Environment

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NYSDEC
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August 6, 2012

Annual Long Term Monitoring Report For 2012 (Site No. 130043H)

Draft

:

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1.0 Introduction

AECOM Technical Services Northeast, Inc. (AECOM) has been issued Work Assignment #D004436-32 under the New York State Department of Environmental Conservation (NYSDEC) State Superfund Standby Program. The site under this work assignment is Utility Manufacturing/Wonder King (Utility Manufacturing), Operable Unit 2 (Site No. 130043H). The location of the site is shown on Figure 1.

The initial scope of work for this project, as defined by the NYSDEC, was project scoping, preparation of plans and specifications, oversight of construction services including sub-slab depressurization system installation at three facilities and installation of six monitoring wells, and one round of groundwater and indoor air sampling. The work was performed in accordance with NYSDEC Division of Environmental Remediation Final DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, May 2010) and the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH; Final, October 2006). The work conducted under the initial scope (well installation, groundwater sampling, and indoor air sampling) was completed in 2010 and documented in the Final Annual Long Term Monitoring Report (AECOM, 2011).

In August 2011, NYSDEC amended the budget to include two rounds of monitoring well sampling and vapor intrusion sampling at two structures. One round of monitoring well sampling and soil vapor intrusion sampling at one structure conducted in 2011 was documented in the Annual Long Term Monitoring Report for 2011 (AECOM, 2012). This report documents one round of monitoring well sampling in 2012.

1.1 Background

The Utility Manufacturing site is located at 700-712 Main Street (south side) between Bond Street and Frost Street, approximately 500 feet (ft) north of Old Country Road in the New Cassel Industrial Area (NCIA), Westbury, Nassau County, New York. The site and study area for Operable Unit No. 2 are located within the NCIA (Figure 1), which is a 170-acre industrial and commercial area on the north side of Old Country Road. The sites within the Operable Unit No. 2 consist mostly of commercial and industrial operations including an auto repair facility, auto garage, office spaces, warehouse, and machine tool shop. The Former Applied Fluidics site, No. 1-30-043M, is located approximately 750 feet east of the Utility Manufacturing site. The 89 Frost Street site, No. 1-30-043L, and the Former Autoline Automotive site, No. 1-30-043I, are adjacent to the Former Applied Fluidics site. All three of these sites are Class 2 sites. The Utility Manufacturing site falls within the New Cassel/Hicksville Groundwater Contamination site (CERCLIS ID NY0001095363), which comprises a widespread area of groundwater contamination.

1.2 Previous Investigations Conducted at the Utility Manufacturing Site

A summary of the site investigations conducted for the Utility Manufacturing site between 1986 and 2007 is provided in the Record of Decision (ROD) dated March 2008 for Operable Unit No. 2 (NYSDEC, 2008).

1.3 Selected Remedy

A ROD presenting the selected remedy for Operable Unit 2 was finalized by NYSDEC in March 2008. The elements of the selected remedy are as follows:

1. Implementation of a remedial design program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
2. Installation of sub-slab depressurization systems in three off-site buildings that have vapor intrusion impacts.
3. Collection of periodic sub-slab vapor, indoor air and outdoor air samples at three properties where the potential for vapor intrusion exists. Periodic sampling will continue until sampling results indicate that continued sampling is no longer required.
4. Naturally attenuation of groundwater contamination within the study area.
5. Imposition of an institutional control in the form of an environmental easement on the site that will require: (a) compliance with the approved site management plan; and (b) the property owner to complete and submit to NYSDEC (the Department) a periodic certification of institutional and engineering controls.
6. Development of a site management plan which will include the following institutional and engineering controls: (a) monitoring of groundwater, sub-slab vapor, indoor air and outdoor air; and (b) provisions for the continued proper operation and maintenance of the components of the remedy.
7. Provision of a periodic certification of institutional and engineering controls by the property owner, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed.
8. Continued operation of the components of the remedy until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.
9. Since the remedy results in untreated hazardous waste remaining at the site, a long-term monitoring program will be instituted. Up to nine monitoring wells will be sampled periodically for VOCs to track the progress of the natural attenuation. In addition, sub-slab vapor, indoor air and outdoor air samples will be obtained and analyzed for VOCs at three buildings with potential vapor intrusion impacts. This program will allow the effectiveness of the natural attenuation and soil vapor intrusion mitigation measures to be monitored and will be a component of the operation, maintenance, and monitoring for the site.

Vapor intrusion sampling at three structures (item 3) and groundwater monitoring sampling (item 9) was conducted in 2010 and documented in AECOM (2011). Of the three off-site buildings identified for installation of sub-slab depressurization systems (item 2), property managers for two of the structures (6 and 9) have declined to have the systems installed. NYSDEC has proposed to collect vapor intrusion samples from these structures instead. To date, the firm managing Structure 9 has declined to have the vapor intrusion samples collected. Subsequent testing at Structure 6 indicates an SSDS system is not required. Since finalizing the ROD, NYSDEC has determined that an environmental easement (item 5) is not needed for the site (NYSDEC, 2012).

2.0 Field Investigation

Groundwater sampling and collection of groundwater elevation measurements was conducted in April 2012. Groundwater samples were collected from the eight wells shown on Figure 2. Well construction data is provided in Table 1. Laboratory analyses were conducted by Spectrum Analytical, Inc. for the groundwater samples. YEC, Inc. participated in field activities as a subcontractor to AECOM. Field forms are provided in Appendix A.

2.1 Groundwater Sampling

AECOM collected one round of samples from two wells installed for the off-site remedial investigation (MW1S and MW1D) and six wells installed off-site in May 2010 (MW11S, MW11D, MW12S, MW12D, MW13S, and MW13D). Well sampling forms showing compliance with EPA low-flow sampling procedures (EPA SOP, 1998) are provided in Appendix A. A bladder pump was used for sampling. The pump intake was set at the midpoint of the screened interval. Dedicated Teflon-lined tubing was used for all groundwater sample collection. Field measurements recorded during purging include flow rate, depth to water, temperature, pH, conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP) and turbidity. The measurements were recorded on a well sampling form. Measurements were collected approximately every ten minutes. A flow-through cell was used to measure the parameters. Purging was considered complete when the indicator parameters stabilized over three consecutive readings. If the groundwater did not stabilize, the samples were collected after two hours of purging. Stabilization parameters are:

- depth to water: less than 0.3 ft drawdown during purging;
- pH: ± 0.1
- conductivity: ± 3%
- DO: ± 10 %
- ORP: ±10 mV and
- Turbidity: less than 50 nephelometric turbidity units (NTU).

During sample collection, the flow cell was disconnected and the sample tubing discharge was poured directly into the laboratory supplied sample containers and field vials. 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 of VOCs, dissolved iron (field filtered), sulfates, nitrates, carbon dioxide, and methane. All parameters other than VOCs are referred to as monitored natural attenuation (MNA) parameters. Analyses were performed by Spectrum Analytical, Inc. in Warwick, Rhode Island, a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory (ELAP #11522).

A round of water table elevation data for the existing monitoring wells was collected on April 24, 2012, prior to groundwater sampling. The results are presented in Table 2. Groundwater elevations are shown on Figure 3 for the shallow wells and Figure 4 for the deep wells. The groundwater flow direction appears to be to the southwest.

3.0 Laboratory Analytical Results

3.1 Groundwater Samples

3.1.1 VOC Data

Groundwater samples were collected from eight wells and submitted for the following analyses: VOCs (EPA SW-846 Method 8260), dissolved iron (EPA SW-846 Method 6010B), sulfates (EPA 300.0), nitrates (EPA 300.0), carbon dioxide (EPA 3C), and methane (EPA RSK-175). The VOC groundwater results are compared to the NYS Class GA Groundwater Criteria and presented in Table 3. VOC detections are summarized on Figure 5. A summary of concentrations exceeding the NYS Class GA Groundwater Criteria are provided below:

- Tetrachloroethene (PCE) was detected in all wells. The concentrations exceed the NYS Class GA criterion of 5 µg/L in six of the eight wells with concentrations ranging from 5.2 µg/L (MW13D) to 24 µg/L (MW1D);
- Trichloroethene (TCE) was detected in all wells except MW11S. The concentrations exceed the NYS Class GA criterion of 5 µg/L in MW13S (16 µg/L), MW13D (60 µg/L), and MW1D (110 µg/L);
- Cis-1,2-dichloroethene was detected in all wells except MW11S and MW12D. The concentrations exceed the NYS Class GA criterion of 5 µg/L in MW13S (7.9 µg/L), MW13D (6.1 µg/L), MW1S (12 µg/L), and MW1D (6.6 µg/L). Trans-1,2-dichloroethene was not detected in any of the wells;
- 1,1-Dichloroethene was detected in MW11D, MW13D, and MW1D. The concentration exceeds the NYS Class GA criterion of 5 µg/L in MW1D (24 µg/L);
- 1,1,1-Trichloroethane was detected in five of the wells. The concentration exceeds the NYS Class GA criterion of 5 µg/L in MW1D (9.9 µg/L); and,
- 1,1-Dichloroethane was detected in four of the wells. The concentration exceeds the NYS Class GA criterion of 5 µg/L in MW13S (5.3 µg/L).

The VOC concentrations for parameters with exceedances of the NY Class GA criteria are compared in Figure 7. Groundwater samples collected from monitoring wells MW1S and MW1D in 2005 for the remedial investigation (ERM, 2005) are also included. The concentrations were compared as follows:

- Shallow well concentration differs from the deeper well concentration by more than 5 µg/L;
- The concentration differs from the previous year by more than 5 µg/L; and,
- The concentration in the well is greater than the NY Class GA criterion (5 µg/L for each parameter) or greater than twice the NY Class GA criterion.

A description of the data collected in 2012 compared to data collected in 2011 is provided below.

For wells MW11S and MW11D, there are no instances where the current concentrations in the shallow and deep wells differ by more than 5 µg/L. The PCE concentration in MW11D is greater than the NY Class GA criterion of 5 µg/L, but is less than 10 µg/L. No other parameters have exceedances in these wells. The PCE concentration in MW11D declined in 2012 compared to the concentration in 2011. The 2012 VOC levels in these wells for compounds other than PCE are within 5 µg/L of the 2011 VOC levels.

For wells MW12S and MW12D, the PCE concentration in the shallow well is more than 5 µg/L higher than in the deep well, and is greater than twice the NY Class GA criterion. No other parameters have exceedances in these wells. The 2012 VOC levels in these wells are within 5 µg/L of the 2011 VOC levels.

For wells MW13S and MW13D, the TCE concentration in the deep well is more than 5 µg/L higher than in the shallow well, and the TCE concentrations in both wells are greater than twice the NY Class GA criterion. The concentrations are greater than the NY Class GA criteria, but less than 10 µg/L for PCE and cis-1,2-DCE in MW13S and MW13D; and 1,1-DCA in MW13S only. The TCE concentration in MW13D declined in 2012 compared to the concentration in 2011. The 2012 VOC levels in these wells for compounds other than TCE are within 5 µg/L of the 2011 VOC levels.

For wells MW1S and MW1D, the concentration is higher in the shallow well than in the deeper well by more than 5 µg/L for cis-12,-DCE; and lower in the shallow well than in the deeper well by more than 5 µg/L for PCE, TCE, 1,1-DCE, and 1,1,1-TCE. Concentrations are greater than twice the NY Class GA criterion of 5 µg/L for cis-1,2-DCE in MW1S; and PCE, TCE, and 1,2-DCE in MW1D. Concentrations are greater than the NY Class GA criterion of 5 µg/L, but less than twice this value for PCE in MW1S; and cis-1,2-DCE and 1,1,1-TCA in MW1D. The concentration of cis-1,2-DCE declined between 2011 and 2012 in well MW1S by more than 5 µg/L. The concentrations of PCE, TCE, 1,1-DCE, and 1,1,1-TCA increased between 2011 and 2012 in well MW1D by more than 5 µg/L. The 2012 VOC levels in these wells for the other compounds are within 5 µg/L of the 2011 VOC levels.

The groundwater concentrations generally appear to be stabilizing over time. There are fewer instances where the concentration in a well increased or declined more than 5 µg/L from the previous year in 2012 compared to 2011. There are more instances in the 2011 and 2012 groundwater concentrations where there is less than 5 µg/L difference in the shallow and deep wells concentrations compared to 2010. VOC concentrations have been declining over time with some exceptions. In particular, the concentrations of PCE, TCE, 1,1-DCE, and 1,1,1-TCA increased in MW1D by more than 5 µg/L in 2012 compared to 2011. The concentration of total VOCs in MW1D (177.3 µg/L) is highest in 2012 compared to the three previous sampling events (112 µg/L in 2005, 153.6 µg/L in 2010, and 93.2 µg/L in 2011).

3.1.2 MNA Data

The results for laboratory MNA parameters are provided in Table 4. The final field measurements of temperature and dissolved oxygen are also listed. The data were evaluated to determine whether reductive dechlorination is occurring.

Biologically-mediated reductive dechlorination, chlorinated VOCs occurs through a series of progressive biochemical reactions where chloride atoms are replaced by hydrogen atoms.

PCE → TCE → DCE → vinyl chloride → ethene

1,1,1-TCA → 1,1-DCA → chloroethane → ethane

Naturally occurring bacteria create hydrogen under reducing conditions that replaces chlorine to sequentially dechlorinate the chlorinated ethenes. These biologically-mediated reactions occur favorably in anaerobic (negligible dissolved oxygen), reducing (oxidation reduction potential or ORP is less than -75 mV), and circumneutral (pH between 6.0 and 8.5) groundwater.

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 the ORP range needed for sulfate reduction or methanogenesis (i.e., below -200 mV).

- pH: Water quality measurements indicate that the groundwater is slightly acidic (pH 4.97 to 6.97), and seven of the eight wells sampled have pH values less than pH 6.0. The low pH in groundwater is likely limiting biological natural attenuation processes.
- ORP and Dissolved Oxygen: Water quality measurements collected during sampling indicate that the groundwater is aerobic (ORP 184 to 349 mV and dissolved oxygen between 2.31 and 13.96). The deep groundwater monitoring wells are slightly less aerobic, with the lower ORP and dissolved oxygen values recorded in the deeper interval. Biotic reductive dechlorination does not occur favorably under these observed aerobic conditions.
- Nitrate was detected in all eight wells sampled (1.2 µg/L to 6.4 µg/L). Under the anaerobic conditions required for reductive dechlorination, nitrate would not be expected to be detected due to conversion to ammonia through denitrification. Nitrate concentrations have been relatively stable from 2010 to 2012.
- Dissolved Iron: An increase in dissolved ferrous iron (Fe II) may indicate reducing conditions and the reduction of insoluble ferric iron (Fe III) by serving as an electron acceptor. Total dissolved iron was not detected or only detected at very low concentrations in six of the eight wells. Concentrations of dissolved iron were detected in monitoring wells MW11S and MW11D. However, aerobic conditions in these wells suggests that this is not dissolved ferrous iron.
- Sulfate was detected in all eight wells sampled (12 µg/L to 47.9 µg/L). Under the anaerobic conditions required for reductive dechlorination, sulfate reducing bacteria would convert sulfate to sulfide. Sulfate concentrations have been relatively stable or have been observed to decrease from 2010 to 2012.
- Methane is a byproduct microbial degradation using carbon dioxide as an electron acceptor, and the presence of methane is an indicator of reducing conditions in groundwater. Relatively low methane concentrations were detected in all wells with concentrations ranging from 0.61 µg/L to 13 µg/L (average concentration of 3.18 µg/L).
- Carbon dioxide: An increase in carbon dioxide may provide an indication of microbial processes. Carbon dioxide was detected in all wells with concentrations ranging from 2,340 µg/L to 22,400 µg/L. However, aerobic conditions suggest that aerobic bacteria are generating this carbon dioxide.
- Daugher products are another indicator of reductive dechlorination processes, and increases in daughter products accompany decreases in parent VOCs as shown in the reactions above (i.e., increase in cis-1,2-DCE as TCE decreases). In addition, 1,1-DCA is an abiotic breakdown product of 1,1,1-TCA. Concentrations of 1,2-DCE and 1,1-DCA have been relatively stable over time. In addition, chloroethane and vinyl chloride are not detected. Therefore, reductive dechlorination is not likely to occur in site groundwater.

The concentrations for 2010 and 2011 are shown on Figure 6 for methane, carbon dioxide, sulfate, nitrate, and VOCs exceeding the NYS Class GA Groundwater Criteria. From the evaluation of MNA analyses and water quality parameters in this section, there is no evidence suggesting that biological reductive dechlorination is occurring in site groundwater. Reductions in concentrations of VOCs are mostly likely the result of dilution and dispersion and to a lesser extent sorption and volatilization. For bioremediation of site VOCs to occur, the pH would need to be raised to circumneutral levels and groundwater would need to be more reducing.

4.0 Data Validation

Data validation was provided by Environmental Data Services, Inc. (EDS) of Williamsburg, Virginia, an independent chemist under subcontract to AECOM. Data Usability Summary Reports (DUSRs) for each sample delivery group (SDG) and complete copies of the laboratory analytical data reports are included on CD as Appendix B.

Groundwater data from samples collected in April 2012 were reported by Spectrum Analytical, Inc., Warwick, Rhode Island as one SDG, L0812. A total of 12 analyses were validated, including one trip blank, one MS/MSD pair, one field duplicate, and eight environmental samples. There were several rejections of data. These data cannot be used in the decision-making process for the project:

- Acetone was rejected in all samples and 2-butanone was rejected in one sample 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 (methylene chloride, cyclohexane, and methyl acetate) were qualified as estimated in nine samples due to high initial calibration percent relative standard deviation.
- Several compounds (dichlorodifluoromethane, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, and carbon tetrachloride) were qualified as estimated in all samples due to high continuing calibration percent difference values.

The laboratory dissolved oxygen measurements were reviewed by AECOM. For each groundwater sample, the laboratory dissolved oxygen concentration exceeds the saturation value of dissolved oxygen in water that would be expected. The saturation value of dissolved oxygen in water decreases with increasing temperature from 14.62 mg/L at 0 ^{o}C to 7.63 at 30 ^{o}C in water with 0 mg/L chloride concentration. All laboratory measurements of dissolved oxygen exceed 14.62 mg/L. Elevated dissolved oxygen values were also observed in the samples collected in 2011. The field dissolved oxygen concentrations are close to or below the saturation value of dissolved oxygen for the groundwater temperature. For years 2011 and 2012, the field dissolved oxygen values should be used instead of the laboratory results to evaluate MNA.

5.0 Conclusions and Recommendations

Groundwater sampling was performed at the Utility Manufacturing site in Westbury, NY with field work conducted in April 2012. A summary of the sampling effort is provided below:

- Groundwater VOC concentrations in samples from one or more monitoring wells exceed the NYS Class GA criteria for PCE, TCE, cis-1,2-DCE, 1,1,1-TCA, 1,1-DCA, 1,1-DCE. The VOC concentrations in 2012 are either stable with concentrations that have changed less than 5 µg/L compared to 2011 or have declining more than 5 µg/L since 2011, with the exception of MW1D. The 2012 concentrations of PCE, TCE, 1,1-DCE, and 1,1,1-TCA increased in MW1D compared to 2011. The concentration of total VOCs in MW1D is highest in 2012 compared to the three previous sampling events.
- Review of the MNA and VOC data indicate that natural attenuation is occurring primarily through dilution and dispersion and to a lesser extent sorption and volatilization.
- Collection of groundwater elevations from additional existing wells during annual groundwater monitoring is recommended to better define the groundwater flow direction.

6.0 References

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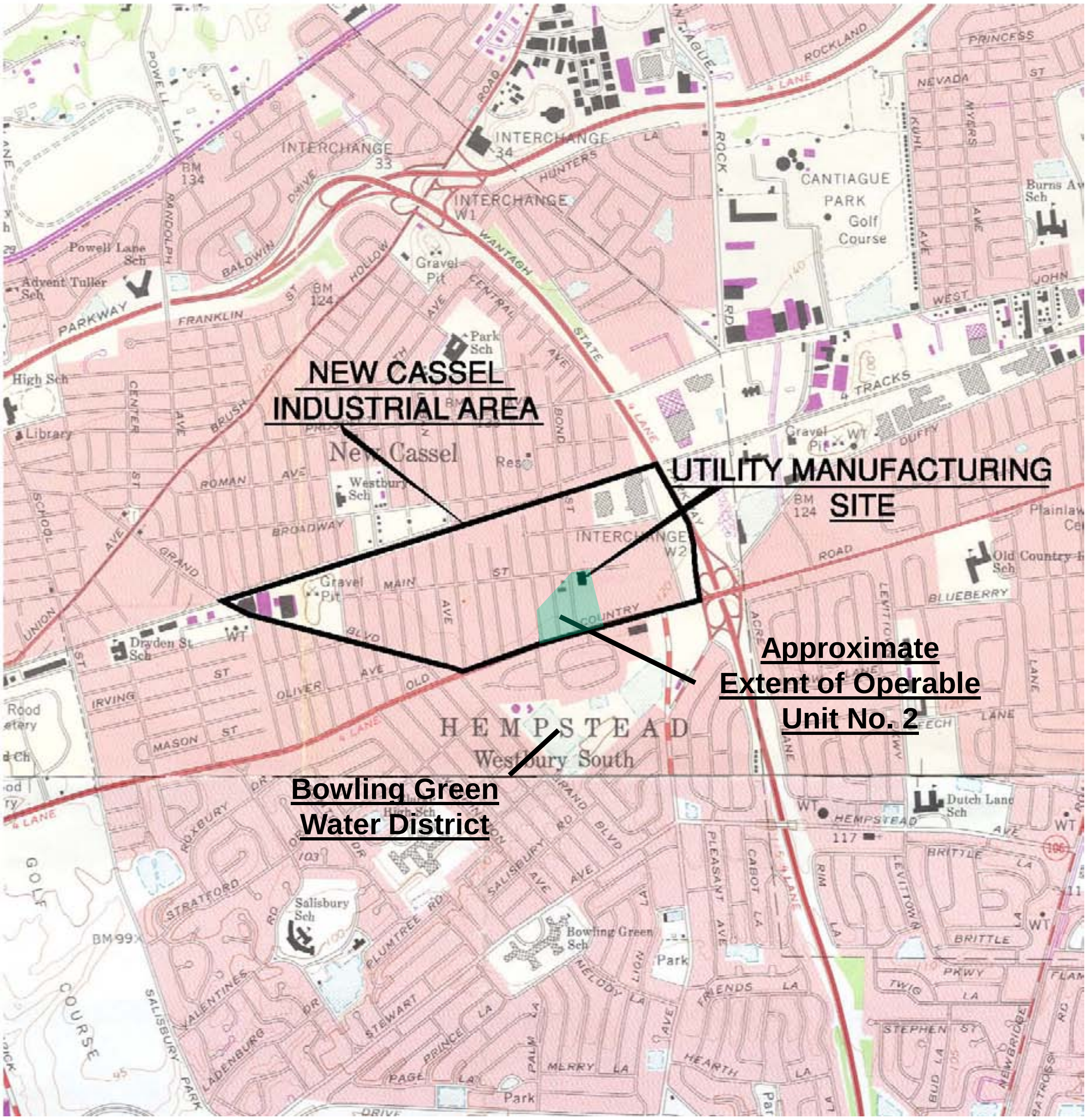
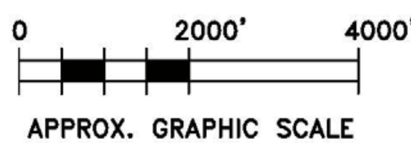




From ERM (2005):
USGS Hicksville & Freeport NY Quadrangle, 1979

100 Red Schoolhouse Road, Suite B-1
Chestnut Ridge , NY 10977-6715

ENVIRONMENTAL CONSULTING ENGINEERS

AECOM	PROJECT: **REMEDIAL DESIGN/ CONSTRUCTION OVERSIGHT** **Utility Manufacturing/Wonder King, OU2** 700 – 712 Main Street, Westbury, New York	SITE LOCATION MAP Project No: 60134954 Figure No: 1 January 12, 2012

AECOM

Utility Manufacturing/Wonder King
700 – 712 Main Street
Westbury, New York

0 20 40 80
Feet

Legend

Monitoring Wells

Installed March 2010

Installed by ERM

No Monitoring Well Found

Indoor Air Sample Structures

Monitoring Well Locations

Project No: 60134954

Figure No: 2

January 12, 2012

AECOM

Utility Manufacturing/Wonder King
700 – 712 Main Street
Westbury, New York

0 15 30 60 Feet

Legend

Monitoring Well

Groundwater elevations are in NAVD88.

Indoor Air Sample Structures

Groundwater Elevations
Shallow Wells - April 2012

Project No: 60134954

Figure No: 3

July 26, 2012

AECOM

Utility Manufacturing/Wonder King
700 – 712 Main Street
Westbury, New York

0 15 30 60
Feet

Legend

Monitoring Well

Groundwater elevations are in NAVD88.

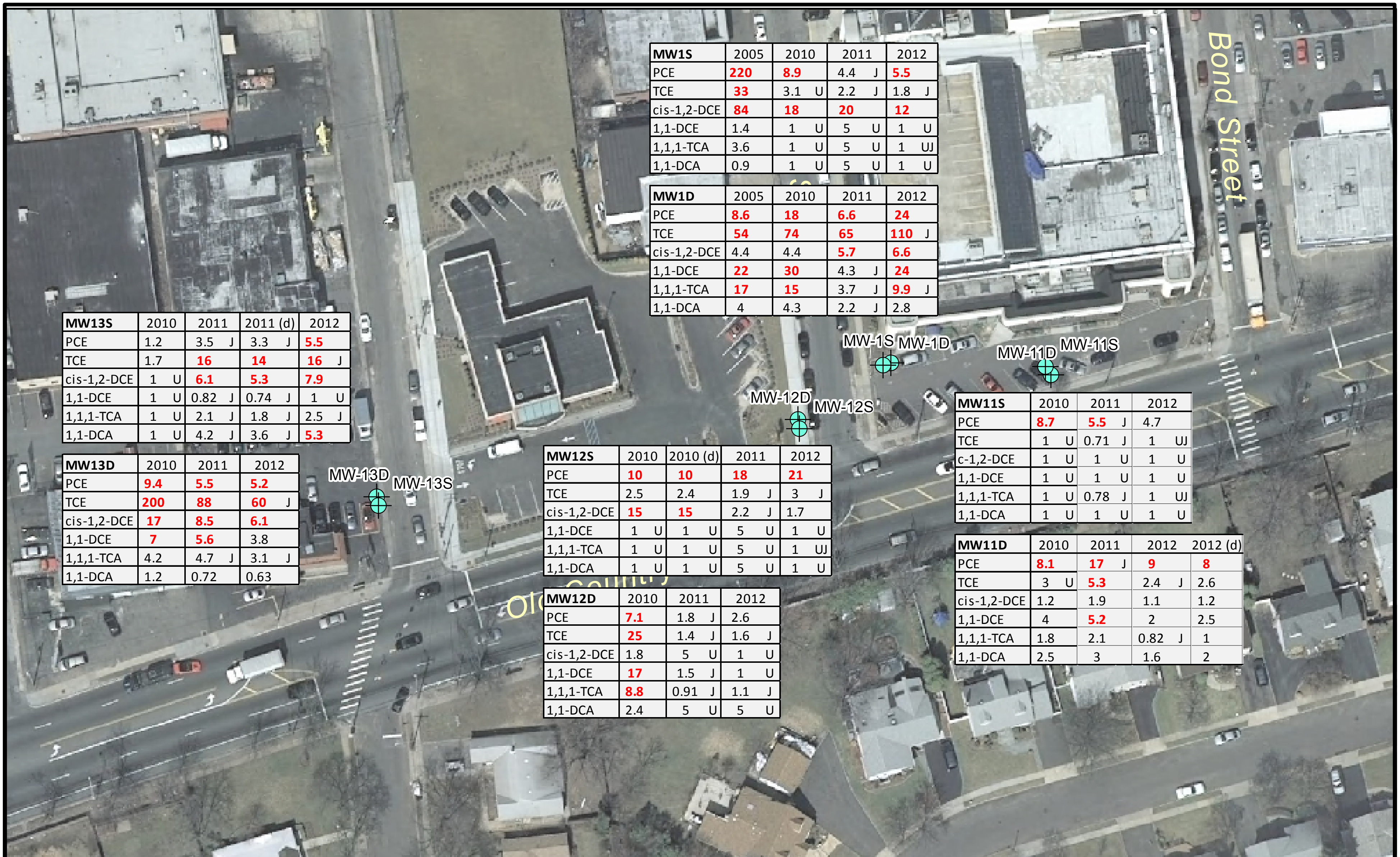
Indoor Air Sample Structures

Groundwater Elevations
Deep Wells - April 2012

Project No: 60134954

Figure No: 4

July 26, 2012



MW1S	2005	2010	2011	2012
PCE	220	8.9	4.4 J	5.5
TCE	33	3.1 U	2.2 J	1.8 J
cis-1,2-DCE	84	18	20	12
1,1-DCE	1.4	1 U	5 U	1 U
1,1,1-TCA	3.6	1 U	5 U	1 UJ
1,1-DCA	0.9	1 U	5 U	1 U

MW1D	2005	2010	2011	2012
PCE	8.6	18	6.6	24
TCE	54	74	65	110 J
cis-1,2-DCE	4.4	4.4	5.7	6.6
1,1-DCE	22	30	4.3 J	24
1,1,1-TCA	17	15	3.7 J	9.9 J
1,1-DCA	4	4.3	2.2 J	2.8

MW13S	2010	2011	2011 (d)	2012
PCE	1.2	3.5 J	3.3 J	5.5
TCE	1.7	16	14	16 J
cis-1,2-DCE	1 U	6.1	5.3	7.9
1,1-DCE	1 U	0.82 J	0.74 J	1 U
1,1,1-TCA	1 U	2.1 J	1.8 J	2.5 J
1,1-DCA	1 U	4.2 J	3.6 J	5.3

MW13D	2010	2011	2012
PCE	9.4	5.5	5.2
TCE	200	88	60 J
cis-1,2-DCE	17	8.5	6.1
1,1-DCE	7	5.6	3.8
1,1,1-TCA	4.2	4.7 J	3.1 J
1,1-DCA	1.2	0.72	0.63

MW12S	2010	2010 (d)	2011	2012
PCE	10	10	18	21
TCE	2.5	2.4	1.9 J	3 J
cis-1,2-DCE	15	15	2.2 J	1.7
1,1-DCE	1 U	1 U	5 U	1 U
1,1,1-TCA	1 U	1 U	5 U	1 UJ
1,1-DCA	1 U	1 U	5 U	1 U

MW12D	2010	2011	2012
PCE	7.1	1.8 J	2.6
TCE	25	1.4 J	1.6 J
cis-1,2-DCE	1.8	5 U	1 U
1,1-DCE	17	1.5 J	1 U
1,1,1-TCA	8.8	0.91 J	1.1 J
1,1-DCA	2.4	5 U	5 U

MW11S	2010	2011	2012
PCE	8.7	5.5 J	4.7
TCE	1 U	0.71 J	1 UJ
c-1,2-DCE	1 U	1 U	1 U
1,1-DCE	1 U	1 U	1 U
1,1,1-TCA	1 U	0.78 J	1 UJ
1,1-DCA	1 U	1 U	1 U

MW11D	2010	2011	2012	2012 (d)
PCE	8.1	17 J	9	8
TCE	3 U	5.3	2.4 J	2.6
cis-1,2-DCE	1.2	1.9	1.1	1.2
1,1-DCE	4	5.2	2	2.5
1,1,1-TCA	1.8	2.1	0.82 J	1
1,1-DCA	2.5	3	1.6	2

AECOM

Utility Manufacturing/Wonder King
700 – 712 Main Street
Westbury, New York

0 20 40 80 Feet

Legend

Monitoring Well

Concentrations exceeding the NYS Class GA criteria are in red.

The NYS Class GA criteria for all other parameters shown are 5 µg/L.

(d) Environmental duplicate sample

Groundwater Sampling Results

Project No: 60134954

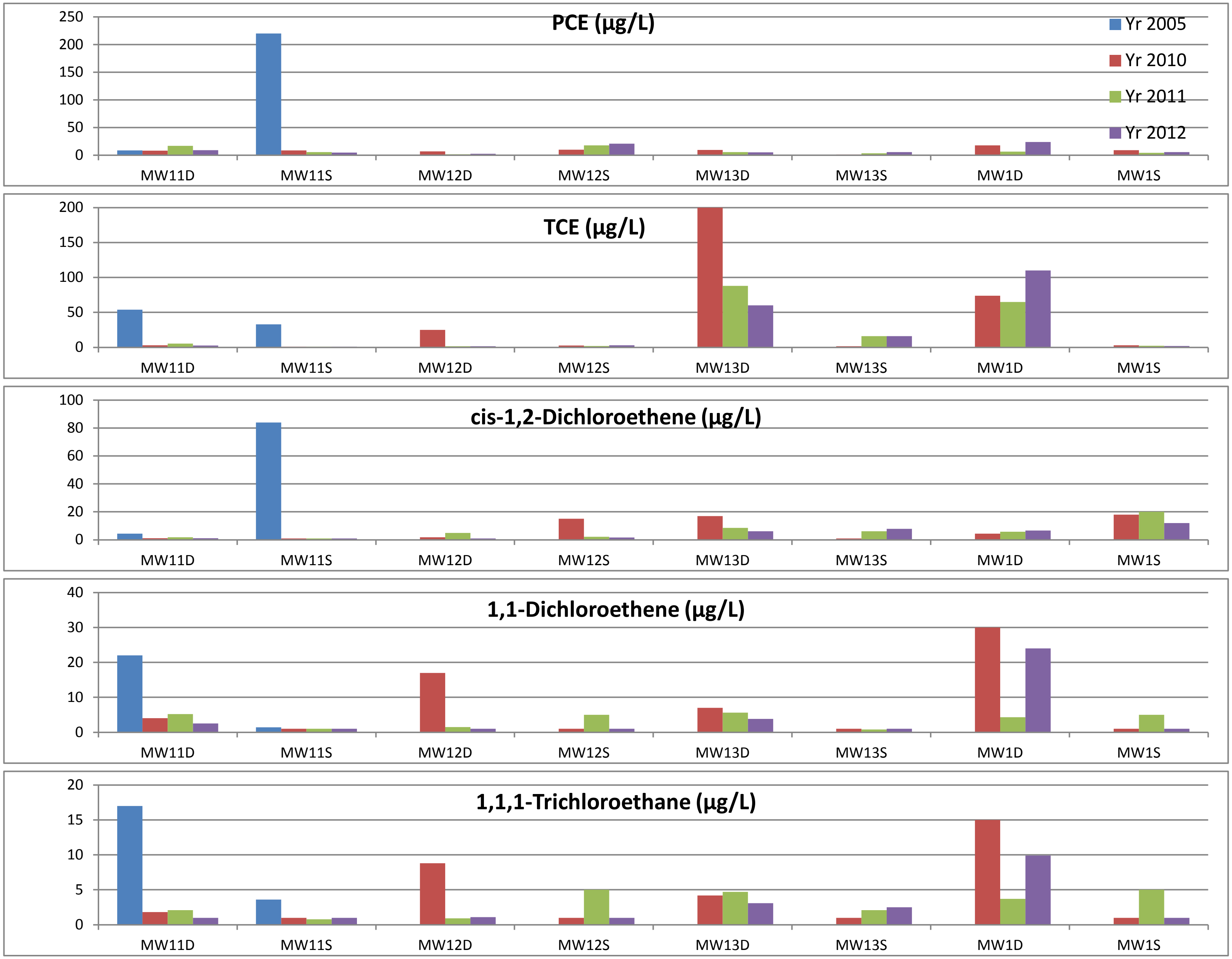
Figure No: 5

July 30, 2012

NYSDEC
Utility Manufacturing/Wonder King Site

Figure 6
Groundwater Concentrations by Year

July 30, 2012



NYSDEC
Utility Manufacturing/Wonder King Site

Figure 6
Groundwater Concentrations by Year

July 30, 2012

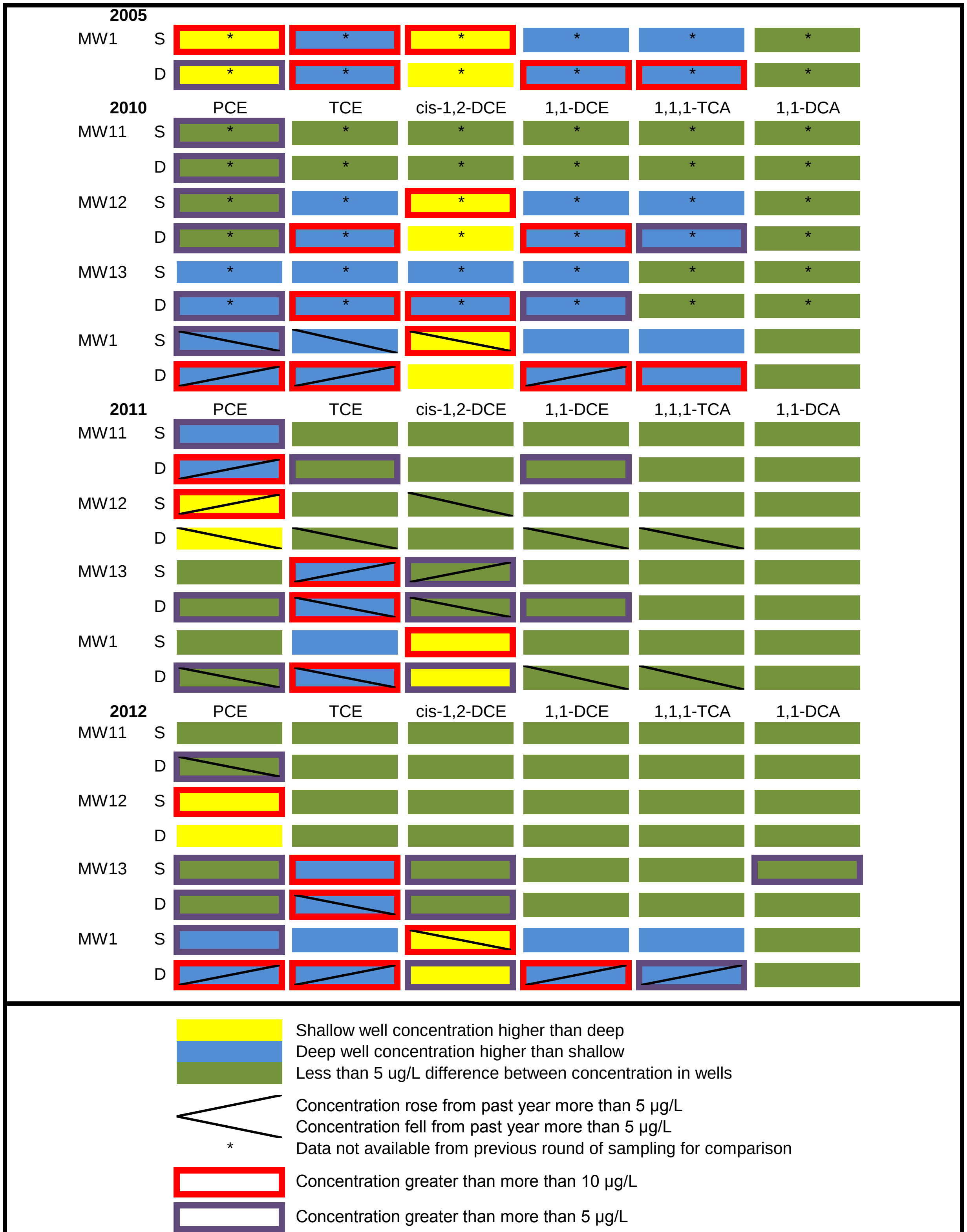


Table 7

Comparison of VOC Concentrations Among Monitoring Wells

NYSDEC

Utility Manufacturing/Wonder King Site

July 30, 2012

Table 1
Well Construction Data

Well Number	Northing	Easting	Ground Elevation	Top of Casing Elevation	Total Depth of Well
MW-1D	214,707.10	1,106,646.90	120.18	119.77	130
MW-1S	214,708.46	1,106,651.34	120.28	119.82	90
MW-11D	214,701.44	1,106,744.20	119.77	119.51	124
MW-11S	214,706.18	1,106,741.07	119.96	119.66	95
MW-12D	214,675.55	1,106,597.69	118.56	118.26	125
MW-12S	214,670.11	1,106,598.27	118.51	117.88	95
MW-13D	214,630.74	1,106,353.23	116.82	116.41	126
MW-13S	214,625.69	1,106,354.25	116.66	116.32	96

Notes:
All elevations and depths are in feet.
Vertical datum: NAVD88
Horizontal datum: NY State Plane NAD83

Table 2
Groundwater Elevations

Well Number	Ground Elevation	Depth To Water 5/12/10	Groundwater Elevation 5/12/10	Depth To Water 8/9/11	Groundwater Elevation 8/9/11	Depth To Water 4/24/12	Groundwater Elevation 4/24/12
MW-1D	120.18	42.4	77.78	45.59	74.59	43.84	76.34
MW-1S	120.28	41.85	78.43	45.58	74.7	43.82	76.46
MW-11D	119.77	42.74	77.03	46.65	73.12	44.7	75.07
MW-11S	119.96	42.76	77.2	46.5	73.46	44.66	75.3
MW-12D	118.56	41.47	77.09	45.25	73.31	43.52	75.04
MW-12S	118.51	41.08	77.43	44.82	73.69	43.12	75.39
MW-13D	116.82	39.74	77.08	43.5	73.32	41.81	75.01
MW-13S	116.66	39.68	76.98	43.4	73.26	41.73	74.93

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

Table 3

VOCs in Groundwater

Units: µg/L	NYS Class GA	MW11S 5/12/2010	MW11S 10/3/2011	MW11S 4/24/2012	MW11D 5/12/2010	MW11D 10/3/2011	MW11D 4/24/2012	MW11D (dup) 4/24/2012	MW12S 5/11/2010	MW12S (dup) 5/11/2010	MW-12S 8/9/2011	MW-12S 4/24/2012	MW12D 5/11/2010
1,1,1-Trichloroethane	5	1 U	**0.78** J	1 UJ	**1.8**	**2.1**	**0.82** J	**1**	1 U	1 U	5 U	1 UJ	**8.8**
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
1,1,2-Trichloroethane	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
1,1,2-Trichlorotrifluoroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	**2.2**
1,1-Dichloroethane	5	1 U	1 U	1 U	**2.5**	**3**	**1.6**	**2**	1 U	1 U	5 U	1 U	**2.4**
1,1-Dichloroethene	5	1 U	1 U	1 U	**4**	**5.2**	**2**	**2.5**	1 U	1 U	5 U	1 U	**17**
1,2,4-Trichlorobenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	5 U	1 U	1 U
1,2-Dibromo-3-chloropropane	0.04	1 U	1 UJ	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 U	5 UJ	1 U	1 U
1,2-Dibromoethane (EDB)	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
1,2-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
1,2-Dichloroethane	0.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
1,2-Dichloroethene, Total	5	2 U	1 U		**1.2** J	**1.9**			**15**	**15**	**2.2** J		**1.8** J
1,2-Dichloropropane	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
1,3-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
1,4-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
2-Butanone (MEK)	5	5 U	R	5 U	5 UJ	R	5 U	5 R	5 U	5 U	5 UJ	5 U	5 U
2-Hexanone	5	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)	5	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	5	5 U	R	5 R	**4.8** J	R	5 R	5 R	5 U	5 U	R	5 R	5 U
Benzene	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Bromodichloromethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Bromoform	5	1 U	1 UJ	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Bromomethane	5	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	5 U	1 U	1 UJ
Carbon disulfide	60	1 U	1 UJ	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Carbon Tetrachloride	5	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 U	1 U	1 U	5 U	1 UJ	1 U
Chlorobenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Chlorodibromomethane	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	5 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Chloroform	7	1 U	1 UJ	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Chloromethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
cis-1,2-Dichloroethene	5	1 U	1 U	1 U	**1.2**	**1.9**	**1.1**	**1.2**	**15**	**15**	**2.2** J	**1.7**	**1.8**
cis-1,3-Dichloropropene	0.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Cyclohexane	NA	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 U	1 U	1 U	5 U	1 UJ	1 U
Dichlorodifluoromethane	5	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 U	1 UJ	1 U	5 U	1 UJ	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Isopropylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Methyl Acetate	NA	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 U	1 U	1 U	5 UJ	1 UJ	1 U
Methyl tert-Butyl Ether	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U

Table 3
VOCs in Groundwater

	NYS	MW11S			MW11D			(dup)	MW12S	(dup)	MW-12S		MW12D
Units: µg/L	Class GA	5/12/2010	10/3/2011	4/24/2012	5/12/2010	10/3/2011	4/24/2012	4/24/2012	5/11/2010	5/11/2010	8/9/2011	4/24/2012	5/11/2010
Methylcyclohexane	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Methylene Chloride	5	1 U	1 U	1 UJ	1 U	1 U	1 UJ	1 U	1 U	1 U	5 U	1 UJ	1 U
Styrene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Tetrachloroethene (PCE)	5	**8.7**	**5.5** J	**4.7**	**8.1**	**17** J	**9**	**8**	**10**	**10**	**18**	**21**	**7.1**
Toluene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
trans-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
trans-1,3-Dichloropropene	0.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	5 U	1 U	1 U
Trichloroethene (TCE)	5	1 U	**0.71** J	1 UJ	3 U	**5.3**	**2.4** J	**2.6**	**2.5**	**2.4**	**1.9** J	**3** J	**25**
Trichlorofluoromethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	5 U	1 U	1 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
Xylenes, total	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	5 U	2 U	2 U

U-Not detected
J-Estimated
R-Rejected
Detections are in bold text.
Exceedances are highlighted

Table 3
VOCs in Groundwater

Units: µg/L	NYS Class GA	MW12D 8/9/2011	MW12D 4/24/2012	MW13S 5/11/2010	MW13S 8/9/2011	MW13S (dup) 8/9/2011	MW13S 4/24/2012	MW13D 5/11/2010	MW13D 8/9/2011	MW13D 4/24/2012	MW1S 4/5/2005	MW1S 5/12/2010	MW1S 8/10/2011
1,1,1-Trichloroethane	5	**0.91** J	**1.1** J	1 U	**2.1** J	**1.8** J	**2.5** J	**4.2**	**4.7** J	**3.1** J	**3.6**	1 U	5 U
1,1,2,2-Tetrachloroethane	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
1,1,2-Trichloroethane	1	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
1,1,2-Trichlorotrifluoroethane	5	5 U	1 U	1 U	5 U	5 U	1 U	**1.2**	5 U	1 U	0.5 U	1 U	5 U
1,1-Dichloroethane	5	5 U	1 U	1 U	**4.2** J	**3.6** J	**5.3**	**1.2**	**0.72** J	**0.63** J	**0.9**	1 U	5 U
1,1-Dichloroethene	5	**1.5** J	1 U	1 U	**0.82** J	**0.74** J	1 U	**7**	**5.6**	**3.8**	**1.4**	1 U	5 U
1,2,4-Trichlorobenzene	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
1,2-Dibromo-3-chloropropane	0.04	5 UJ	1 U	1 UJ	5 UJ	5 UJ	1 U	1 UJ	5 UJ	1 U	0.5 U	1 U	5 UJ
1,2-Dibromoethane (EDB)	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
1,2-Dichlorobenzene	3	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
1,2-Dichloroethane	0.6	5 U	1 U	1 U	5 U	5 U	1 U	**0.58** J	5 U	1 U	0.5 U	1 U	5 U
1,2-Dichloroethene, Total	5	5 U		**0.74** J	**6.1**	**5.3**		**17**	**8.5**			**18**	**20**
1,2-Dichloropropane	1	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
1,3-Dichlorobenzene	3	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
1,4-Dichlorobenzene	3	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
2-Butanone (MEK)	5	5 UJ	5 U	5 U	5 UJ	5 UJ	5 U	5 U	5 UJ	5 U	5 U	5 UJ	5 UJ
2-Hexanone	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U
4-Methyl-2-pentanone (MIBK)	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 U
Acetone	5	R	5 R	5 U	R	R	5 R	5 U	R	5 R	5 U	**5** J	R
Benzene	1	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Bromodichloromethane	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Bromoform	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 UJ	5 U
Bromomethane	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Carbon disulfide	60	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Carbon Tetrachloride	5	5 U	1 UJ	1 U	5 U	5 U	1 UJ	1 U	5 U	1 UJ	0.5 U	1 U	5 U
Chlorobenzene	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Chlorodibromomethane	NA	5 U	1 U	1 UJ	5 U	5 U	1 U	1 UJ	5 U	1 U	0.5 U	1 U	5 U
Chloroethane	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Chloroform	7	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Chloromethane	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
cis-1,2-Dichloroethene	5	5 U	1 U	1 U	**6.1**	**5.3**	**7.9**	**17**	**8.5**	**6.1**	**84**	**18**	**20**
cis-1,3-Dichloropropene	0.4	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Cyclohexane	NA	5 U	1 UJ	1 U	5 U	5 U	1 UJ	1 U	5 U	1 UJ	0.5 U	1 U	5 U
Dichlorodifluoromethane	5	5 U	1 UJ	1 UJ	5 U	5 U	1 UJ	1 UJ	5 U	1 UJ	0.5 U	1 U	5 U
Ethylbenzene	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Isopropylbenzene	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Methyl Acetate	NA	5 UJ	1 UJ	1 U	5 UJ	5 UJ	1 UJ	1 U	5 UJ	1 UJ	0.5 U	1 UJ	5 UJ
Methyl tert-Butyl Ether	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	**0.97**	1 U	5 U

Table 3
VOCs in Groundwater

	NYS	MW12D		MW13S		MW13S (dup)	MW13S	MW13D			MW1S		
Units: µg/L	Class GA	8/9/2011	4/24/2012	5/11/2010	8/9/2011	8/9/2011	4/24/2012	5/11/2010	8/9/2011	4/24/2012	4/5/2005	5/12/2010	8/10/2011
Methylcyclohexane	NA	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Methylene Chloride	5	5 U	1 UJ	1 U	5 U	5 U	1 UJ	1 U	5 U	1 UJ	0.5 U	1 U	5 U
Styrene	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Tetrachloroethene (PCE)	5	**1.8** J	**2.6**	**1.2**	**3.5** J	**3.3** J	**5.5**	**9.4**	**5.5**	**5.2**	**220**	**8.9**	**4.4** J
Toluene	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
trans-1,2-Dichloroethene	5	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	**0.76**	1 U	5 U
trans-1,3-Dichloropropene	0.4	5 U	1 U	1 UJ	5 U	5 U	1 U	1 UJ	5 U	1 U	0.5 U	1 U	5 U
Trichloroethene (TCE)	5	**1.4** J	**1.6** J	**1.7**	**16**	**14**	**16** J	**200**	**88**	**60** J	**33**	3.1 U	**2.2** J
Trichlorofluoromethane	5	5 U	1 U	1 UJ	5 U	5 U	1 U	1 UJ	5 U	1 U	0.5 U	1 U	5 U
Vinyl chloride	2	5 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	1 U	0.5 U	1 U	5 U
Xylenes, total	5	5 U	2 U	2 U	5 U	5 U	2 U	2 U	5 U	2 U	0.5 U	2 U	5 U

Table 3
VOCs in Groundwater

Units: µg/L	NYS Class GA	MW1S 4/24/2012	MW1D 4/5/2005	MW1D 5/12/2010	MW1D 8/10/2011	MW1D 4/24/2012
1,1,1-Trichloroethane	5	1 UJ	**17**	**15**	**3.7** J	**9.9** J
1,1,2,2-Tetrachloroethane	5	1 U	0.5 U	1 U	5 U	1 U
1,1,2-Trichloroethane	1	1 U	0.5 U	1 U	5 U	1 U
1,1,2-Trichlorotrifluoroethane	5	1 U	**1.7**	**3.5**	5 U	1 U
1,1-Dichloroethane	5	1 U	**4**	**4.3**	**2.2** J	**2.8**
1,1-Dichloroethene	5	1 U	**22**	**30**	**4.3** J	**24**
1,2,4-Trichlorobenzene	5	1 U	0.5 U	1 U	5 U	1 U
1,2-Dibromo-3-chloropropane	0.04	1 U	0.5 U	1 U	5 UJ	1 U
1,2-Dibromoethane (EDB)	5	1 U	0.5 U	1 U	5 U	1 U
1,2-Dichlorobenzene	3	1 U	0.5 U	1 U	5 U	1 U
1,2-Dichloroethane	0.6	1 U	0.5 U	1 U	5 U	1 U
1,2-Dichloroethene, Total	5			**4.4**	**5.7**	
1,2-Dichloropropane	1	1 U	0.5 U	1 U	5 U	1 U
1,3-Dichlorobenzene	3	1 U	0.5 U	1 U	5 U	1 U
1,4-Dichlorobenzene	3	1 U	0.5 U	1 U	5 U	1 U
2-Butanone (MEK)	5	5 U	5 U	5 U	5 UJ	5 U
2-Hexanone	5	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)	5	5 U	5 U	5 U	5 U	5 U
Acetone	5	5 R	5 U	5 U	R	5 R
Benzene	1	1 U	0.5 U	1 U	5 U	1 U
Bromodichloromethane	5	1 U	0.5 U	1 U	5 U	1 U
Bromoform	5	1 U	0.5 U	1 U	5 U	1 U
Bromomethane	5	1 U	0.5 U	1 UJ	5 U	1 U
Carbon disulfide	60	1 U	0.5 U	1 U	5 U	1 U
Carbon Tetrachloride	5	1 UJ	0.5 U	1 U	5 U	1 UJ
Chlorobenzene	5	1 U	0.5 U	1 U	5 U	1 U
Chlorodibromomethane	NA	1 U	0.5 U	1 U	5 U	1 U
Chloroethane	5	1 U	0.5 U	1 U	5 U	1 U
Chloroform	7	1 U	0.5 U	1 U	5 U	1 U
Chloromethane	5	1 U	0.5 U	1 U	5 U	1 U
cis-1,2-Dichloroethene	5	**12**	**4.4**	**4.4**	**5.7**	**6.6**
cis-1,3-Dichloropropene	0.4	1 U	0.5 U	1 U	5 U	1 U
Cyclohexane	NA	1 UJ	0.5 U	1 U	5 U	1 UJ
Dichlorodifluoromethane	5	1 UJ	0.5 U	1 U	5 U	1 UJ
Ethylbenzene	5	1 U	0.5 U	1 U	5 U	1 U
Isopropylbenzene	5	1 U	0.5 U	1 U	5 U	1 U
Methyl Acetate	NA	1 UJ	0.5 U	1 U	5 UJ	1 UJ
Methyl tert-Butyl Ether	5	1 U	0.5 U	1 U	5 U	1 U

Units: µg/L	NYS Class GA	MW1S 4/24/2012		MW1D 4/5/2005		MW1D 5/12/2010		MW1D 8/10/2011		MW1D 4/24/2012	
Methylcyclohexane	NA	1	U	0.5	U	1	U	5	U	1	U
Methylene Chloride	5	1	UJ	0.5	U	1	U	5	U	1	UJ
Styrene	5	1	U	0.5	U	1	U	5	U	1	U
Tetrachloroethene (PCE)	5	**5.5**		**8.6**		**18**		**6.6**		**24**	
Toluene	5	1	U	0.5	U	1	U	5	U	1	U
trans-1,2-Dichloroethene	5	1	U	0.5	U	1	U	5	U	1	U
trans-1,3-Dichloropropene	0.4	1	U	0.5	U	1	U	5	U	1	U
Trichloroethene (TCE)	5	**1.8**	J	**54**		**74**		**65**		**110**	J
Trichlorofluoromethane	5	1	U	0.5	U	1	U	5	U	1	U
Vinyl chloride	2	1	U	0.5	U	1	U	5	U	1	U
Xylenes, total	5	2	U	0.5	U	2	U	5	U	2	U

Table 4
MNA Parameters in Groundwater

		NY	MW11S			MW11D			MW12S	(dup)	MW12S		MW12D		
ANALYTE	UNITS	Class GA	5/12/2010	10/3/2011	4/24/2012	5/12/2010	10/3/2011	4/24/2012	5/11/2010	5/11/2010	8/9/2011	4/24/2012	5/11/2010	8/9/2011	4/24/2012
Methane	µg/L	NA	1 U	1.9	**1.8**	**0.63** J	**1.7**	**13**	1 U	1 U	**0.61**	**1.8**	1 U	**0.63**	**1.6**
Carbon Dioxide	µg/L	NA	**5200**	1750	**2340**	**1000**	**7350**	**10300**	**3500**	**3400**	**6400**	**3530**	**3500**	**2300**	**8150**
Sulfate	mg/L	250	**16.1** B	12	**23.5**	**28.4** B	**17**	**15.6**	**28.9**	**29**	**37**	**47.6** R01	**46.8**	**25**	**29.3**
Nitrogen, Nitrate	mg/L-N	10	**1.42**	1.3 B	**2.3** D	**1.62**	**1.3** B	**1.2** D	**2.97**	**2.97**	**4** B	**3.77**	**3.38** D08	**2.4** B	**2.59**
Iron - Dissolved	mg/L	300	0.05 U	0.2 U	**50.4** B	0.05 U	0.2 U	**0.229**	0.05 U	0.05 U	0.2 U	0.2 U	0.05 U	0.2 U	0.2 U
Dissolved Oxygen															
Laboratory	mg/L	NA	**10.5**	**33.6**	**50.4**	**10.6**	**35.6**	**37.3**	**11.3**	**11.3**	**37.2**	**27.4**	**9.9**	**47.4**	**35.0**
Field	mg/L	NA	**9.7**	**13.4**	**14.0**	**3.8**	**3.1**	**2.8**	**10.1**	NA	**7.5**	**12.7**	**9.9**	**15.8**	**8.3**
Temperature															
Field	Celsius	NA	**14.4**	**17.9**	**11.7**	**13.3**	**19.0**	**15.9**	**15.8**	NA	**20.1**	**15.0**	**17.2**	**18.7**	**10.5**

U Not detected
J Concentrations are estimated.
D Dilution required due to high concentration of target analyte(s)
B Analyte was detected in the associated Method Blank
NA Not available
Detections are in bold text.
The field dissolved oxygen and temperature are the final readings collected during groundwater sampling.

Table 4
MNA Parameters in Groundwater

ANALYTE	UNITS	NY Class GA	MW13S 5/11/2010	MW13S 8/9/2011	MW13S 4/24/2012	MW13D 5/11/2010	MW13D 8/9/2011	MW13D 4/24/2012	MW1S 5/12/2010	MW1S 8/10/2011	MW1S 4/24/2012	MW1D 5/12/2010	MW1D 8/10/2011	MW1D 4/24/2012
Methane	µg/L	NA	1 U	**0.63**	**2.0**	1 U	**0.67**	**1.7**	1 U	**0.7**	**1.7**	1 U	**0.78**	**1.8**
Carbon Dioxide	µg/L	NA	**17000**	**11000**	**12900**	**9000**	**13600**	**22400**	**7700**	**10400**	**8790**	**15000**	**3860**	**13000**
Sulfate	mg/L	250	**47.9**	**28**	**39.5** R01	**12.4**	**12**	**16.5**	**25.9** B	**13**	**18.6**	**24.4** B	**16**	**22.5**
Nitrogen, Nitrate	mg/L-N	10	**3.81** D08	**4.4** B	**5.34**	**6.39** D08	**4.6** B	**5.7**	**1.85**	**2.2** B	**2.6** D	**2.8**	**2.5** B	**2.4** D
Iron - Dissolved	mg/L	300	0.05 U	0.2 U	0.2 U	0.05 U	1.17 U	0.2 U	0.05 U	0.2 U	**0.0463** B	**0.029** J	0.2 U	**0.036** B
Dissolved Oxygen														
Laboratory	mg/L	NA	**12.2**	**16.9**	**18.4**	**9.3**	**16.0**	**52.3**	**6.6**	**25.2**	**48.4**	**4.2**	**38.0**	**18.3**
Field	mg/L	NA	**10.1**	**7.5**	**10.7**	**10.1**	**4.5**	**3.3**	**6.8**	**12.2**	**10.4**	**0.6**	**16.8**	**2.3**
Temperature														
Field	Celsius	NA	**16.7**	**19.4**	**11.3**	**18.3**	**18.3**	**15.7**	**15.8**	**17.9**	**15.9**	**15.2**	**20.8**	**16.4**

APPENDIX A

Field Forms

AECOM

WELL NO. MW-1S

WELL SAMPLING FORM	PROJECT Utility Manufacturing/Wonder King Site	PROJECT No. 60134954	SHEET 1 OF 1 SHEETS
LOCATION Westbury, NY		DATE WELL STARTED April 24, 2012	DATE WELL COMPLETED April 24, 2012
CLIENT NYSDEC		NAME OF INSPECTOR Celeste Foster /Brian Caccioppoli	
DRILLING COMPANY E.A.R./Clearwater Drilling, Inc.			

Time	Depth to Water (ft)	Purge Rate (ml/min)	FIELD MEASUREMENTS Temp. (ºC)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (ntu)	REMARKS
8:47	43.88								Static water level
8:50									Pump On
9:18	43.88	200	15.0	0.36	11.05	5.32	299	221.0	
9:28	43.88	200	14.8	0.37	10.63	5.26	309	207.0	
9:38	43.88	200	15.1	0.38	11.21	5.25	317	325.0	
9:48	43.88	200	15.0	0.39	11.17	5.26	319	446.0	
9:58	43.88	200	15.1	0.39	11.11	5.27	319	591.0	
10:08	43.88	200	14.7	0.40	11.19	5.28	318	163.0	
10:18	43.88	200	15.1	0.39	10.59	5.29	317	220.0	
10:48	43.88	200	15.7	0.39	10.18	5.29	318	348.0	
10:58	43.88	200	15.9	0.39	10.37	5.29	319	434.0	Sampled MW-1S
11:05									

Pump Type: Bladder pump with dedicated tubing for sampling

Analytical Parameters: VOCs, methane, carbon dioxide, dissolved oxygen, iron

AECOM

WELL NO. MW-1D

WELL SAMPLING FORM	PROJECT: Utility Manufacturing/Wonder King Site	PROJECT No.: 60134954	SHEET 1 OF 1 SHEETS
LOCATION: Westbury, NY		DATE WELL STARTED: April 24, 2012	DATE WELL COMPLETED: April 24, 2012
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster /Brian Caccioppoli	
DRILLING COMPANY: E.A.R./Clearwater Drilling, Inc.			

Time	Depth to Water (ft)	Purge Rate (ml/min)	FIELD MEASUREMENTS Temp. (ºC)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (ntu)	REMARKS
8:58	43.86								Static water level
9:00									Pump on, no water
9:17	44.05	220							
9:27	44.05	220							
9:37	44.01	220							very turbid
9:47	44.01	220							
9:57	44.02	220							Horiba in place
10:07	44.02	220	15.51	0.249	2.54	4.86	265	291.0	
10:17	44.00	220	15.45	0.25	2.37	4.96	275	234.0	
10:47	43.94	220	16.17	0.242	2.19	5.04	281	151.0	
10:57	43.92	220	16.50	0.243	2.26	5.04	284	142.0	
11:17	43.90	220	16.35	0.245	2.31	4.98	292	116.0	
11:25									Sampled MW-1D

Pump Type: Bladder pump with dedicated tubing for sampling

Analytical Parameters: VOCs, methane, carbon dioxide, dissolved oxygen, iron

AECOM

WELL NO. MW-11S

WELL SAMPLING FORM	PROJECT: Utility Manufacturing/Wonder King Site	PROJECT No.: 60134954	SHEET 1 OF 1 SHEETS
LOCATION: Westbury, NY		DATE WELL STARTED: April 24, 2012	DATE WELL COMPLETED: April 24, 2012
CLIENT: NYSDEC		NAME OF INSPECTOR: Celeste Foster /Brian Caccioppoli	
DRILLING COMPANY: E.A.R./Clearwater Drilling, Inc.			

Time	Depth to Water (ft)	Purge Rate (ml/min)	FIELD MEASUREMENTS Temp. (ºC)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (ntu)	REMARKS
8:10	44.68								Static water level
8:15		150							Pump on
8:40	44.62	200	10.5	0.670	12.86	5.76	183	279	
8:55	44.45	200	10.5	0.695	14.16	5.53	202	272	
9:10	44.50	200	10.1	0.695	13.70	5.50	215	200	
9:25	44.58	200	9.9	0.673	13.53	5.50	233	133	
9:40	44.58	200	10.0	0.635	14.08	5.57	227	134	
9:55	44.60	200	10.9	0.585	14.32	5.64	220	108	
10:10	44.60	200	11.5	0.587	14.06	5.56	228	131	
10:15	44.60	200	11.7	0.590	13.96	5.57	230	147	
10:30									Sampled MW-11S

Pump Type: Bladder pump with dedicated tubing for sampling

Analytical Parameters: VOCs, methane, carbon dioxide, dissolved oxygen, iron

AECOM

WELL NO. MW-11D

PROJECT		PROJECT No.	SHEET	SHEETS
WELL SAMPLING FORM	Utility Manufacturing/Wonder King Site	60134954	1 OF	1

LOCATION	DATE WELL STARTED	DATE WELL COMPLETED
Westbury, NY	April 24, 2012	April 24, 2012

CLIENT	NAME OF INSPECTOR
NYSDEC	Celeste Foster /Brian Caccioppoli

DRILLING COMPANY	
E.A.R./Clearwater Drilling, Inc.	

Time	Depth to Water (ft)	Purge Rate (ml/min)	FIELD MEASUREMENTS Temp. (ºC)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (ntu)	REMARKS
7:45	44.81								Static water level
7:54									Pump On
8:20	45.08	125	14.51	0.177	1.68	5.68	212	-5.0	Turbid
8:35	45.04	200	15.36	0.184	1.10	5.88	194	-5.0	
8:50	45.10	250	15.39	0.186	1.05	5.78	190	-5.0	
9:05	45.20	250	15.46	0.192	3.68	5.78	192	-5.0	
9:20	45.61	250	15.48	0.191	3.58	5.79	191	924	
9:35	45.32	200	15.28	0.186	3.28	5.62	196	859	
9:50	45.21	200	15.50	0.198	2.97	5.87	187	917	
9:55	45.20	200	15.90	0.199	2.78	5.91	184	-5.0	
10:00									Sampled MW-11D and MS/MSD
10:10									& Duplicate MW-61D for VOCs only

Pump Type: Bladder pump with dedicated tubing for sampling

Analytical Parameters: VOCs, methane, carbon dioxide, dissolved oxygen, iron

AECOM

WELL NO. MW-12S

WELL SAMPLING FORM		PROJECT Utility Manufacturing/Wonder King Site						PROJECT No. 60134954	SHEET 1 OF 1 SHEETS
LOCATION Westbury, NY							DATE WELL STARTED April 23, 2012		DATE WELL COMPLETED April 23, 2012
CLIENT NYSDEC							NAME OF INSPECTOR Celeste Foster /Brian Caccioppoli		
DRILLING COMPANY E.A.R./Clearwater Drilling, Inc.									

Time	Depth to Water (ft)	Purge Rate (ml/min)	FIELD MEASUREMENTS Temp. (ºC)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (ntu)	REMARKS
15:30	43.03								Static water level
15:33									Pump on
15:50	43.03	150	15.0	0.42	13.37	6.56	276	999	
16:05	43.03	150	15.1	0.40	13.20	6.89	257	672.0	
16:20	43.03	150	15.3	0.40	13.09	6.93	249	391.0	
16:35	43.03	150	15.3	0.39	13.04	6.96	246	339.0	
16:50	43.03	150	15.1	0.38	13.11	6.97	248	178.0	
17:05	43.03	150	15.0	0.38	13.16	6.96	247	212.0	
17:30	43.03	150	15.0	0.37	12.71	6.97	247	183.0	
17:35									Sampled MW-12S

Pump Type: Bladder pump with dedicated tubing for sampling

Analytical Parameters: VOCs, methane, carbon dioxide, dissolved oxygen, iron

AECOM

WELL NO. MW-12D

WELL SAMPLING FORM	PROJECT Utility Manufacturing/Wonder King Site	PROJECT No. 60134954	SHEET 1 OF SHEETS 1	
LOCATION Westbury, NY		DATE WELL STARTED April 23, 2012	DATE WELL COMPLETED April 23, 2012	
CLIENT NYSDEC		NAME OF INSPECTOR Celeste Foster /Brian Caccioppoli		
DRILLING COMPANY E.A.R./Clearwater Drilling, Inc.				

Time	Depth to Water (ft)	Purge Rate (ml/min)	FIELD MEASUREMENTS Temp. (ºC)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (ntu)	REMARKS
15:05	43.60								Pump On
15:08									
15:30	43.64	150	10.4	0.382	8.37	6.33	266	-5.0	
15:45	43.67	150	10.4	0.369	8.37	6.13	268	-5.0	
16:00	43.64	150	10.4	0.657	8.38	5.87	276	-5.0	
16:15	43.64	150	10.5	0.352	8.35	5.76	276	-5.0	
16:30	43.64	150	10.9	0.342	8.24	5.63	275	464	
16:45	43.64	150	10.8	0.340	8.20	5.57	276	313.0	
17:00	43.64	150	10.7	0.340	8.20	5.56	277	231.0	
17:10	43.64	150	10.5	0.339	8.25	5.58	277	190.0	
17:15									Sampled MW-12D

Pump Type: Bladder pump with dedicated tubing for sampling

Analytical Parameters: VOCs, methane, carbon dioxide, dissolved oxygen, iron

AECOM

WELL NO. MW-13S

WELL SAMPLING FORM	PROJECT: Utility Manufacturing/Wonder King Site	PROJECT No.: 60134954	SHEET 1 OF SHEETS 1
LOCATION: Westbury, NY	DATE WELL STARTED: April 23, 2012	DATE WELL COMPLETED: April 23, 2012	
CLIENT: NYSDEC	NAME OF INSPECTOR: Celeste Foster /Brian Caccioppoli		
DRILLING COMPANY: E.A.R./Clearwater Drilling, Inc.			

Time	Depth to Water (ft)	Purge Rate (ml/min)	FIELD MEASUREMENTS Temp. (ºC)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (ntu)	REMARKS
11:52	41.73								Static water level
12:57		175							Pump on
13:20	41.73	175	11.6	0.482	12.23	5.23	311	105.0	
13:30	41.74	175	11.3	0.478	11.67	5.05	327	48.1	
13:40	41.74	175	11.4	0.476	11.19	4.86	339	30.7	
13:50	41.43	175	11.4	0.473	10.84	4.77	345	25.5	
14:00	41.73	175	11.3	0.474	10.73	4.74	349	26.4	
14:05									Sampled MW-13S
	41.73								

Pump Type: Bladder pump with dedicated tubing for sampling

Analytical Parameters: VOCs, methane, carbon dioxide, dissolved oxygen, iron

AECOM

WELL NO. MW-13D

WELL SAMPLING FORM	PROJECT: Utility Manufacturing/Wonder King Site	PROJECT No.: 60135954	SHEET 1 OF SHEETS 1
LOCATION: Westbury, NY	DATE WELL STARTED: April 23, 2012	DATE WELL COMPLETED: April 23, 2012	
CLIENT: NYSDEC	NAME OF INSPECTOR: Celeste Foster /Brian Caccioppoli		
DRILLING COMPANY: E.A.R./Clearwater Drilling, Inc.			

Time	Depth to Water (ft)	Purge Rate (ml/min)	FIELD MEASUREMENTS Temp. (ºC)	Conduct. (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (ntu)	REMARKS
11:50	41.81								Static water level
12:55									Pump on
13:10									Pump off
13:35									Pump on; Horiba not attached due to
——									high turbidity
14:30	42.12	200	15.83	0.271	4.14	5.36	284	-5.0	Horiba attached
14:40	42.12	200	15.79	0.259	3.56	5.47	263	842	
14:50	42.13	200	15.76	0.257	3.53	5.49	262	568	
15:00	42.12	200	15.73	0.256	0.35	5.50	262	533	
15:10	42.12	200	15.84	0.255	3.53	5.46	261	535	
15:20	42.14	200	15.75	0.254	3.40	5.42	266	497	
15:30	42.12	200	15.72	0.253	3.35	5.43	268	598	
15:35	42.12	200	15.73	0.252	3.34	5.42	268	591	
15:40									Sampled MW-13D
	41.83								

Pump Type: Bladder pump with dedicated tubing for sampling

Analytical Parameters: VOCs, methane, carbon dioxide, dissolved oxygen, iron

APPENDIX B

Laboratory Data and DUSRs on CD