AECOM

WELL NO. MW-C16

WELL SAMPLING FORM	PROJECT: Crystal Cleaners	PROJECT No.: 60269812	SHEET: 1 OF 1
LOCATION: Pelham NY		DATE WELL STARTED: 11/15/12	DATE WELL COMPLETED: 11/15/12
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster	
DRILLING COMPANY: Parratt Wolff, Inc.			

ONE WELL VOLUME : 12.9 WELL TD: 94.7 PUMP INTAKE DEPTH: 89.7

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	
11:00	15.47								Static water level
11:35	14.44								Pump on
11:45	14.44	125	12.3	9.42	2.14	9.23	-37	385	
11:55	14.44	125	12.76	9.47	1.93	9.19	-32	404	
12:05	14.62	125	12.79	9.48	0.89	8.98	-34	396	
12:15	14.83	110	12.61	9.37	0.96	8.97	-35	434	
12:25	15.1	110	12.18	9.72	1.04	8.92	-33	425	
12:35	15.05	110	11.83	9.88	1.00	8.88	-27	459	
12:45	15.00	110	11.72	9.91	0.78	8.88	-28	489	
12:55	14.94	110	11.76	9.92	0.76	8.88	-28	490	
13:05	14.89	110	11.45	9.90	0.68	8.91	-27	495	
13:15	14.93	110	12.18	9.94	0.44	8.90	-36	417	
13:25	15.01	110	12.75	10.0	0.14	8.90	-41	388	
13:35	15.02	110	13.00	10.1	0.37	8.86	-38	422	
13:45	15.04	110	12.94	10.1	0.41	8.83	-32	515	
13:50									Collected sample MW-C16
13:55									Collected sample MW-C56

Pump Type: Bladder pump

Analytical Parameters: VOCs

CleanVenture/CycleChem

CVCC 218148

The Environmental Services Source

NON-HAZARDOUS SOLID WASTE

BILL OF LADING

Page 1 of 1

24 Hour Emergency Number (908) 354-0210

GENERATOR

Generator's Name and Mailing Address NYSDEC
625 BROADWAY
ALBANY, NY 12233
Generator's Phone ((518) 402-9775

BOL

113 WOLFS LANE
PELHAM NY 10803

Transporter 1 Company Name
CLEAN VENTURE INC.

State Trans. ID-NJDEPE 16755
Decal No.-

Transporter 2 Company Name

Transporter's Phone ((908) 355-5800
State Trans. ID-NJDEPE
Decal No.-

Designated Facility Name and Site Address
Cycle Chem Inc.
217 South First Street
Elizabeth, NJ 07206

10. US EPA ID Number
NJD002200046

Transporter's Phone ( )
Facility's Phone ((908)) 355-5800

	US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group)	Containers No.	Type	Total Quantity	Unit Wt/Vol	Waste No.
a. X	Non-DOT CHEMICAL PROCESS SOLID Non-RCRA	X5	DM	275	P	ID27
b. X	Non-DOT CHEMICAL PROCESS LIQUID Non-RCRA	X8	DM	440	9	ID72
c.						
d.						

J. Additional Descriptions for Materials Listed Above

a. c.

b. d.

CCI Generator # and Product Codes: 949707/947381/128508/276701 (1)PC01-2 SOIL CUTTINGS (2)REM002-3 WATER FROM WELL DEVELOPMENT & SAMPLING

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and are non-hazardous by USEPA & applicable state regulations.

PLACARDS REQUIRED ☐ YES ☐ NO- FURNISHED BY CARRIER PLACARDS SUPPLIED

Printed/Typed Name	Signature	Month	Day	Year
X Claire Hunt	X Claire Hunt	12	1	11

TRANSPORTER

Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Richard Jackson	Richard Jackson	12	1	11

Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest.

Printed/Typed Name	Signature	Month	Day	Year

SIGNATURE AND INFORMATION *MUST* BE LEGIBLE ON ALL COPIES

Clean Venture, Inc.
TRANSPORTATION TRIP TICKET

TTEL: **TTEL-15095**
DATE: **12/1/2011**
Job Number: **TR6134**

Tractor #: **ST 114/ Freightliner Business Class** Trailer#:	Driver: **Richard Jackson** Start Date: 12-1-11 End Date:
Start City & State: Mount NY	End City & State:
Start Mileage: Start Time: 11:50	End Mileage: Total Trip Miles: End Time: Total Hours:
Customer Name: **Clean Venture - Branch 1 (I)**	Reference Number: **CCI08- 128508**
Contract:	Broker: **AECOM**
Pick Up Location: Crystal Cleaners	Contact: **Claire Hunt**
Site Address: **113 Wolfs Lane**	Phone: **845-425-4980, ext 21**
Site Address 2:	Signature:
City, State, Zip: **Pelham, Westchester Co, NY, 10803**	Time In: Time Out:

Project Description/Notes:

# Drums/Containers P/U Size & Quantity:	Supplies Delivered: / /
# of Gallons Picked Up (Tankers Only):	
Manifest/BOL Number:	Helper: Yes___ No ___
Destination Name: Cycle Chem- NJ	Date:
Street Address: **217 S 1st St**	Contact:
Street Address:	Phone: **(908) 355- 5800**
City, State & Zip: **Elizabeth, NJ 07206**	Signature:
	Time In: Time Out:

ROLL OFF SECTION ONE

BOX NUMBER:	**DROP OFF**	**PICK-UP**	**LIVE LOAD**	**DUMP**
Site Name:	Condition of Roll Off Equipment		Damaged Fair	Good
Address:	Bottom Rail/Top Rail/Ribs			
City, State & Zip:	Tailgate/Hinges/Ratchets/Rollers			
Contact:	Tarp			
Phone:	Number of Bows: **0**			
Manifest/BOL Number:	Number of Liners: **0**			
Time In Time Out	Signature			
Comments:				
Destination Name:	Date			
Street Address:	Contact:			
City, State & Zip:	Phone:			
Time In Time Out	Signature			

ROLL OFF SECTION TWO

BOX NUMBER:	**DROP OFF**	**PICK-UP**	**LIVE LOAD**	**DUMP**
Site Name:	Condition of Roll Off Equipment		Damaged Fair	Good
Address:	Bottom Rail/Top Rail/Ribs			
City, State & Zip:	Tailgate/Hinges/Ratchets/Rollers			
Contact:	Tarp			
Phone:	Number of Bows: **0**			
Manifest/BOL Number:	Number of Liners: **0**			
Time In Time Out	Signature			
Comments:				
Destination Name:	Date:			
Street Address	Contact:			
City, State & Zip:	Phone:			
Time In Time Out	Signature			

CleanVenture/CycleChem

cvcc 210110

The Environmental Services Source

NON-HAZARDOUS SOLID WASTE

BILL OF LADING

Page 1 of 1

24 Hour Emergency Number (908) 354-0210

GENERATOR

Generator's Name and Mailing Address NYSDEC
625 BROADWAY
ALBANY, NY 12233

Generator's Phone ((518) 402-9775

Transporter 1 Company Name
CLEAN VENTURE INC.

Transporter 2 Company Name

Designated Facility Name and Site Address — 10. US EPA ID Number
Cycle Chem Inc.
217 South First Street
Elizabeth, NJ 07206 — NJD002200046

BOL

~~43 WILKS LANE~~ ~~495 Spa~~ 113 Wolf Hunt
PELHAM NY 10803

State Trans. ID-NJDEPE 16755
Decal No.- 08626
Transporter's Phone ((908) 355-5800
State Trans. ID-NJDEPE
Decal No.-
Transporter's Phone ( )
Facility's Phone ((908) 855-5800

	US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group)	Containers No.	Type	Total Quantity	Unit Wt/Vol	Waste No.
a.	Non-DOT CHEMICAL PROCESS SOLID Non-RCRA	6	DM	6,600	P	ID27
b.	Non-DOT CHEMICAL PROCESS LIQUID Non-RCRA	3	DM	165	G	ID72
c.						
d.						

J. Additional Descriptions for Materials Listed Above

a. c.

b. d.

CCI Generator # and Product Codes: 949707/947381/132789/280653 (1)PC01-2 SOIL CUTTINGS (2)REM002-3 WATER FROM WELL DEVELOPMENT & SAMPLING

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and are non-hazardous by USEPA & applicable state regulations.

PLACARDS REQUIRED — PLACARDS SUPPLIED ☐ YES ☐ NO- FURNISHED BY CARRIER

Printed/Typed Name	Signature	Month	Day	Year
X Claire Hunt	X Claire Hunt	3	28	12

TRANSPORTER

Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Walter Bilek	Walter Bilek	3	28	12

Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest.

Printed/Typed Name	Signature	Month	Day	Year
Andrew Carlson	Andrew Carlson	3	28	12

SIGNATURE AND INFORMATION MUST BE LEGIBLE ON ALL COPIES

COPY 1 - WHITE - GENERATOR — COPY 2 - PINK - TRANSPORTER — COPY 3 - BLUE - CycleChem — COPY 4 - CANARY - FACILITY

CleanVenture/CycleChem

CVCC 219196

NON-HAZARDOUS SOLID WASTE

The Environmental Services Source

BILL OF LADING

Page 1 of 1

24 Hour Emergency Number (908) 354-0210

Generator's Name and Mailing Address NYSDEC
625 BROADWAY
ALBANY, NY 12233
Generator's Phone ((518) 402-9775

BOL

113 WOLFS LANE
PELHAM NY 10803

Transporter 1 Company Name
CLEAN VENTURE INC.

State Trans. ID-NJDEPE 16755
Decal No.-
Transporter's Phone ((908)) 355-5800

Transporter 2 Company Name

State Trans. ID-NJDEPE
Decal No.-
Transporter's Phone ( )

Designated Facility Name and Site Address
Cycle Chem Inc.
217 South First Street
Elizabeth, NJ 07206

10. US EPA ID Number
NJD002220004 6

Facility's Phone ((908))355-5800

	US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group)	Containers No.	Containers Type	Total Quantity	Unit Wt/Vol	Waste No.
a.	Non-DOT CHEMICAL PROCESS SOLID Non-RCRA	8	DM	4000	P	ID27
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above

a. c.

b. d.

CCI Generator # and Product Codes: 949707/947381/139929/287789 (1)PC01-2 SOIL CUTTINGS

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and are non-hazardous by USEPA & applicable state regulations.

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO- FURNISHED BY CARRIER

TRANSPORTER

Printed/Typed Name	Signature	Month	Day	Year
X Brian Cacciappoli		10	02	12
Transporter 1 Acknowledgement of Receipt of Materials				
George Desruisseaux		10	02	12
Transporter 2 Acknowledgement of Receipt of Materials				
Printed/Typed Name	Signature	Month	Day	Year

FACILITY

Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest.

Printed/Typed Name	Signature	Month	Day	Year

SIGNATURE AND INFORMATION *MUST* BE LEGIBLE ON ALL COPIES

COPY 1 - WHITE - GENERATOR COPY 2 - PINK - TRANSPORTER COPY 3 - BLUE - CycleChem COPY 4 - CANARY - FACILITY

Clean Venture, Inc.
TRANSPORTATION TRIP TICKET

ST 7

TTEL: **TTEL-19154**
DATE: **10/2/2012**
Job Number: **TR6134**

10-2-12
[illegible]

Tractor #: [illegible] Trailer #:	Driver: [illegible] Start Date: End Date:
Start City & State:	End City & State:
Start Mileage:	End Mileage: Total Trip Miles:
Start Time:	End Time: Total Hours:
Customer Name: Clean Venture - Branch [illegible]	Reference Number: [illegible]
Carrier:	Broker: AECOM
Pick Up Location: Crystal Cleaners	Contact: **Celeste Foster**
Site Address: **113 Wolfs Lane**	Phone: **974-334-8327**
Site Address 2:	Signature: [signature]
City, State, Zip: **Pelham, Westchester Co, NY, 10803**	Time In: Time Out:

Project Description/Notes: **0900**

# Drums/Containers P/U Size & Quantity: 8	Supplies Delivered: / /
# of Gallons Picked Up (Tankers Only):	
Manifest/BOL Number: 219196	Helper: Yes___ No ___
Destination Name: Cycle Chem- NJ	Date:
Street Address: **217 S 1st St**	Contact:
Street Address:	Phone: **(908) 355- 5800**
City, State & Zip: **Elizabeth, NJ 07206**	Signature:
	Time In: Time Out:

ROLL OFF SECTION ONE

BOX NUMBER:	DROP OFF	PICK-UP	LIVE LOAD	DUMP
Site Name:	Condition of Roll Off Equipment	Damaged	Fair	Good
Address:	Bottom Rail/Top Rail/Ribs			
City, State & Zip:	Tailgate/Hinges/Ratchets/Rollers			
Contact:	Tarp			
Phone:	Number of Bows: [illegible]			
Manifest/BOL Number:	Number of Liners: [illegible]			
Time In Time Out	Signature			
Comments:				
Destination Name:	Date:			
Street Address:	Contact:			
City, State & Zip:	Phone:			
Time In Time Out	Signature			

ROLL OFF SECTION TWO

BOX NUMBER:	**DROP OFF**	**PICK-UP**	**LIVE LOAD**	**DUMP**
Site Name:	Condition of Roll Off Equipment	Damaged	Fair	Good
Address:	Bottom Rail/Top Rail/Ribs			
City, State & Zip:	Tailgate/Hinges/Ratchets/Rollers			
Contact:	Tarp			
Phone:	Number of Bows: **0**			
Manifest/BOL Number:	Number of Liners: **0**			
Time In Time Out	Signature			
Comments:				
Destination Name:	Date:			
Street Address:	Contact:			
City, State & Zip:	Phone:			
Time In Time Out	Signature			

VEOLIA
ENVIRONMENTAL SERVICES

Activity Report

JOB NO: **1688916000** WO NO: **1688916001**
BILL DOC NO **N421119704**
GENERATOR NO **593750** EPA ID: **NYCESQG**

BILL TO: **NYSDEC**
625 BROADWAY
ALBANY, NY 12233
(845) 425-4980

JOB SITE: **CRYSTAL CLEANER SITE**
NO. 3-60-053
113 WOLFS LANE
PELHAM, NY 10803
(845) 425-4980

CONTACT: **CLAIRE HUNT**

CONTACT: **CLAIRE HUNT**

MANIFEST NUMBER(S):
000647540VES, ZZ00253506

CUSTOMER P.O. NUMBER	PROJECT NUMBER	SHIP DATE	TERR.
		11/19/2012	**N09**

DESCRIPTION	# CONT.	CONT./CODE	QTY	UOM	PG/LN	WASTE AREA
Manifest # 000647540VES WIP 333470 / Approval SRRBASIC DRILLING GROUT WATER	18	551A2-DM	7200	P	1 / 1	
Manifest # ZZ00253506 WIP 333471 / Approval MARWATER-NH PURGE WATER	3	551A2-DM	1200	P	1 / 1	
Manifest # ZZ00253506 WIP 333472 / Approval ERC-LF SOIL CUTTINGS	6	551A2-DM	4800	P	1 / 2	
Manifest # ZZ00253506 WIP 735177 / Approval MAREMPTY EMPTY DRUMS FOR RECYCLING	2	551A2-DM	90	P	1 / 3	
11/19/2012 Manpwr.- MOBILIZATION FEE 26' STERLING P212556		1246	1@2	EACH		
11/19/2012 Manpwr.- TECHNICAL SUPERVISOR - 9:20 AM to 12:20 PM BEAU		936	1@3	HOUR		
11/19/2012 Misc. - STATE REGULATORY FEES		4419	2	EACH		

Veolia Environmental Solutions is permitted for and has capacity to accept waste listed above in container quantities.

VEOLIA
ENVIRONMENTAL SERVICES

Activity Report

JOB NO: **1688916000** WO NO: **1688916001**
BILL DOC NO **N421119704**
GENERATOR NO **593750** EPA ID: **NYCESQG**

BILL TO: **NYSDEC**
625 BROADWAY
ALBANY, NY 12233
(845) 425-4980

JOB SITE: **CRYSTAL CLEANER SITE**
NO. 3-60-053
113 WOLFS LANE
PELHAM, NY 10803
(845) 425-4980

CONTACT: **CLAIRE HUNT**

CONTACT: **CLAIRE HUNT**

MANIFEST NUMBER(S):
000647540VES, ZZ00253506

CUSTOMER P.O. NUMBER	PROJECT NUMBER	SHIP DATE	TERR.
		11/19/2012	N09

DESCRIPTION	# CONT.	CONT./CODE	QTY	UOM	PG/LN	WASTE AREA
11/19/2012 Misc. - FUEL & SECURITY SURCHARGE		3130	1	EACH		
11/19/2012 Mtrl. - RINGS AND LIDS (SET)		7	1	EACH		

Total Hours: 3
# of Containers: 29
Total Pounds: 13290

Comments:

Signature: _____

Veolia Environmental Solutions is permitted for and has capacity to accept waste listed above in container quantities.

FORM# VES-6

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
NYCESQQ	1	(877) 818-0087	000647540 VES

GENERATOR

5. Generator's Name and Mailing Address
NYSDEC
625 BROADWAY
ALBANY, NY 12233
Generator's Phone:

Generator's Site Address (if different than mailing address)
CRYSTAL CLEANER SITE
NO 3-60-053
113 WOLFE LANE
PELHAM, NY 10803

6. Transporter 1 Company Name: VEOLIA ES TECHNICAL SOLUTIONS — U.S. EPA ID Number: NJD083631369

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
VEOLIA ES TECHNICAL SOLUTIONS
L.L.C.
1 EDEN LANE
FLANDERS, NJ 07836
Facility's Phone: 973 347-2111
U.S. EPA ID Number: NJD980536993

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. UN3266, WASTE CORROSIVE LIQUID, BASIC, INORGANIC, n.o.s., (CALCIUM CARBONATE), 8, III, RQ (D002)	1	DM	7200	P	D002		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information: ER Service Contracted by VEOLIA

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: X — Signature: X — Month: 11 Day: 19 Year: 12

INTL

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month: 11 Day: 19 Year: 12

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

VEOLIA
ENVIRONMENTAL SERVICES

PACKING SUMMARY

Generator Number: 593750
CRYSTAL CLEANER SITE
NO. 3-60-053
PELHAM, NY 10803
Attn: CLAIRE HUNT
EPA ID: NYCESQG

Manifest Number: 000647540VES
Field System ID: N4
Work Order Number: 1688916001
Date Shipped: 11/19/2012

Container#: N4-1688916001-001 Waste Area: Manifest Page/Line: 01 / 1

WIP: 333470 DisposalCode: SRRBASIC PHY State: L

Date Accumulated: 11/19/2012 Gen Drum ID:

Shipping Name: UN3266, WASTE CORROSIVE LIQUID, BASIC, INORGANIC, n.o.s., (CALCIUM CARBONATE), 8, III, RQ (D002)

No. of Commons: 18 Outer Container: 55IA2-DM Inner Container:

Primary Waste Codes: D002,T PCB Serial #: OOS Date: / /

Total Cmns Wt: 7200 SIC: 7216 Source: G49 Form: W119 System: H141 Cubic Ft.: 7.50

Individual Common Weights: 400, 400, 400, 400, 400, 400, 400, 400, 400, 400, 400, 400, 400, 400, 400, 400, 400, 400 (POUNDS)

Units	Container Size	Net Weight	Chemical Name	EPA/State Codes
1	55 GAL		CALCIUM CARBONATE [1-5%] WATER [90-98%] DRILLING GROUT [1-5%]	D002, T

VEOLIA
ENVIRONMENTAL SERVICES

Land Disposal Restriction Notification Form

Generator Name **CRYSTAL CLEANER SITE**

EPA ID Number **NYCESQG** Manifest **000847540VES**

This notice is being provided in accordance with 40 CFR 268.7 to inform you that this shipment contains waste restricted from land disposal by the USEPA under the land disposal restriction program. Identified below for each container is the designation of the waste as a wastewater or non-wastewater, the Clean Water Act (CWA) permit status associated with the treatment/disposal facility, applicable waste codes and any corresponding subcategories, list of any F001-F005 solvent constituents that are present in the waste, and any underlying hazardous constituents (UHC) that are present.

This notice is also being provided in accordance with 6 NYCRR 376.1(g)(1).

Container Number: **N4-16889160001-001 (1/ 1)**

WIP / Approval Code:	**333470 / SRRBASIC**
Form Designation / CWA Status:	**Wastewater / Non-CWA**
Waste Codes (Subcategories):	**D002**
Constituents (F001 - F005):	**None**
UHCs Present:	**None**
Treatment Requirements:	**Restricted waste requires treatment to applicable standards.**
Additional Notices:	

I hearby certify that all information in this and associated land disposal restriction documents is complete and accurate to the best of my knowledge and information.

Signature _____

Title _____ Date 9/1/12

VEOLIA
ENVIRONMENTAL SERVICES

SHIPPING DOCUMENT

1. Generator ID Number: NYSDEC E S G O

2. Page 1 of: 1

3. Emergency Response Phone: (877) 518-9282

4. Shipping Document Tracking Number: ZZ 00253506

GENERATOR

5. Generator's Name and Mailing Address:
NYSDEC
625 BROADWAY
ALBANY, NY 12233

Generator's Phone:

Generator's Site Address (if different than mailing address):
CRYSTAL CLEANER SITE
NO. 3-60-053
113 WOLFS LANE
PELHAM, NY 10803

6. Transporter 1 Company Name: VEOLIA ES TECHNICAL SOLUTIONS

U.S. EPA ID Number: N J D 0 9 8 0 6 3 1 3 6 9

7. Transporter 2 Company Name:

U.S. EPA ID Number:

8. Designated Facility Name and Site Address:
VEOLIA ES TECHNICAL SOLUTIONS
L.L.C.
1 EDEN LANE
FLANDERS, NJ 07836

Facility's Phone: 973 347-7111

U.S. EPA ID Number: N J D 9 8 0 5 3 6 5 9 3

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Codes
	1. NON HAZARDOUS MATERIAL	3	D M	1200	P	ID72 T
	2. NON HAZARDOUS MATERIAL	6	D M	4800	P	ID27 L
	3. EMPTY DRUMS	2	D M	90	P	NONE R
	4.					

14. Special Handling Instructions and Additional Information
ER Service Contracted by VESTS

15. **GENERATOR S/OFFEROR S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: X

Signature: X

Month / Day / Year: 11 / 19 / 12

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Shipment

Transporter 1 Printed/Typed Name: [illegible]

Signature: [illegible]

Month / Day / Year: 11 / 19 / 12

Transporter 2 Printed/Typed Name:

Signature:

Month / Day / Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Shipping Document Tracking Number:

18b. Alternate Facility (or Generator)

U.S. EPA ID Number:

Facility's Phone:

18c. Signature of Alternate Facility (or Generator)

Month / Day / Year:

19. Report Management Method Codes (i.e., codes for treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of shipment except as noted in Item 18a

Printed/Typed Name:

Signature:

Month / Day / Year:

GENERATOR / SHIPPER'S INITIAL COPY

VEOLIA
ENVIRONMENTAL SERVICES

PACKING SUMMARY

Generator Number: 593750
CRYSTAL CLEANER SITE
NO. 3-60-053
PELHAM, NY 10803
Attn: CLAIRE HUNT
EPA ID: NYCESQG

Manifest Number: ZZ00253506
Field System ID: N4
Work Order Number: 1688916000
Date Shipped: 11/19/2012

Container#: N4-1688916000-002 Waste Area: Manifest Page/Line: 01 / 1

WIP: 333471 DisposalCode: MARWATER-NH PHY State: L

Date Accumulated: 11/19/2012 Gen Drum ID:

Shipping Name: NON HAZARDOUS MATERIAL

No. of Commons: 03 Outer Container: 551A2-DM Inner Container:

Primary Waste Codes: ID72,T PCB Serial #: OOS Date: / /

Total Cmns Wt: 1200 SIC: 7216 Source: G49 Form: W119 System: H141 Cubic Ft.: 7.50

Individual Common Weights: 400, 400, 400 (POUNDS)

Units	Container Size	Net Weight	Chemical Name	EPA/State Codes
1	55 GAL		PURGE WATER [100%]	ID72, T

Container#: N4-1688916000-003 Waste Area: Manifest Page/Line: 01 / 2

WIP: 333472 DisposalCode: ERC-LF PHY State: S

Date Accumulated: 11/19/2012 Gen Drum ID:

Shipping Name: NON HAZARDOUS MATERIAL

No. of Commons: 06 Outer Container: 551A2-DM Inner Container:

Primary Waste Codes: ID27,L PCB Serial #: OOS Date: / /

Total Cmns Wt: 4800 SIC: 7216 Source: G49 Form: W409 System: H141 Cubic Ft.: 7.50

Individual Common Weights: 800, 800, 800, 800, 800, 800 (POUNDS)

Units	Container Size	Net Weight	Chemical Name	EPA/State Codes
1	55 GAL		NON HAZ SOIL CUTTINGS [100%]	ID27, L

Container#: N4-1688916000-004 Waste Area: Manifest Page/Line: 01 / 3

WIP: 736177 DisposalCode: MAREMPTY PHY State: S

Date Accumulated: 11/19/2012 Gen Drum ID:

Shipping Name: EMPTY DRUMS

No. of Commons: 02 Outer Container: 551A2-DM Inner Container:

Primary Waste Codes: NONE,R PCB Serial #: OOS Date: / /

Total Cmns Wt: 90 SIC: 7216 Source: G09 Form: W307 System: H141 Cubic Ft.: 7.50

Individual Common Weights: 45, 45 (POUNDS)

Units	Container Size	Net Weight	Chemical Name	EPA/State Codes
1	55 GAL		EMPTY METAL AND PLASTIC DRUMS (55 GAL DRUM ONLY) [100%]	NONE, R

FORM# VES-6

Veolia ES Technical Solutions, L.L.C.

VEOLIA ENVIRONMENTAL SERVICES

VEOLIA

WASTESTREAM INFORMATION

☐ Recertification
VEOLIA LOCATION
☐ Invoice Address
☐ Manifest from - blank if direct

ADDRESS _____ CITY _____ ST _____

Disposal Code _____

VEOLIA TSDF requested _____ Technology requested _____ Generator No. 593750 Generator EPA ID NYCESQG

1. Generator Name CRYSTAL CLEANER SITE Generator State # _____

Address NO. 3-60-053 113 WOLFS LANE State Wastestream # _____

City PELHAM State NY Country US Zip 10803

SIC Code 7216 1st NAICS Code _____ 2nd NAICS Code _____ 3rd NAICS Code _____

Source G09 Origin _____ Form W307 System Type _____

2. Waste Name EMPTY DRUMS FOR RECYCLING Lab or Waste _____

3. Process Generating EMPTY DRUMS

4. Shipping Name EMPTY DRUMS

Hazard Class NO NE UN/NA Number NONE PkgGrp _____ Sub Hzds _____ RQ Amt (lbs.) 0

RQ Desc:	1.	2.
DOT Desc:	1.	2.

5. Waste Codes NONE, R

Wastewater (Y/N) N Sub-Category _____

6. Physical and chemical

pH Lo 0	Specific Gravity Lo 0	Flash Point (F) Lo 0	Water Solubility Lo 0	BTU/lb Lo 0
pH Hi 0	Specific Gravity Hi 0	Flash Point (F) Hi 0	Water Solubility Hi 0	BTU/lb Hi 0

Solids:

Suspended Lo 100	Settleable (%) Lo 100	Dissolved (%) Lo 100	% Ash Lo 0	Free Liquid (%) Lo 0
Suspended Hi 100	Settleable (%) Hi 100	Dissolved (%) Hi 100	% Ash Hi 0	Free Liquid (%) Hi 0

Physical State:	Hazardous	Layer C - Single-Phase
Physical State 1 S - solid	Haz. Char. 1 _____	Top D - solid
Physical State 2 _____	Haz. Char. 2 _____	Middle _____
Physical State 3 _____	Haz. Char. 3 _____	Bottom _____

Halogens:

Bromine (%) Lo _____	Chlorine (%) Lo _____	Fluorine (%) Lo _____	Iodine (%) Lo _____	Color 1 VAR
Bromine (%) Hi _____	Chlorine (%) Hi _____	Fluorine (%) Hi _____	Iodine (%) Hi _____	Color 2 _____
				Intensity _____

Odor Intensity A - none

Description _____

Contains Used Oil? No HOC < 1000 ppm ___ HOC > 1000 ppm ___

WIP NO. 735177

FORM# VES-6

7. Chemical Composition:

Veolia
ENVIRONMENTAL SERVICES

	Low	High	%/PPM/PPB
PLASTIC DRUMS (55 GAL DRUM ONLY)	100	100	%

Other	Yes/N		
8. Is the wastestream being imported into the USA?	No	PCB	
9. Does the wastestream contain PCBs regulated by 40 CPR?	No	concentration:	0.00 PPM
10.Is the wastestream subject to the Marine Pollutant Regulations?	No		
11.Is the wastestream subject to Benzene NESHAP?	No	Benzene	
If Yes, is the wastestream subject to Notification and Control Reqs?	No	concentration:	0.00 PPM
Does it contain >= 10% water?	No	TAB at Facility:	0.00 Mg/Yr
12.Is the wastestream subject to RCRA subpart CC controls?	No	Vol. Org. Conc.,	
CC approved analytical method? General Knowledge?		if known:	0.00 PPMW
13.Is the wastestream from a CERCLA or state mandated cleanup?	No		

14. Reclaim Composition: There are no reclaim components

15.Container Information (Identify UN container marking if

Packaging: Bulk _____ Type/Size _____ Bulk Liquid: _____ Type/Size _____ Drum: _____ Type/Size _____

Other: _____

Shipping Frequency: Units _____ Per Month _____ Quarter _____ Year _____ One Time _____ Other _____

16.Additional Information:

Is analytical or an MSDS available that describes the waste? Yes _____ No _____ If Yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent metho All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

NAME (Print or Type)	PHONE	DATE
SIGNATURE	TITLE	

FACILITY

If approved for management, Veolia has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED? No DESCRIBE: _____

WIP NO. 735177

VEOLIA
ENVIRONMENTAL SERVICES

SHIPPING DOCUMENT

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Shipping Document Tracking Number
NYCESQG	1	(877) 818-0067	ZZ 00490050

GENERATOR

5. Generator's Name and Mailing Address
NYSDEC
625 BROADWAY
ALBANY, NY 12233
Generator's Phone:

Generator's Site Address (if different than mailing address)
CRYSTAL CLEANER SITE
NO. 3-60-053
115 WOLFS LANE
PELHAM, NY 10803

6. Transporter 1 Company Name: VEOLIA ES TECHNICAL SOLUTIONS — U.S. EPA ID Number: NJD980631569

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: VEOLIA ES TECHNICAL SOLUTIONS L.L.C.
1 EDEN LANE
FLANDERS, NJ 07836
Facility's Phone: 973 347-7111
U.S. EPA ID Number: NJD980536593

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Codes
	1. NON HAZARDOUS MATERIAL	1	DM	200	P	ID72
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information: ER Service Contracted by VESTS

15. **GENERATOR S/OFFEROR S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Dave Hart for NYSDEC — Signature — Month: 06 — Day: 17 — Year: 14

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Shipment

Transporter 1 Printed/Typed Name: Tim Soja — Signature: Tim Soja — Month: 06 — Day: 17 — Year: 14

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Shipping Document Tracking Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Report Management Method Codes (i.e., codes for treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of shipment except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

GENERATOR / SHIPPER'S INITIAL COPY

VEOLIA
ENVIRONMENTAL SERVICES

PACKING SUMMARY

Generator Number: 593750
CRYSTAL CLEANER SITE
NO. 3-60-053
PELHAM, NY 10803
Attn: CLAIRE HUNT
EPA ID:NYCESQG

Manifest Number: ZZ00490050
Field System ID: ZH
Work Order Number: 2025643000
Date Shipped: 06/17/2014

Container#: ZH-2025643000-001 Waste Area: Manifest Page/Line: 01 / 1

WP: 333471 DisposalCode: MARWATER-NH PHY State: L

Date Accumulated: 06/16/2014 Gen Drum ID:

Shipping Name: NON HAZARDOUS MATERIAL

No. of Commons: 01 Outer Container: 55A2-DM Inner Container:

Primary Waste Codes: ID72 PCB Serial #: OOS Date: / /

Total Cmns Wt: 400 SIC: 7216 Source: G49 Form: W119 System: H141 Cubic Ft.: 7.50

Individual Common Weights: 1 @ 400 (POUNDS)

Units	Container Size	Net Weight	Chemical Name	EPA/State Codes
1	55 GAL		PURGE WATER (100%)	ID72

FORM# VES-6

VEOLIA
ENVIRONMENTAL SERVICES

Activity Report

JOB NO: 2025643000 WO NO: 2025643000
BILL DOC NO ZH40616960
GENERATOR NO 593750 EPA ID: NYCESQG

BILL TO: AECOM
100 RED SCHOOLHOUSE ROAD
SUITE B-1
CHESTNUT RIDGE, NY 10977-6715
(845) 425-4980

JOB SITE: CRYSTAL CLEANER SITE
NO. 3-60-053
113 WOLFS LANE
PELHAM, NY 10803
(845) 425-4980

CONTACT: CLAIRE HUNT

CONTACT: CLAIRE HUNT

MANIFEST NUMBER(S):
ZZ00490050

CUSTOMER P.O. NUMBER	PROJECT NUMBER	SHIP DATE	TERR.
		06/17/2014	N09

DESCRIPTION	# CONT.	CONT./CODE	QTY	UOM	PG/LN	WASTE AREA
Manifest # ZZ00490050 WP 333471 / Approval MARWATER-NH PURGE WATER	1	55IA2-DM	~~400~~ 200	P	1 / 1	
06/17/2014 Manpwr.- MOBILIZATION FEE		1246	1@1	EACH		
06/17/2014 Misc. - FUEL & SECURITY SURCHARGE		3130	1	EACH		
06/17/2014 Misc. - STATE REGULATORY FEES		4419	1	EACH		

Total Hours: 0
# of Containers: 1
Total Pounds: 400

Comments:

Signature: Claire Hunt

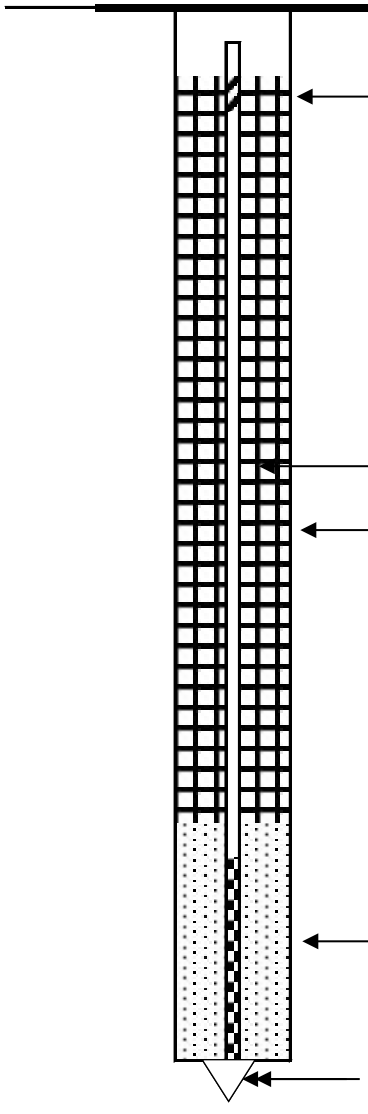
Print Name: Claire Hunt (Aecom for NYSDEC)

Veolia Environmental Solutions is permitted for and has capacity to accept waste listed above in container quantities.

FORM# VES-6

SOIL VAPOR CONSTRUCTION LOG **Boring No. SV-07**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech	
Surface Elevation: NA	Driller: Tony	
	AECOM Rep.: Celeste Foster	
Datum: NA	Date of Construction: June 23, 2011	



Ground Surface 0.0 ft

Surface Seal Depth -0.5 ft bgs

Surface Seal Material benonite

Inert Sampling Tube Material 1/4" ID Teflon lined Poly

Bentonite Seal -6.0 ft to -0.5 ft bgs

Top of the ¼" ID x 8" Long Stainless Steel Screen -7 1/3 ft bgs

Porous Backfill Material sand

Porous Backfill Material -8.0 ft to -6.0 ft bgs

Bottom of Borehole at -8.0 ft bgs

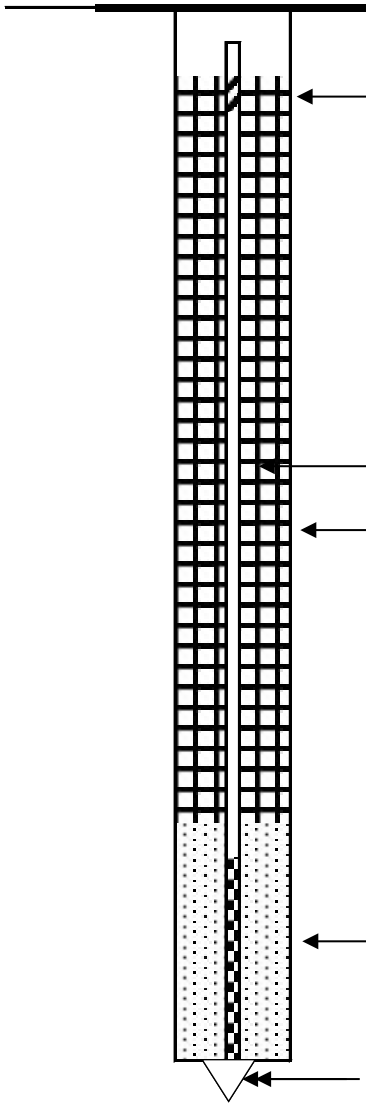
Expendable Anchor Point Connected to Implant with an O-ring

Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

SOIL VAPOR CONSTRUCTION LOG **Boring No. SV-07**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech	
Surface Elevation: NA	Driller: Tony	
	AECOM Rep.: Celeste Foster	
Datum: NA	Date of Construction: June 23, 2011	



Ground Surface 0.0 ft

Surface Seal Depth -0.67 ft bgs

Surface Seal Material benonite

Inert Sampling Tube Material 1/4" ID Teflon lined Poly

Bentonite Seal -6.0 ft to -0.67 ft bgs

Top of the ¼" ID x 8" Long Stainless Steel Screen -7.3 ft bgs

Porous Backfill Material sand

Porous Backfill Material -8.0 ft to -6.0 ft bgs

Bottom of Borehole at -8.0 ft bgs

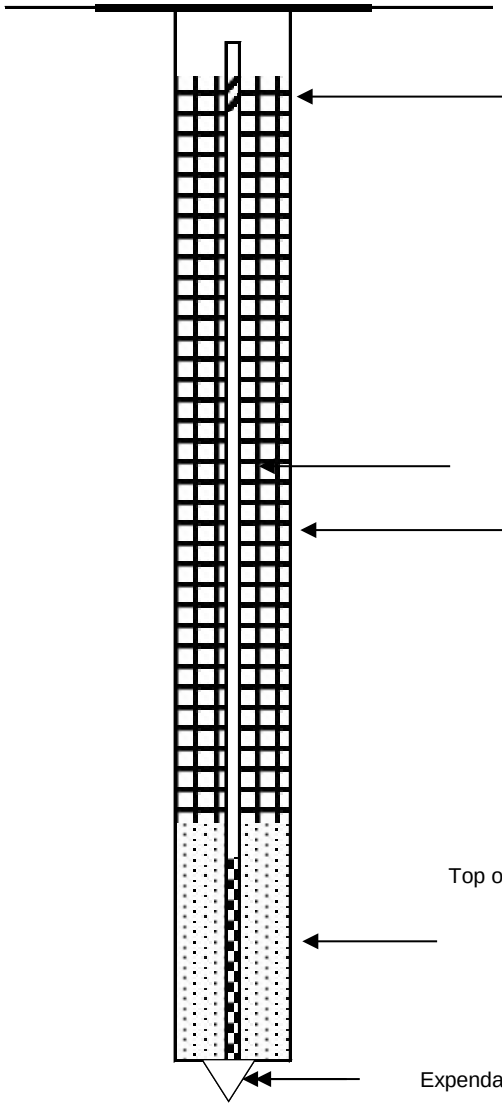
Expendable Anchor Point Connected to Implant with an O-ring

Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

SOIL VAPOR CONSTRUCTION LOG **Boring No. SV-09**

Project: Crystal Cleaners	Location: Pelham, NY	Page 1 of 1
AECOM Project No.: 60188614	Subcontractor: Aztech	
Surface Elevation: NA	Driller: Tony	
	AECOM Rep.: Celeste Foster	
Datum: NA	Date of Construction: June 24, 2011	



Ground Surface 0.0 ft

Surface Seal Depth -0.5 ft bgs

Surface Seal Material benonite

Inert Sampling Tube Material 1/4" ID Teflon lined Poly

Bentonite Seal -3.5 ft to -0.5 ft bgs

Top of the ¼" ID x 8" Long Stainless Steel Screen -4.3 ft bgs

Porous Backfill Material sand

Porous Backfill Material -5.0 ft to -3.5 ft bgs

Bottom of Borehole at -5.0 ft bgs

Expendable Anchor Point Connected to Implant with an O-ring

Note: All measurements based on ground surface at 0.0 feet. (+) above grade. (-) below grade.

(NOT TO SCALE)

Summa Canister Sampling Field Data Sheet

Site: Crystal Cleaners (60188614)
Samplers: Celeste Foster (AECOM)
Date: 7/8/2011

Sample#	SV-7	SV-8	SV-9	OA-1	OA-51
Location	ROW Manning Circle	ROW Manning Circle	ROW Sparks Ave	ROW Manning Circle	←
Summa Canister ID	2552	5096	4294	4286	2576
Flow Controler ID	3132	3445	4034	2617	4043
Additional Tubing Added	Yes	Yes	Yes	No	←
How much (ft)?	3	3	3	NA	←
Purge Time (Start)	1028	944	1133	NA	←
Purge Time (Stop)	1038	950	1143	NA	←
Total Purge Time (min)	10	6	10	NA	←
Purge Volume (L)	1	1	1	NA	←
Purge PID (ppm)	3.6	2.3	2.4	NA	←
Pressure Gauge - Before Sampling (" Hg)	-30+	-30+	-30+	-29	-30+
Sample Time (Start)	11:58	11:59	11:55	12:00	12:01
Sample Time (Stop)	13:58	13:59	13:55	13:59	14:00
Total Sample Time (min)	120	120	120	119	119
Pressure Gauge - After Sampling (" Hg)	-6	-6	-8	-4	-7
Background PID (ppm)	0	←	←	←	←
Sample Volume	6L	6L	6L	6L	6L
Canitster Pressure Went to Ambient Pressure?	No	No	No	No	No
Tracer Gas Results	50 ppm/74.6%	75 ppm/70.2%	0/80.2%	NA	NA
Weather 24 hours before and during sampling	Scattered showers, 80s				
General Comments					
1 canister and flow controller sent back unused					

Summa Canister Sampling Field Data Sheet

Site: Crystal Cleaners

Samplers: Rita Papagian (AECOM), Jim Christopher (YEC)						
Date: 2/25/2011						
Sample#	B1-SS1-022511	B1-IA1-022511	B1-DUP-022511	B1-IA2-022511	B1-AA1-022511	
Structure	B01	B01	B01	B01	B01	
Location	Subslab	Basement Indoor Air	Duplicated Basement Air	First Floor Indoor Air	Outdoor Air	
Summa Canister ID	7056	7198	3487		3145	
Flow Controler ID	3931	3059	3988		3193	
Additional Tubing Added How much (ft)?	3'	N	N	N	N	
Purge Time (Start)	10:30	NA	NA	NA	NA	
Purge Time (Stop)	10:35	NA	NA	NA	NA	
Total Purge Time (min)	5	NA	NA	NA	NA	
Purge Volume (L)	1	NA	NA	NA	NA	
Purge PID (ppm)	0.6	NA	NA	NA	NA	
Pressure Gauge - Before Sampling (" Hg)	-30	-28	-30	-30	-27.5	
Sample Time (Start)	10:55	10:57	10:56	11:00	11:25	
Sample Time (Stop)	20:05	18:03	19:00		18:00	
Total Sample Time (min)	550	426	484		395	
Pressure Gauge - After Sampling (" Hg)	-8	-8	-10		-25.5	
Background PID (ppm)	0	0	0	0	0	
Sample Volume (L)	6	6	6	6	6	
Canitster Pressure Went to Ambient Pressure?	N	N	N	N	N	
Weather 24 hours before and during sampling	Rainy, humid					
General Comments						

Summa Canister Sampling Field Data Sheet

Site: Crystal Cleaners

Samplers: Rita Papagian (AECOM), Jim Christopher (YEC)						
Date: 2/25/11						
Sample#	B2-IA1-022511					
Structure	B02					
Location	Basement Indoor Air					
Summa Canister ID	6905					
Flow Controler ID	5181					
Additional Tubing Added How much (ft)?	N					
Purge Time (Start)	NA					
Purge Time (Stop)	NA					
Total Purge Time (min)	NA					
Purge Volume (L)	NA					
Purge PID (ppm)	NA					
Pressure Gauge - Before Sampling (" Hg)	-29					
Sample Time (Start)	11:40					
Sample Time (Stop)	15:55					
Total Sample Time (min)	255					
Pressure Gauge - After Sampling (" Hg)	-26					
Background PID (ppm)	0					
Sample Volume (L)	6					
Canitster Pressure Went to Ambient Pressure?	N					
Weather 24 hours before and during sampling	Rainy, humid					
General Comments: Smelled of film & printing material in room. Old library smell.						

Summa Canister Sampling Field Data Sheet

Site: Crystal Cleaners

Samplers: Rita Papagian (AECOM), Jim Christopher (YEC)						
Date: 2/25/11						
Sample#	B3-IA1-022511					
Structure	B03					
Location	Basement Indoor Air					
Summa Canister ID	4557					
Flow Controler ID	4050					
Additional Tubing Added How much (ft)?	N					
Purge Time (Start)	NA					
Purge Time (Stop)	NA					
Total Purge Time (min)	NA					
Purge Volume (L)	NA					
Purge PID (ppm)	NA					
Pressure Gauge - Before Sampling (" Hg)	-30					
Sample Time (Start)	11:50					
Sample Time (Stop)	17:00					
Total Sample Time (min)	310					
Pressure Gauge - After Sampling (" Hg)	-15.5					
Background PID (ppm)	0					
Sample Volume (L)	6					
Canitster Pressure Went to Ambient Pressure?	N					
Weather 24 hours before and during sampling	Rainy, humid					
General Comments						

Summa Canister Sampling Field Data Sheet

Site: Crystal Cleaners

Samplers: Celeste Foster and Kevin Seise (AECOM)						
Date: 02/04/2012						
Sample#	B04-0A1	B04-SS1	B04-IA1	B04-IA51		
Structure	B04	B04	B04	B04		
Location	Outdoor ambient	Sub Slab	Basement Indoor Air	Duplicate Indoor Air		
Summa Canister ID	4336	4327	4083	4777		
Flow Controler ID	3650	2808	4195	4531		
Additional Tubing Added How much (ft)?	N	3	N	N		
Purge Time (Start)	NA	8:30	NA	NA		
Purge Time (Stop)	NA	8:40	NA	NA		
Total Purge Time (min)	NA	10	NA	NA		
Purge Volume (L)	NA	1	NA	NA		
Purge PID (ppm)	NA	0.0	NA	NA		
Pressure Gauge - Before Sampling (" Hg)	-29	-30	-30	-30+		
Sample Time (Start)	9:32	9:30	9:23	9:24		
Sample Time (Stop)	9:12	8:54	8:48	8:49		
Total Sample Time (min)	1420	1404	1405	1405		
Pressure Gauge - After Sampling (" Hg)	-3.5	-8	-8	-8		
Background PID (ppm)	0	0	0	0		
Sample Volume (L)	6	6	6	6		
Canitster Pressure Went to Ambient Pressure?	N	N	N	N		
Weather 24 hours before and during sampling	clear, 30-40 F					
General Comments		tracer gas 0ppm				

Summa Canister Sampling Field Data Sheet

Site: Crystal Cleaners

Samplers: Celeste Foster (AECOM), Fernando P. (YEC)						
Date: 2/11/2012						
Sample#	B05-SS1-20120211	B05-IA1-20120211	B05-IA51-20120211	B05-OA1-20120211		
Structure	B05	B05	B05	B05		
Location	Basement Subslab	Basement Indoor Air	Duplicate Indoor Air	Outdoor ambient		
Summa Canister ID	5057	3758	4304	2791		
Flow Controler ID	4941	5213	3773	4935		
Additional Tubing Added How much (ft)?	3	N	N	N		
Purge Time (Start)	9:14	NA	NA	NA		
Purge Time (Stop)	9:24	NA	NA	NA		
Total Purge Time (min)	10	NA	NA	NA		
Purge Volume (L)	1	NA	NA	NA		
Purge PID (ppm)	0.0	NA	NA	NA		
Pressure Gauge - Before Sampling (" Hg)	-27	-29	-30	-30		
Sample Time (Start)	10:22	10:20	10:21	10:24		
Sample Time (Stop)	9:40	9:42	9:41	10:00		
Total Sample Time (min)	1398	1402	1400	1416		
Pressure Gauge - After Sampling (" Hg)	-4	-7.5	-4	-8		
Background PID (ppm)	0	0	0	0		
Sample Volume (L)	6	6	6	6		
Canitster Pressure Went to Ambient Pressure?	N	N	N	N		
Weather 24 hours before and during sampling	30's snowy, slight wind					
General Comments:	tracer gas 675 ppm/64.3%					

Summa Canister Sampling Field Data Sheet

Site: Crystal Cleaners

Samplers: Kevin Seise (AECOM)						
Date: 4/13/12						
Sample#	B06-SS1	B06-IA1	B06-IA2	B06-AA1		
Structure	B06	B06	B06	B06		
Location	Basement Subslab	Basement Indoor Air	Duplicate Indoor	Outdoor ambient		
Summa Canister ID	4551	4362	3429	3267		
Flow Controler ID	4741	2942	3443	4746		
Additional Tubing Added How much (ft)?	2	N	N	N		
Purge Time (Start)	9:40	NA	NA	NA		
Purge Time (Stop)	9:45	NA	NA	NA		
Total Purge Time (min)	5	NA	NA	NA		
Purge Volume (L)	0.5	NA	NA	NA		
Purge PID (ppm)	0.0	NA	NA	NA		
Pressure Gauge - Before Sampling (" Hg)	-30	-30	-30	-30		
Sample Time (Start)	9:50	9:51	9:52	9:58		
Sample Time (Stop)	8:26	8:24	8:25	8:23		
Total Sample Time (min)	1356	1353	1353	1345		
Pressure Gauge - After Sampling (" Hg)	-8	-8	-12	-7		
Background PID (ppm)	0	0	0	0		
Sample Volume (L)	6	6	6	6		
Canitster Pressure Went to Ambient Pressure?	N	N	N	N		
Weather 24 hours before and during sampling	50-65 F					
General Comments						

Summa Canister Sampling Field Data Sheet

Site: Crystal Cleaners

Samplers: Kevin Seise (AECOM)						
Date: 4/16/12						
Sample#	B07-SS1	B07-IA1	B07-AA1			
Structure	B07	B07	B07			
Location	Sub Slab	Indoor Air	Outdoor ambient			
Summa Canister ID	4144	3425	3515			
Flow Controler ID	4733	4202	3952			
Additional Tubing Added How much (ft)?	2	N	N			
Purge Time (Start)	11:10	NA	NA			
Purge Time (Stop)	11:15	NA	NA			
Total Purge Time (min)	5	NA	NA			
Purge Volume (L)	2	NA	NA			
Purge PID (ppm)	0.0	NA	NA			
Pressure Gauge - Before Sampling (" Hg)	-30	-30	-26			
Sample Time (Start)	11:16	11:17	11:25			
Sample Time (Stop)	12:23	12:24	11:59			
Total Sample Time (min)	1507	1507	1474			
Pressure Gauge - After Sampling (" Hg)	-7	-6	-3			
Background PID (ppm)	0	0	0			
Sample Volume (L)	6	6	6			
Canitster Pressure Went to Ambient Pressure?	N	N	N			
Weather 24 hours before and during sampling	Sunny, 65-85 F					
General Comments						

Summa Canister Sampling Field Data Sheet

Site: Crystal Cleaners

Samplers: Celeste Foster (AECOM)						
Date: 4/1/14						
Sample#	B08-IA1	B08-OA1				
Structure	B08	B08				
Location	Sub Slab	Outdoor Air				
Summa Canister ID	4928	4082				
Flow Controler ID	3960	4180				
Additional Tubing Added How much (ft)?	2	N				
Purge Time (Start)	NA	NA				
Purge Time (Stop)	NA	NA				
Total Purge Time (min)	NA	NA				
Purge Volume (L)	NA	NA				
Purge PID (ppm)	NA	NA				
Pressure Gauge - Before Sampling (" Hg)	-30	-30				
Sample Time (Start)	15:15	15:20				
Sample Time (Stop)	15:33	15:36				
Total Sample Time (min)	1458	1456				
Pressure Gauge - After Sampling (" Hg)	-6	-6				
Background PID (ppm)	NA	NA				
Sample Volume (L)	6	6				
Canitster Pressure Went to Ambient Pressure?	N	N				
Weather 24 hours before and during sampling	No precipitation, approx. 50 F					
General Comments						

Summa Canister Sampling Field Data Sheet

Site: Crystal Cleaners

Samplers: Celeste Foster (AECOM)						
Date: 4/1/14						
Sample#	B09-IA1	B09-IA51	B09-SS1	B09-OA1		
Structure	B09	B09	B09	B09		
Location	Indoor Air	Indoor Air	Sub Slab	Outdoor Air		
Summa Canister ID	4144	3425	3515	4088		
Flow Controler ID	4733	4202	3952	2840		
Additional Tubing Added How much (ft)?	N	N	3	N		
Purge Time (Start)	NA	NA	1640	NA		
Purge Time (Stop)	NA	NA	1645	NA		
Total Purge Time (min)	NA	NA	5	NA		
Purge Volume (L)	NA	NA	1	NA		
Purge PID (ppm)	NA	NA	2.7	NA		
Pressure Gauge - Before Sampling (" Hg)	-30	-30	-30	-30		
Sample Time (Start)	16:45	16:46	16:47	17:04		
Sample Time (Stop)	16:07	16:08	16:12	16:30		
Total Sample Time (min)	1402	1402	1405	1406		
Pressure Gauge - After Sampling (" Hg)	-1	-8	-15	-6		
Background PID (ppm)	NA	NA	NA	NA		
Sample Volume (L)	6	6	6	6		
Canitster Pressure Went to Ambient Pressure?	N	N	N	N		
Weather 24 hours before and during sampling	No precipitation, approx. 50 F					
General Comments						

Indoor Air Sampling

To avoid potential interferences and dilution effects, occupants should make a reasonable effort to avoid the following for 24 hours prior to and during sampling:

- Opening any windows, fireplace dampers, openings or vents;
- Operating ventilation fans unless special arrangements are made;
- Smoking in the building;
- Painting;
- Using a wood stove, fireplace or other auxiliary heating equipment (e.g., kerosene heater);
- Operating or storing automobile in an attached garage;
- Allowing containers of gasoline or oil to remain within the house or garage area, except for fuel oil tanks;
- Cleaning, waxing or polishing furniture, floors or other woodwork with petroleum- or oil-based products;
- Using air fresheners, scented candles or odor eliminators;
- Engaging in any hobbies that use materials containing volatile chemicals;
- Using cosmetics including hairspray, nail polish, nail polish removers, perfume/cologne, etc.;
- Lawn mowing, paving with asphalt, or snow blowing;
- Applying pesticides;
- Using building repair or maintenance products, such as caulk or roofing tar; and
- Bringing freshly dry-cleaned clothing or furnishings into the building.

Appendix B

Photo Log

Overburden Well Installation at MW-C13

Investigation Derived Waste Drum Staging on Village of Pelham Department of Public Works Property

Rock Core from MW-C09

Rock Core Bit

Appendix C

Geophysical Survey Reports

GEOPHYSICAL INVESTIGATION REPORT

PERFORMED AT:

113 Wolfs Lane
Pelham, NY 10803

PREPARED FOR:

Claire Hunt
AECOM
100 Red Schoolhouse Road
Chestnut Ridge, NY 10977

PREPARED BY:

Shan Wei
Senior Geophysicist
Enviroprobe Service, Inc.
908 N Lenola Road
Moorestown, NJ 08057
Phone: (856) 858-8584
Toll Free: (800) 596-7472

July 8, 2011

1.0 INTRODUCTION

Enviroprobe Service, Inc. (Enviroprobe) is an environmental investigation services firm which provides monitoring well installation (HSA), Geoprobe (DPT) drilling services and Environmental & Engineering Geophysics (EEG) services to the environmental consulting and engineering community.

Enviroprobe conducted a subsurface geophysical investigation at the subject property within client-specified areas of concern. Due to conditions and objectives, the investigation utilized a Mala Geoscience Ramac X3M cart-mounted Ground Penetrating Radar (GPR) unit with a 250 MHz antenna, a Radiodetection receiver and a Radiodetection transmitter.

GPR is a geophysical method that has been developed over the past thirty years for shallow, high-resolution, subsurface investigations of the earth. GPR uses high frequency pulsed electromagnetic waves (generally 10 MHz to 2,000 MHz) to acquire subsurface information. An EM wave is propagated downward into the ground by a transmitting antenna. Where abrupt changes in electrical properties occur in the subsurface, a portion of the energy is reflected back to the surface. This reflected wave is detected by a receiver antenna and transmitted to a control unit for real time processing and display. The penetration depth of the GPR unit varies from several inches to tens of feet according to site-specific conditions. The penetration depth decreases with increased soil conductivity. The penetration depth is the greatest in ice, dry sands, and fine gravels. Clayey, highly saline or saturated soils, areas covered by concrete, foundry slag, or other highly conductive materials greatly reduce GPR penetration. GPR is a method commonly used for environmental, engineering, archaeological, and other shallow investigations.

The Radiodetection (RD) transmitter and receiver are commonly used for pipe and cable locating. The multi-frequency transmitter can be directly connected, clamped, or used to induce a signal in a target line while the multi-frequency receiver is used to measure the signal from energized lines.

2.0 SCOPE OF WORK

On June 20, 2011, a geophysicist from Enviroprobe Service Inc. was mobilized to the subject property to perform a geophysical investigation. The purpose of the investigation was to designate underground conduits/utilities and investigate proposed soil boring/monitoring well locations within client-specified areas of the property. The survey areas were located at the rear of the buildings on Wolfs Lane and on the sidewalks of Sparks Ave and Manning Circle. The ground surface of the survey area consisted of paved, concrete, landscaped, and natural soil surfaces.

3.0 SURVEY RESULTS

The utility survey was conducted using a cart-mounted GPR unit and a RD unit. The RD unit was used to trace common utilities from sources in and around the survey area. The RD receiver was also used in the passive mode to search for live underground electrical power cables and other utilities emitting 60Hz electromagnetic signals. When possible, the location of utilities was confirmed with the GPR. The GPR survey was also performed in a grid pattern in at least two orthogonal directions to search for evident and non-evident underground utilities. Whenever possible and necessary, the manhole covers in and around the survey area were opened and the manholes were visually inspected for underground utilities. Designated utilities were marked on-site with spray paint. The geophysical findings were discussed with the client representative on-site, and the proposed borings/well locations were determined based on the findings and the discussion. Each surveyed area was marked as a rectangular box with white paint on-site.

4.0 LIMITATIONS

Due to surface conditions and subsurface content, the GPR penetration depth was estimated as about from 2 to 4 feet in the majority of the survey area. This penetration was reduced in areas of concrete cover.

Due to the dielectric properties of the subsurface, plastic polymer and fiberglass utilities may not have been detected.

The underground utility survey was conducted in compliance with the industry standard of care guidelines found in ASCE 38-02 (Level B).

5.0 WARRANTIES

The field observations and measurements reported herein are considered sufficient in detail and scope for this project. Enviroprobe Service, Inc. warrants that the findings and conclusions contained herein have been promulgated in accordance with generally accepted environmental engineering methods. There is a possibility that conditions may exist which could not be identified within the scope of this project and were not apparent during the site activities performed for this project.

Enviroprobe represents that the services were performed in a manner consistent with that level of care and skill ordinarily exercised by environmental consultants under similar circumstances. No other representations to Client, express or implied, and no warranty or guarantee is included or intended in this agreement, or in any report, document, or otherwise.

Enviroprobe Service, Inc. believes that the information provided in this report is reliable. However, Enviroprobe cannot warrant or guarantee that the information provided by others is complete or accurate. No other warranties or guarantees are implied or expressed.

GPR data is subject to signal anomalies and operator interpretation. The GPR data is intended to provide the locations of areas of concern requiring additional investigation or the approximate location of underground structures and utilities. Great care must be utilized when excavating and/or drilling around underground structures and utilities since GPR data can only be used for estimation purposes and GPR data is subject to misinterpretation. Enviroprobe can not guarantee that utilities, post-tension cables, and/or rebar will not be incurred during drilling, cutting, coring, or excavating activities.

This report was prepared pursuant to the contract Enviroprobe has with the Client. That contractual relationship included an exchange of information about the property that was unique and between Enviroprobe and its client and serves as the basis upon which this report was prepared. Because of the importance of the communication between Enviroprobe and its client, reliance or any use of this report by anyone other than the Client, for whom it was prepared, is prohibited and therefore not foreseeable to Enviroprobe.

Reliance or use by any such third party without explicit authorization in the report does not make said third party a third party beneficiary to Enviroprobe contract with the Client. Any such unauthorized reliance on or use of this report, including any of its information or conclusions, will be at the third party's risk. For the same reasons, no warranties or representations, expressed or implied in this report, are made to any such third party.

ENVIROPROBE SERVICE INCORPORATED

GEOPHYSICAL INVESTIGATION REPORT

PERFORMED AT:

Manning Drive and Sparks Avenue
Pelham, NY 10803

PREPARED FOR:

Celeste Foster
AECOM
100 Red Schoolhouse Road Suite B-1
Chestnut Ridge, NY 10977-6715

PREPARED BY:

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September 24, 2012

1.0 INTRODUCTION

Enviroprobe Service, Inc. (Enviroprobe) is an environmental investigation services firm which provides monitoring well installation (HSA), Geoprobe (DPT) drilling services and Environmental & Engineering Geophysics (EEG) services to the environmental consulting and engineering community.

Enviroprobe conducted a subsurface geophysical investigation at the subject property within client-specified areas of concern. Due to conditions and objectives, the investigation utilized a Sensors and Software cart-mounted Ground Penetrating Radar (GPR) unit with a 250 MHz antenna, a Radiodetection 7000T3 multi-frequency transmitter, a Radiodetection 7000 receiver, and a Fisher TW-6 metallic locator.

Ground penetrating radar (commonly called GPR) is a geophysical method that has been developed over the past thirty years for shallow, high-resolution, subsurface investigations of the earth. GPR uses high frequency pulsed electromagnetic waves (generally 10 MHz to 2,000 MHz) to acquire subsurface information. An EM wave is propagated downward into the ground by a transmitting antenna. Where abrupt changes in electrical properties occur in the subsurface, a portion of the energy is reflected back to the surface. This reflected wave is detected by a receiver antenna and transmitted to a control unit for real time processing and display. The penetration depth of the Sensors and Software GPR unit varies from several inches to tens of feet according to site-specific conditions. The penetration depth decreases with increased soil conductivity. The penetration depth is the greatest in ice, dry sands, and fine gravels. Clayey, highly saline or saturated soils, areas covered by concrete, foundry slag, or other highly conductive materials greatly reduce GPR penetration. GPR is a method that is commonly used for environmental, engineering, archaeological, and other shallow investigations.

The Radiodetection (RD) transmitter and receiver are commonly used for pipe and cable locating. The multi-frequency transmitter can be directly connected, clamped, or used to induce a signal in a target line while the multi-frequency receiver is used to measure the signal from energized lines.

The Fisher TW-6 metallic locator is designed to find pipes, cables and other metallic objects such as underground storage tanks (USTs). The TW-6 transmitter generates an electromagnetic field that induces electrical currents in the subsurface. These currents produce a secondary electromagnetic field that is measured by the TW-6 receiver. One surveyor can carry both the transmitter and receiver together to search for underground metallic objects, although the TW-6 response can also be affected by the electrical properties of non-metallic materials in the subsurface.

2.0 SCOPE OF WORK

On September 24, 2012, a geophysical technician from Enviroprobe Service Inc. was mobilized to the subject property to perform a geophysical investigation. The

purpose of this investigation was to designate underground conduits/utilities and investigate (5) proposed boring locations within client-specified portions of the subject property. The ground surface of the survey area consisted of paved, concrete, landscaped, and natural soil surfaces.

3.0 SURVEY RESULTS

The survey was conducted using a cart-mounted GPR unit, a Fisher TW-6 metallic locator, and a RD unit. The RD unit was used to trace common utilities from sources in and around the survey area. The RD receiver was also used in the passive mode to search for live underground electrical power cables and other utilities emitting 60Hz electromagnetic signals. When possible, the locations of utilities were confirmed with the GPR. A GPR survey was also performed in a grid pattern in at least two orthogonal directions to search for underground utilities. Designated utilities were marked on-site with spray paint using the following colors; red – electric and blue – water.

The GPR and TW-6 were used in a grid pattern over all client-specified areas of the property. Based on the results of the GPR and TW-6 surveys, no anomalies consistent with an UST were identified.

Five proposed boring locations were investigated with the GPR, TW-6, and RD receiver. Location #1: #5 Manning Circle – an area of 25ft by 8.5ft was scanned and cleared. Location #2: was the DPW yard located on Sparks Avenue, an area of 18ft by 12.5 was scanned and cleared. At this location a water line, and an electric line were designated and marked with paint. Location #3: #12 Manning Circle – an area of 25.5ft by 8.5ft was scanned and cleared. Location #4: #15 Manning Circle – two areas were scanned and cleared (a) an area of 13ft by 7ft, and (b) an area of 46ft by 7.5ft. Location #5: #18 Manning Circle – an area of 13ft by 3ft were also scanned and cleared. All designated anomalies were marked on-site with spray paint.

4.0 LIMITATIONS

The client-selected areas of the property had obstructions including fence lines, curb lines, and landscaping. These objects prevented a thorough investigation of the spaces beneath and immediately adjacent to them.

Due to surface conditions and subsurface content, the GPR signal penetration was estimated at 3 feet in the majority of the survey area. This penetration was reduced in areas of concrete cover.

The TW-6 survey was kept up to 6 feet away from above ground objects containing metals depending on the sizes, shapes and positions of the metal objects. The TW-6 survey was not effective in areas with reinforced concrete.

Due to the dielectric properties of the subsurface, plastic polymer and fiberglass utilities may not have been detected.

All field services were conducted in compliance with the industry standard of care guidelines found in ASCE 38-02 (Level B).

5.0 WARRANTIES

The field observations and measurements reported herein are considered sufficient in detail and scope for this project. Enviroprobe Service, Inc. warrants that the findings and conclusions contained herein have been promulgated in accordance with generally accepted environmental engineering methods. There is a possibility that conditions may exist which could not be identified within the scope of this project and were not apparent during the site activities performed for this project.

Enviroprobe represents that the services were performed in a manner consistent with that level of care and skill ordinarily exercised by environmental consultants under similar circumstances. No other representations to Client, express or implied, and no warranty or guarantee is included or intended in this agreement, or in any report, document, or otherwise.

Enviroprobe Service, Inc. believes that the information provided in this report is reliable. However, Enviroprobe cannot warrant or guarantee that the information provided by others is complete or accurate. No other warranties or guarantees are implied or expressed.

GPR data is subject to signal anomalies and operator interpretation. The GPR data is intended to provide the locations of areas of concern requiring additional investigation or the approximate location of underground structures and utilities. Great care must be utilized when excavating and/or drilling around underground structures and utilities since GPR data can only be used for estimation purposes and GPR data is subject to misinterpretation. Enviroprobe can not guarantee that utilities, post-tension cables, and/or rebar will not be incurred during drilling, cutting, coring, or excavating activities.

This report was prepared pursuant to the contract Enviroprobe has with the Client. That contractual relationship included an exchange of information about the property that was unique and between Enviroprobe and its client and serves as the basis upon which this report was prepared. Because of the importance of the communication between Enviroprobe and its client, reliance or any use of this report by anyone other than the Client, for whom it was prepared, is prohibited and therefore not foreseeable to Enviroprobe.

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information or conclusions, will be at the third party's risk. For the same reasons, no warranties or representations, expressed or implied in this report, are made to any such third party.

ENVIROPROBE SERVICE INCORPORATED

Preliminary Geophysical Field Report

Client Name: AECOM
Office Address: 100 Red Schoolhouse Rd. Suite B-1
Chestnut Ridge, NY 10977-6715
Phone #: _____ Fax #: _____

Project Manager: Claire Hunt Phone #: _____
Site Contact: Celeste Foster Phone #: _____
Purchase Order #: _____
Site Address: Wolfs Ln. & Brookside Ave.
Pelham, NY 10803
Type or Name of Facility: Gulf Station + Brookside Ave.
Nearest Cross Street: -
Lot #: - Block #: -
Site Longitude: - Latitude: -
Job Date: 4/16/14 Start Time: 7:30am Finish Time: 10:00am
Miles to Site: _____
Attach all receipts with a brief
Description: _____

Scope of Work: UMP a UST investigation of a 10ft. radius of (6) client selected boring locations, (4) at Gulf Station & (2) on Brookside Ave.

Conditions: Asphalt & concrete in active maintenance facility & roadways

Limitations: GPR penetration ±3.5', immoved vehicles, curblines, storage areas

Results: marked on site: gas w/ yellow, water w/ blue, sanitary sewer w/ green, vent piping and unknowns w/ pink

Signature: _____

Sketch:

Appendix D

Laboratory Data and DUSRs on CD