



Geotechnical Environmental and Water Resources Engineering

Groundwater Monitoring Report January 2012 Semiannual Sampling Event

Glen Cove Former MGP Site

City of Glen Cove Nassau County, Long Island, New York Order on Consent Index No. D1-001-98-11 Site ID No. 1-30-089P

Submitted to:

National Grid USA 175 East Old Country Road Hicksville, NY 11801

Submitted by:

GEI Consultants, Inc. 110 Walt Whitman Road Huntington Station, NY 11746 631-760-9300

April 2012 Project 093270-5-1504



Table of Contents

<u>1.</u>	Introdu	ction and Site Background	1
	1.1	Site Description and History	2
	1.2	Geology	2
	1.3	Hydrogeology	3
	1.4	Historical Groundwater Monitoring Event Summary	3
2.	Glen C	ove Site and Adjacent Offsite Areas	4
	2.1	First Semiannual 2012 Groundwater Monitoring Event Summary	4
	2.2	Monitoring Program	4
		2.2.1 Number of Wells	4
		2.2.2 Hydrological Data	4
		2.2.3 NAPL Gauging	5
		2.2.4 Groundwater Analytical Sampling	5
		2.2.5 Analytical Results	6
	2.3	Future Plans	8

Tables

Attached

- 1 Water Level Measurements and Calculated Groundwater Elevations
- 2 Summary of Groundwater Analytical Results

Embedded

- 2a Shallow Groundwater Measurements
- 2b Intermediate/Deep Groundwater Measurements
- 2c BTEX Detections
- 2d PAH Detections

Figures

- 1 Site Location Map
- 2 Monitoring Well Location Map
- 3 Groundwater Contour Map Shallow Wells 1/27/2012
- 4 Groundwater Contour Map Intermediate Wells 1/27/2012
- 5 Groundwater Analytical Results



i

1. Introduction and Site Background

This report presents the groundwater monitoring results for the Glen Cove Former Manufactured Gas Plant (MGP) site located in Glen Cove, Nassau County, New York (the Site). This report covers the period of August 2011 through January 2012, including the January 2012 groundwater sampling event. The frequency of groundwater monitoring was modified to semiannual following the fourth quarter 2010 groundwater monitoring event, with New York State Department of Environmental Conservation (NYSDEC) approval. This report has been prepared in accordance with the requirements of Section 6 of *DER-10* (Division of Environmental Remediation) *Technical Guidance for Site Investigation and Remediation*; the Order on Consent, Index No. D1-0001-98-11 signed by National Grid Corporation (National Grid) and the NYSDEC, and the *Remedial Action Plan, Glen Cove Former Manufactured Gas Plant, Town of Oyster Bay, Nassau Country, New York* (RAP) prepared by GEI Consultants, Inc. (GEI), dated March 2010.

The NYSDEC-approved remedy for the Site included two remedial phases. Phase I includes the excavation of shallow soil and offsite disposal of accessible MGP-related source material (or "hot spots"). Phase II includes groundwater treatment using oxygen injection technology and the installation of recovery wells to remove mobile non-aqueous phase liquids (NAPL). The current property owner, Long Island Power Authority (LIPA), is conducting a facility upgrade which includes the installation of underground utilities, foundation, pilings, and associated electric equipment. LIPA's upgrade to this substation is necessary to meet the growing energy demand in the Glen Cove region.

Phase I excavation activities were performed from May 5 through 21, 2011 and included the removal and proper disposal of 3,411 tons of material at depths of up to approximately 17 feet below ground surface (ft bgs). An oxygen injection pilot test was conducted on April 27, 2011; the results of which will be incorporated into the Phase II portion of the remedy. Additional excavation of surface soils along the property boundary in the southwest portion of the Site was conducted from July 15 through 18, 2011. Approximately 240 tons of polycyclic aromatic hydrocarbon (PAH)-impacted material was removed to a depth of approximately 2 feet and transported offsite for proper disposal. A summary report of the soil removal was submitted to the NYSDEC on September 12, 2011. Phase II remediation began in February 2012 with the installation of one recovery well. The remaining recovery wells will be installed during 2012. Remaining Phase II remedial activities will be completed at the completion of the ongoing LIPA substation construction.

As part of the long term monitoring of the remedy, National Grid began quarterly monitoring of the groundwater at the Site in Q1 2010. This data, and the subsequent semiannual data,



will provide a seasonal baseline of groundwater analytical results to compare against postremedy concentrations and evaluate the overall effectiveness of the remedial actions. Monitoring wells which have been abandoned to accommodate the ongoing LIPA substation Construction project will be reinstalled during the Phase II field work. Following completion of the Phase II portion of the remedy, quarterly groundwater monitoring will resume.

1.1 Site Description and History

The Glen Cove Former MGP Site is an inverted L-shaped parcel of approximately 1.9 acres presently occupied by an active electrical substation which services Glen Cove and the surrounding area. Topographically, the Site is a flat depression bounded by approximately 20-foot high slopes to the north, south, and east.

To the west, the property slopes downward approximately 20 feet to Glen Cove Creek, a channelized stream, which eventually discharges to Hempstead Bay. Glen Cove Creek flows in a general south to north direction along the western site property line. The creek exits the property boundary at the northwest corner of the Site through a box culvert that directs flow beneath the Long Island Rail Road (LIRR) tracks. The creek eventually discharges to Mosquito Cove (Hempstead Bay). A site location map is included as **Figure 1**.

MGP operations at the Site began in 1905 under the ownership of the Sea Cliff and Glen Cove Gas Company. Facility structures were located on the northern section of the property, and consisted of a 60,000 cubic foot gas holder, boilers, purifiers, retorts, coal shed, engine room, tar and oil tank, and approximately eight gas tanks. In 1929, the Long Island Lighting Company (LILCO) terminated MGP operations and demolished the facility's surface structures sometime thereafter. Site activities following 1929 consisted solely of natural gas storage in a Hortonsphere gas holder through the 1950s. The Hortonsphere was decommissioned and demolished between 1959 and 1966. A major electrical substation was constructed on the Site in the mid-1960s. In 1998, Brooklyn Union Gas (BUG) and LILCO merged to form the KeySpan Corporation, at which time the ownership of the substation was transferred to LIPA. In 2007, National Grid acquired responsibility for the former MGP property through the acquisition of KeySpan. Currently, the Site is owned by LIPA and operated by National Grid under contract to LIPA.

1.2 Geology

The shallow stratigraphy beneath the Site is comprised of heterogeneous fill and glacial outwash of Upper Pleistocene deposits. The stratigraphic sequence consists of outwash deposits overlain by heterogeneous fill. The heterogeneous fill across most of the Site ranges in thickness from approximately 10 feet throughout most of the former site to 30 feet in the offsite area just north of the Site boundary. The fill composition is primarily poorly sorted and highly permeable sand and gravel with varying percentages of gravel, silt, clay, and coal



fragments. The glacial outwash deposits consist mainly of interbedded layers of permeable sand and gravel, and less permeable silty sand. The top of the glacial unit was encountered from approximately 10 ft bgs on the central portion of the Site to approximately 32 ft bgs from the top of the railroad embankment. The ground surface elevation of the Site is significantly lower than the top of the railroad embankment, and when factoring in the ground surface elevation difference, the glacial deposits are encountered at similar elevations across the Site and beneath the railroad embankment.

Glen Cove Creek originally occupied a natural stream channel just to the west of the Site before it was channelized along its present route. The natural creek bed is indicated by the alluvial deposits consisting of reworked glacial outwash present along the western boundary of the Site. The alluvial deposits associated with the original stream channel consist of isolated sand and gravelly sand layers encountered in the upper 5 to 10 feet of soils at the western site boundary.

1.3 Hydrogeology

The groundwater beneath the Site is considered part of the regional Upper Glacial aquifer. Regionally, this aquifer is not used for drinking water. Drinking water for Long Island is provided by the deeper Magothy aquifer.

Groundwater elevations of site wells were similar for the shallow and intermediate wells ranging from about 45 to 53 feet above mean sea level (ft-msl). Groundwater elevation contours indicate a consistent groundwater flow direction to the west for the shallow zone wells and the west-northwest for the intermediate zone.

The water table surface of the shallow groundwater follows the general topography of the Site sloping from east to west. The hydraulic gradient is relatively steep (0.02 feet/foot) in the eastern and western portions of the Site and less steep (0.005 feet/foot) in the western portion of the Site. A uniform hydraulic gradient of about 0.005 feet/foot is present in the intermediate groundwater across the Site. The estimated groundwater seepage flow velocities, assuming an effective porosity of 20 percent, were calculated for the shallow and intermediate aquifer zones as 0.05 and 0.001 feet per day (ft/day), respectively. The potential vertical hydraulic gradients at the Site, at well clusters, are less than .25 feet.

1.4 Historical Groundwater Monitoring Event Summary

Three groundwater monitoring events were conducted at the Site prior to 2010. Groundwater sample collection and analysis, and NAPL/groundwater measurements were conducted in 2004, 2005, and 2008. Quarterly groundwater sampling was conducted through 2010. Semiannual sampling began in July 2011 after completion of the Phase I remedial excavation.



2. Glen Cove Site and Adjacent Offsite Areas

2.1 First Semiannual 2012 Groundwater Monitoring Event Summary

Event Dates: January 24, 27 and 31, 2012

Site Phase: Semiannual groundwater monitoring

Location: The location of the Glen Cove Former MGP Site is depicted on

Figure 1.

2.2 Monitoring Program

2.2.1 Number of Wells

A total of 11 monitoring wells and piezometers are currently located at or adjacent to the Site. Piezometer PZ-03 is believed to have been destroyed in 2007. Monitoring wells GCMW-09S, GCMW-09I, GCMW-10S, GCMW-10I, GCMW-14S and GCMW-14I, as well as piezometers PZ-01A, PZ-02A, PZ-04 and PZ-07 were either destroyed or abandoned as part of the remedial activities conducted between March and May 2011. Monitoring well and piezometer locations are depicted on **Figure 2**.

2.2.2 Hydrological Data

Groundwater levels were measured at 11 monitoring wells and piezometers on January 27, 2012. Depth to groundwater and calculated groundwater elevations are provided in **Table 1**. Shallow and intermediate groundwater contours for the January 2012 semiannual sampling event are depicted in **Figures 3** and **4**, respectively. The groundwater flow direction was generally to the west towards Glen Cove Creek in the shallow zone. Currently only two wells remain in the intermediate zone and the groundwater direction depicted on **Figure 4** is based on historical data from previous sampling events. The depth to water and water table elevation data for the shallow and intermediate/deep portions of the aquifer are presented below.



Shallow Groundwater Zone

Table 2a – Shallow Groundwater Measurements

Well ID	Depth to Water (feet)	Water Elevation (feet above MSL)
PZ-05	7.83	55.05
PZ-06	4.12	54.40
GCMW-08S	25.22	53.37
GCMW-11S	7.14	50.38
GCMW-12S	11.55	55.08
GCMW-13S	8.86	48.87
GCMW-15	5.11	46.73
GCMW-16	4.67	46.62

The average calculated shallow hydraulic gradient was 0.0256 feet/foot.

Intermediate/Deep Groundwater Zone

Table 2b – Intermediate/Deep Groundwater Measurements

Well ID	Depth to Water (feet)	Water Elevation (feet above MSL)
GCMW-08D	26.52	52.30
GCMW-11I	7.18	50.27
GCMW-13I	8.33	49.40

The calculated intermediate hydraulic gradient was 0.012 feet/foot.

2.2.3 NAPL Gauging

All of the existing wells of the groundwater monitoring network were gauged for the presence of non-aqueous phase liquid (NAPL) on January 27, 2011. Dense non-aqueous phase liquid (DNAPL) was present in one well, MW-13S, at a thickness of 0.65 feet. Historically, measurable DNAPL has only been observed in this well. DNAPL was measured at a thickness of 0.74 feet in June 2005 and had been steadily decreasing to the thickness of 0.3 feet, in July 2011, prior to the observed increase in January 2012.

2.2.4 Groundwater Analytical Sampling

The first semiannual 2012 groundwater sampling event was performed on January 24, 27, and 31, 2012 and included all accessible wells on the quarterly sampling list. A total of 11 monitoring wells and piezometers were sampled for the following analytes:

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tert-butyl ether (MTBE) via Environmental Protection Agency (EPA) Method 8260.
- PAHs and semi-volatile organic compounds (SVOCs) via EPA Method 8270.



Additionally, monitoring wells GCMW-15 and GCMW-16 were sampled for natural attenuation monitoring parameters for system pre-operational purposes for the following analytes:

- Polychlorinated biphenyls (PCBs) via EPA Method 8082
- Metals via EPA Method 6010, 8000/7000
- Mercury via EPA Method 7470/7471
- Cyanide via EPA Method 9012
- TOC-KAHN,
- Nitrate (E535)
- Sulfate via EPA Method 30
- Alkalinity
- Biochemical Oxygen Demand
- Free Carbon Dioxide
- Chemical Oxygen Demand
- Nitrogen Ammonia
- Nitrite via E353
- Ferrous Iron
- Dissolved Manganese
- Standard Plate Count

2.2.5 Analytical Results

The discussion below focuses on the analytical results from the current semiannual sampling event. A summary of historical groundwater monitoring results are included on **Figure 5**. More in-depth evaluation of the results will be conducted when the planned oxygen injection system is installed and becomes operational, following the completion of the ongoing LIPA substation construction.

BTEX

Total BTEX concentrations ranged from less than method detection limits (ND) in eight of the 11 wells sampled, to 624 micrograms per liter (μ g/L) in GCMW-13S. The detections are summarized in the following table.

Table 2c – BTEX Detections

Sample Name:	GCMW-11S	GCMW-11I	GCMW-13S
Sample Date:	1/31/2012	1/31/2012	1/31/2012
Benzene	48	12	1 U
Toluene	11	1 U	24
Ethylbenzene	200 D	1 U	230 D
Xylene, total	190	1	370
Total BTEX	449	13	624



Notes:

All values reported in µg/L

Bolding indicates a detected concentration

Gray shading indicates that the detected result value exceeds NYS AWQS

D: sample diluted for quantification purposes

U: indicates not detected to the reporting limit for organic analysis

For the first semiannual 2012 monitoring event, BTEX detections were at, or near, the respective historical minimum concentrations. BTEX concentrations in GCMW-11S were the lowest values recorded. BTEX concentrations in GCMW-11I significantly decreased from 2004 concentrations and have remained relatively stable.

SVOCs

Total PAH concentrations ranged from ND in five of the 11 wells sampled to 16,678 μ g/L in GCMW-13S. The detections are summarized in the following table.

Table 2d – PAH Detections

Sample Name:	GCMW- 08D	GCMW- 11S	GCMW- 11I	GCMW- 13S	GCMW- 13I	GCMW- 15
Sample Date	1/24/2012	1/31/2012	1/31/2012	1/31/2012	1/31/2012	1/24/2012
Acenaphthene	25	280 D	10 U	10 U	10 U	1 J
Acenaphthylene	16	16	10 U	10	10 U	10 U
Anthracene	13	10	10 U	10	2 J	10 U
Benz[a]anthracene	2 J	10 U	10 U	10 U	10 U	10 U
Benzo[a]pyrene	1 J	10 U	10 U	10 U	10 U	10 U
Chrysene	1	10 U	10 U	10 U	10 U	10 U
Fluoranthene	11	4 J	10 U	5 J	5 J	10 U
Fluorene	23	61	10 U	51	10 U	10 U
Methylnaphthalene,2-	10 U	360 D	19	1,400 D	10 U	10 U
Naphthalene	2 J	4,400 D	510 D	15,000 D	10 U	10 U
Phenanthrene	120 D	70	10 U	56	3 J	10 U
Pyrene	16	5 J	10 U	6 J	6 J	10 U
Total PAHs	230	5,206	529	16,678	16	1

Notes:

All values reported in µg/L

Bolding indicates a detected concentration

Gray shading indicates that the detected result value exceeds NYS AWQS

J: estimated value

D: sample diluted for quantification purposes

U: indicates not detected to the reporting limit for organic analysis

In two of the six wells with detections, PAH concentrations were below groundwater standards. The January 2012 total PAH concentrations in wells GCMW-11S and GCMW-11I were within the respective historical concentration ranges. The total PAH concentrations in the remaining two wells, GCMW-08D and GCMW-13S, were the highest recorded. Detections of non-PAH SVOCs were sparse and included five SVOCs (bis(2-ethylhexyl)phthalate, carbazole, dibenzofuran, diethylphthalate, and 4-methylphenol).



The laboratory analytical results for the January 2012 semiannual sampling event are included in **Table 2**.

Monitoring Parameters for the Future Oxygen Injection System

The January 2012 semiannual monitoring parameter results for evaluating the planned oxygen injection system operation will be presented and evaluated along with all preoperational and system startup data in the system startup report.

2.3 Future Plans

- Design and construct an oxygen injection system as part of Phase II remedy
- Install additional monitoring wells as part of Phase II remedy
- Continue semiannual groundwater and NAPL monitoring, then quarterly after startup of the oxygen injection system.



Tables



Table 1 Water Level Measurements and Calculated Groundwater Elevations Glen Cove Former MGP Site Glen Cove, New York

Well ID	Date of Measurement	Screened Interval (feet bgs)	Time of Measurement	Well Casing Diameter (inches)	Well Elevation ¹ (feet above MSL)	Depth to Water (feet)	Water Elevation (feet above MSL)	Notes
PZ-01A*	NM	25 - 35	NM	2	57.11	NM	NM	
PZ-02A*	NM	18 - 21	NM	2	58.58	NM	NM	
PZ-03*	NM	14 - 19	NM	-	56.76	NM	NM	
PZ-04*	NM	16 - 19	NM	2	56.96	NM	NM	
PZ-05	1/27/2012	8 - 18	0927	2	62.88	7.83	55.05	
PZ-06	1/27/2012	7 - 17	0921	2	58.52	4.12	54.40	
PZ-07*	NM	3 - 10	NM	2	50.36	NM	NM	
GCMW-08S	1/27/2012	26 - 36	0728	2	78.59	25.22	53.37	
GCMW-08D	1/27/2012	60 - 70	0730	2	78.82	26.52	52.30	
GCMW-09S*	NM	8 - 18	NM	2	56.81	NM	NM	
GCMW-09I*	NM	26 - 36	NM	2	56.88	NM	NM	
GCMW-10S*	NM	11 - 16	NM	2	52.62	NM	NM	
GCMW-10I*	NM	16 - 26	NM	2	53.08	NM	NM	
GCMW-11S	1/27/2012	8 - 20	0952	2	57.52	7.14	50.38	
GCMW-11I	1/27/2012	23 - 28	0955	2	57.45	7.18	50.27	
GCMW-12S	1/27/2012	14 - 24	0925	2	66.63	11.55	55.08	
GCMW-13S	1/27/2012	12 - 22	0948	2	57.73	8.86	48.87	
GCMW-13I	1/27/2012	25 - 30	0949	2	57.73	8.33	49.40	
GCMW-14S*	NM	8 - 18	NM	2	58.74	NM	NM	
GCMW-14I*	NM	25 - 30	NM	2	58.75	NM	NM	
GCMW-15	1/27/2012	6 - 16	0710	2	51.34	5.11	46.23	
GCMW-16	1/27/2012	6 - 16	0712	2	51.29	4.67	46.62	

Notes:

bgs - Below Ground Surface

¹- Well Elevations Obtained From 2008 RI

MSL - Mean Sea Level

* Destroyed

NM - Not Measured



Sample Name	NYS AWQS	GCMW-08S 1/24/2012	GCMW-08I 1/24/2012	GCMW-11S 1/31/2012	GCMW-11I 1/31/2012	Duplicate of: GCMW-11I 1/31/2012	GCMW-12S 1/27/2012	GCMW-13S 1/31/2012	GCMW-13I 1/31/2012
Sample Date:	AWQS	1/24/2012	1/24/2012	1/31/2012	1/31/2012	1/31/2012	1/2//2012	1/31/2012	1/31/2012
Benzene	1	1 U	1 U	48	12	9	1 U	1 U	1 U
Toluene	5	1 U	1 U	11	1 U	1 U	1 U	24	1 U
Ethylbenzene	5	1 U	1 U	200 D	1 U	1 U	1 U	230 D	1 U
Xylene, total	5	1 U	1 U	190	1	1	1 U	370	1 U
Total BTEX	NE	ND	ND	449	13	10	ND	624	ND
Other VOCs (ug/L) Acetone	50*	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Butanone,2-	50*	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	60*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene Chloroethane	5 5	1 U 1 U	1 U 1 U	1 U 1 U	1 U 1 U				
Chloroform	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichloroethane,1,1-	5	1 U	1 U	2	1 U	1 U	1 U	1 U	1 U
Dichloroethane,1,2-	0.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichloroethene,1,1-	0.07	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichloroethene,1,2- (total)	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichloropropane,1,2-	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichloropropene, cis-1,3 Dichloropropene, trans-1,3	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexanone,2-	NE 50*	5 U	5 U	1 U 5 U	1 U 5 U	1 U 5 U	1 U 5 U	1 U 5 U	5 U
Methyl tert-butyl ether	10*	10 U	2 J	10 U	60	44	10 U	4 J	10 U
Methyl-2-pentanone,4-	NE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene chloride	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Styrene	5	1 U	1 U	1 U	1 U	1 U	1 U	9	1 U
Tetrachloroethane,1,1,2,2-	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	1 U	1 U	1 U	2	1	1 U	1 U	4
Trichloroethane,1,1,1-	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethane,1,1,2- Trichloroethene	1 5	1 U 1 U	1 U 1 U	1 U	1 U 1 U	1 U 1 U	1 U	1 U 1 U	1 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total VOCs	NE	ND	2	451	75	55	ND	637	4
Non-carcinogenic PAHs (ug/L)			_						
Acenaphthene	20*	10 U	25	280 DJ	10 U	10 U	10 U	140 J	10 U
Acenaphthylene	NE	10 U	16	16	10 U	10 U	10 U	10	10 U
Anthracene	50*	10 U	13	10	10 U	10 U	10 U	10	2 J
Benzo[g,h,i]perylene	NE 50*	10 U 10 U	10 U	10 U 4 J	10 U	10 U 10 U	10 U 10 U	10 U 5 J	10 U 5 J
Fluoranthene Fluorene	50*	10 U	23	61	10 U	10 U	10 U	5 J 51	10 U
Methylnaphthalene,2-	NE	10 U	10 U	360 DJ	19	22	10 U	1400 DJ	10 U
Naphthalene	10*	10 U	2 J	4400 D	510 D	520 D	10 U	15000 D	10 U
Phenanthrene	50*	10 U	120 D	70	10 U	10 U	10 U	56	3 J
Pyrene	50*	10 U	16	5 J	10 U	10 U	10 U	6 J	6 J
Carcinogenic PAHs (ug/L)									
Benz[a]anthracene	0.002*	10 U	2 J	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[a]pyrene	ND	10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene	0.002*	10 U	10 U	10 U	10 U				
Benzo[k]fluoranthene Chrysene	0.002* 0.002*	10 U 10 U	10 U	10 U	10 U	10 U 10 U	10 U 10 U	10 U	10 U
Dibenz[a,h]anthracene	NE	10 U	10 U	10 U	10 U				
Indeno[1,2,3-cd]pyrene	0.002*	10 U	10 U	10 U	10 U				
Total PAHs	NE	ND	230	5206	529	542	ND	16678	16
Other SVOCs (ug/L)									
Bis(2-chloroethoxy)methane	5	10 U	10 U	10 U	10 U				
Bis(2-chloroethyl)ether	1	10 U	10 U	10 U	10 U				
Bis(2-ethylhexyl)phthalate	5	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bis(chloroisopropyl)ether Bromophenyl phenyl ether,4-	5 NE	10 U	10 U	10 U	10 U	10 U 10 U	10 U 10 U	10 U	10 U
Butyl benzyl phthalate	NE 50*	10 U	10 U	10 U	10 U				
Carbazole	NE	10 U	10 U	23	10 U	10 U	10 U	9 J	10 U
Chloro-3-methylphenol,4-	NE	10 U	10 U	10 U	10 U				
Chloroaniline,4-	5	10 U	10 U	10 U	10 U				
Chloronaphthalene,2-	10*	10 U	10 U	10 U	10 U				
Chlorophenol,2-	NE	10 U	10 U	10 U	10 U				
Chlorophenyl phenyl ether,4-	NE	10 U	10 U	10 U	10 U				
Dibenzofuran	NE	10 U	7 J	12	10 U	10 U	10 U	12	10 U
Dichlorobenzene,1,2-	3	10 U	10 U	10 U	10 U				
Dichlorobenzene,1,3- Dichlorobenzene,1,4-	3	10 U 10 U	10 U 10 U	10 U	10 U 10 U	10 U 10 U	10 U 10 U	10 U 10 U	10 U 10 U
Dichlorobenzidine,3,3-	5	10 U	10 U	10 U	10 U				
Diding obchizion io, o, o		100	100	100	100	100	100	100	100



Or walls No wa	NIVO	000444 000	001111 001	0011111 440	000000 441	Duplicate of:	001111/400	0011111 400	001414 401
Sample Name Sample Date		GCMW-08S 1/24/2012	GCMW-08I 1/24/2012	GCMW-11S 1/31/2012	GCMW-11I 1/31/2012	GCMW-11I 1/31/2012	GCMW-12S 1/27/2012	GCMW-13S 1/31/2012	GCMW-13I 1/31/2012
Dichlorophenol,2,4-	5 5	10 U							
Diethyl phthalate	50*	10 U	1 J	10 U					
Dimethyl phthalate	50*	10 U							
Dimethylphenol, 2,4-	50*	10 U							
Di-n-butyl phthalate	50	10 U							
Dinitro-2-methylphenol,4,6- Dinitrophenol,2,4-	NE 10*	25 U 25 U							
Dinitrophenol,2,4-	5	10 U							
Dinitrotoluene,2,6-	5	10 U							
Di-n-octyl phthalate	50*	10 U							
Hexachlorobenzene	0.04	10 U							
Hexachlorobutadiene	0.5	10 U							
Hexachlorocyclopentadiene	5	10 U							
Hexachloroethane	5 50*	10 U 10 U	10 U	10 U 10 U	10 U	10 U 10 U	10 U 10 U	10 U 10 U	10 U
Isophorone Methylphenol, 4-	1	10 U							
Methylphenol,2-	1	10 U							
Nitroaniline,2-	5	25 U							
Nitroaniline,3-	5	25 U							
Nitroaniline,4-	5	25 U							
Nitrobenzene	0.4	10 U							
Nitrophenol,2-	NE	10 U							
Nitrophenol,4-	NE	25 U							
N-Nitrosodi-n-propylamine N-Nitrosodiphenylamine	NE 50*	10 U 10 U							
Pentachlorophenol	1	25 U							
Phenol	1	10 U							
Trichlorobenzene.1.2.4-	5	10 U							
Trichlorophenol,2,4,5-	NE	10 U							
Trichlorophenol,2,4,6-	NE	10 U							
Total SVOCs	NE	2	238	5242	529	542	ND	16699	16
PCBs (ug/L)	LNE	NIA	l NA	l NIA	NIA.	NIA.	NIA.	N. A. L. A.	A I A
Aroclor 1016 Aroclor 1221	NE NE	NA NA							
Aroclor 1232	NE	NA NA							
Aroclor 1242	NE	NA	NA	NA	NA	NA NA	NA	NA	NA
Aroclor 1248	NE	NA							
Aroclor 1254	NE	NA							
Aroclor 1260	NE	NA							
Total PCBs	NE	NA							
Dissolved Metals (ug/L) Manganese	300	NA							
Total Metals (ug/L)	300	INA							
Aluminum	NE	NA							
Antimony	3	NA							
Arsenic	25	NA							
Barium	1000	NA							
Beryllium	3*	NA							
Calairm	5	NA NA							
Calcium Chromium	NE 50	NA NA							
Cobalt	NE	NA NA							
Copper	200	NA	NA	NA	NA	NA NA	NA	NA	NA
Iron	300	NA							
Lead	25	NA							
Magnesium	35000*	NA							
Manganese	300	NA							
Mercury	0.7	NA NA							
Nickel Potassium	100 NE	NA NA							
Selenium	10	NA NA							
Silver	50	NA	NA NA	NA	NA	NA NA	NA	NA	NA
Sodium	20000	NA							
Thallium	0.5*	NA							
Vanadium	NE	NA							
Zinc	2000*	NA							
Total Cyanide (ug/L) Cyanide, Total	200	NA							



						Duplicate of:			
Sample Name:	NYS	GCMW-08S	GCMW-08I	GCMW-11S	GCMW-11I	GCMW-11I		GCMW-13S	GCMW-13I
Sample Date:	AWQS	1/24/2012	1/24/2012	1/31/2012	1/31/2012	1/31/2012	1/27/2012	1/31/2012	1/31/2012
Other (ug/L)									
Alkalinity	NE	NA	NA	NA	NA	NA	NA	NA	NA
Biochemical Oxygen Demand	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Dioxide, Free	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chemical Oxygen Demand	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	250000	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	200	NA	NA	NA	NA	NA	NA	NA	NA
Ferrous iron	NE	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Nitrate	10000	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Nitrite	1000	NA	NA	NA	NA	NA	NA	NA	NA
Standard Plate Count (cfu/mL)	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	250000	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	50*	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Phosphorous	NE	NA	NA	NA	NA	NA	NA	NA	NA



Sample Name:	NYS	GCMW-15		Duplicate of: GCMW-16	PZ-05	PZ-06
Sample Date:	AWQS	1/24/2012	1/24/2012	1/24/2012	1/27/2012	1/27/2012
Benzene	1	1 U	1 U	1 U	1 U	1 U
Toluene	5	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U
Xylene, total Total BTEX	5 NE	1 U ND	1 U ND	1 U ND	1 U ND	1 U ND
Other VOCs (ug/L)	INE	ND	ואט	ND	IND	טאו
Acetone	50*	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	50*	1 U	1 U	1 U	1 U	1 U
Bromoform	50*	1 U	1 U	1 U	1 U	1 U
Bromomethane Butanone,2-	5 50*	1 U 5 U	1 U 5 U	1 U 5 U	1 U 5 U	1 U 5 U
Carbon disulfide	60*	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	1 U
Chloroform	7	1 U	1 U	1 U	1 U	1 U
Chloromethane Dibromochloromethane	5 50*	1 UJ 1 U	1 UJ 1 U	1 UJ 1 U	1 U	1 U
Dichloroethane,1,1-	50"	2	1 U	1 U	1 U	1 U
Dichloroethane,1,2-	0.6	1 U	1 U	1 U	1 U	1 U
Dichloroethene,1,1-	0.07	1 U	1	1 U	1 U	1 U
Dichloroethene,1,2- (total)	NE	3	1	1	1 U	1 U
Dichloropropane,1,2-	1 NE	1 U	1 U	1 U	1 U	1 U
Dichloropropene, cis-1,3 Dichloropropene, trans-1,3	NE NE	1 U 1 U	1 U 1 U	1 U 1 U	1 U	1 U 1 U
Hexanone,2-	50*	5 U	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	10*	10 U	10 U	10 U	10 U	10 U
Methyl-2-pentanone,4-	NE	5 U	5 U	5 U	5 U	5 U
Methylene chloride	5	2 U	2 U	2 U	2 U	2 U
Styrene Tetrachloroethane, 1, 1, 2, 2-	5 5	1 U 1 U	1 U	1 U 1 U	1 U	1 U 1 U
Tetrachloroethene	5	1 UJ	2 J	2 J	1 U	1 U
Trichloroethane,1,1,1-	5	1 U	1 U	1 U	1 U	1 U
Trichloroethane,1,1,2-	1	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	1 U	2	2	1 U	1 U
Vinyl chloride	2	5	1 U	1 U	1 U	1 U
Total VOCs Non-carcinogenic PAHs (ug/L)	NE	10	6	5	ND	ND
Acenaphthene	20*	1 J	10 UJ	10 UJ	10 U	10 U
Acenaphthylene	NE	10 U	10 UJ	10 UJ	10 U	10 U
Anthracene	50*	10 U	10 UJ	10 UJ	10 U	10 U
Benzo[g,h,i]perylene	NE	10 U	10 UJ	10 UJ	10 U	10 U
Fluorene Fluorene	50* 50*	10 U 10 U	10 UJ 10 UJ	10 UJ 10 UJ	10 U	10 U 10 U
Methylnaphthalene,2-	NE	10 U	10 UJ	10 UJ	10 U	10 U
Naphthalene	10*	10 U	10 UJ	10 UJ	10 U	10 U
Phenanthrene	50*	10 U	10 UJ	10 UJ	10 U	10 U
Pyrene	50*	10 U	10 UJ	10 UJ	10 U	10 U
Carcinogenic PAHs (ug/L)	0.000*	10 U	10.111	10 !!!	1011	1011
Benz[a]anthracene Benzo[a]pyrene	0.002* ND	10 U	10 UJ 10 UJ	10 UJ 10 UJ	10 U 10 U	10 U 10 U
Benzo[b]fluoranthene	0.002*	10 U	10 UJ	10 UJ	10 U	10 U
Benzo[k]fluoranthene	0.002*	10 U	10 UJ	10 UJ	10 U	10 U
Chrysene	0.002*	10 U	10 UJ	10 UJ	10 U	10 U
Dibenz[a,h]anthracene	NE	10 U	10 UJ	10 UJ	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002*	10 U	10 UJ	10 UJ	10 U	10 U
Total PAHs Other SVOCs (ug/L)	NE	1	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	5	10 U	10 UJ	10 UJ	10 U	10 U
Bis(2-chloroethyl)ether	1	10 U	10 UJ	10 UJ	10 U	10 U
Bis(2-ethylhexyl)phthalate	5	10 U	10 UJ	10 UJ	10 U	10 U
Bis(chloroisopropyl)ether	5	10 U	10 UJ	10 UJ	10 U	10 U
Bromophenyl phenyl ether,4- Butvl benzyl phthalate	NE FO*	10 U 10 U	10 UJ 10 UJ	10 UJ 10 UJ	10 U 10 U	10 U 10 U
Carbazole	50* NE	10 U	10 UJ	10 UJ	10 U	10 U
Chloro-3-methylphenol,4-	NE	10 U	10 UJ	10 U	10 U	10 U
Chloroaniline,4-	5	10 U	10 UJ	10 UJ	10 U	10 U
Chloronaphthalene,2-	10*	10 U	10 UJ	10 UJ	10 U	10 U
Chlorophenol,2-	NE	10 U	10 UJ	10 U	10 U	10 U
Chlorophenyl phenyl ether,4-	NE	10 U	10 UJ	10 UJ	10 U	10 U
Dibenzofuran Dichlorobenzene,1,2-	NE 3	10 U 10 U	10 UJ 10 UJ	10 UJ 10 UJ	10 U	10 U 10 U
Dichlorobenzene,1,3-	3	10 U	10 UJ	10 UJ	10 U	10 U
Dichlorobenzene,1,4-	3	10 U	10 UJ	10 UJ	10 U	10 U
Dichlorobenzidine,3,3-	5	10 U	10 UJ	10 UJ	10 U	10 U



	10.00	001111/15	001111/10	Duplicate of:	D7.05	D7.00
Sample Name: Sample Date:	NYS AWQS	GCMW-15 1/24/2012	GCMW-16 1/24/2012	GCMW-16 1/24/2012	PZ-05 1/27/2012	PZ-06 1/27/2012
Dichlorophenol,2,4-	5 AWQS	10 U	10 UJ	1/24/2012 10 U	10 U	10 U
Diethyl phthalate	50*	10 U	10 UJ	10 UJ	10 U	10 U
Dimethyl phthalate	50*	10 U	10 UJ	10 UJ	10 U	10 U
Dimethylphenol, 2,4-	50*	10 U	10 UJ	10 U	10 U	10 U
Di-n-butyl phthalate	50	10 U	10 UJ	10 UJ	10 U	10 U
Dinitro-2-methylphenol,4,6- Dinitrophenol,2,4-	NE 10*	25 U 25 U	25 UJ 25 UJ	25 U 25 U	25 U 25 U	25 U 25 U
Dinitropherol,2,4-	5	10 U	10 UJ	10 UJ	10 U	10 U
Dinitrotoluene,2,6-	5	10 U	10 UJ	10 UJ	10 U	10 U
Di-n-octyl phthalate	50*	10 U	10 UJ	10 UJ	10 U	10 U
Hexachlorobenzene	0.04	10 U	10 UJ	10 UJ	10 U	10 U
Hexachlorobutadiene	0.5	10 U	10 UJ	10 UJ	10 U	10 U
Hexachlorocyclopentadiene Hexachloroethane	5 5	10 U 10 UJ	10 UJ 10 UJ	10 UJ 10 UJ	10 U 10 U	10 U 10 U
Isophorone	50*	10 U	10 UJ	10 UJ	10 U	10 U
Methylphenol, 4-	1	10 U	10 UJ	10 U	10 U	10 U
Methylphenol,2-	1	10 U	10 UJ	10 U	10 U	10 U
Nitroaniline,2-	5	25 U	25 UJ	25 UJ	25 U	25 U
Nitroaniline,3-	5	25 U	25 UJ	25 UJ	25 U	25 U
Nitroaniline,4-	5 0.4	25 U 10 U	25 UJ 10 UJ	25 UJ 10 UJ	25 U 10 U	25 U 10 U
Nitrophenol,2-	NE	10 U	10 UJ	10 U	10 U	10 U
Nitrophenol,4-	NE	25 U	25 UJ	25 U	25 U	25 U
N-Nitrosodi-n-propylamine	NE	10 U	10 UJ	10 UJ	10 U	10 U
N-Nitrosodiphenylamine	50*	10 U	10 UJ	10 UJ	10 U	10 U
Pentachlorophenol	1	25 U	25 UJ	25 U	25 U	25 U
Phenol Triables and a 4 2 4	1 5	10 U	10 UJ	10 U	10 U	10 U
Trichlorobenzene,1,2,4- Trichlorophenol,2,4,5-	NE	10 U	10 UJ 10 UJ	10 UJ 10 U	10 U	10 U
Trichlorophenol.2.4.6-	NE	10 U	10 UJ	10 U	10 U	10 U
Total SVOCs	NE	1	ND	ND	ND	ND
PCBs (ug/L)						
Aroclor 1016	NE	1 U	1 U	1 U	NA	NA
Aroclor 1221 Aroclor 1232	NE NE	2 U 1 U	2 U 1 U	2 U 1 U	NA NA	NA NA
Aroclor 1232 Aroclor 1242	NE	1 U	1 U	1 U	NA NA	NA NA
Aroclor 1248	NE	1 U	1 U	1 U	NA	NA
Aroclor 1254	NE	1 U	1 U	1 U	NA	NA
Aroclor 1260	NE	1 U	1 U	1 U	NA	NA
Total PCBs	NE	ND	ND	ND	NA	NA
Dissolved Metals (ug/L) Manganese	300	975	1.3 UJ	1.6 UJ	NA	NA
Total Metals (ug/L)	300	9/3	1.3 03	1.6 03	INA	INA
Aluminum	NE	41.4 UJ	21.9 UJ	29.4 UJ	NA	NA
Antimony	3	2.6 UJ	2.6 UJ	2.2 U	NA	NA
Arsenic	25	1.8 U	1.8 U	1.8 U	NA	NA
Barium	1000	118 J	88.2 J	89.4 J	NA	NA
Beryllium Cadmium	3* 5	0.13 UJ 0.17 U	0.13 UJ 0.17 U	0.13 UJ 0.17 U	NA NA	NA NA
Calcium	NE	53300	36300	36800	NA NA	NA NA
Chromium	50	0.28 UJ	0.28 UJ	0.28 UJ	NA	NA
Cobalt	NE	0.44 U	0.44 U	0.44 U	NA	NA
Copper	200	0.7 UJ	0.7 UJ	0.7 UJ	NA	NA
Iron	300	26100	69.6 UJ	36.3 UJ	NA	NA
Lead Magnesium	25	1.6 U 8060	21.2	20.6	NA NA	NA NA
Magnesium Manganese	35000* 300	1460	14700 4.5 J	14600 3 J	NA NA	NA NA
Mercury	0.7	0.1 U	0.1 U	0.1 U	NA NA	NA
Nickel	100	0.66 U	0.8 J	1.5 J	NA	NA
Potassium	NE	9760 J	2200 UJ	3170 UJ	NA	NA
Selenium	10	3.8 UJ	2.8 UJ	2.8 UJ	NA	NA
Silver	50	0.42 U	0.42 U	0.42 U	NA NA	NA
Sodium Thallium	20000 0.5*	256000 3.4 U	31900 3.4 U	34700 3.4 U	NA NA	NA NA
Thallium Vanadium	NE	0.21 UJ	0.21 UJ	0.21 UJ	NA NA	NA NA
Zinc	2000*	13 UJ	8 UJ	8.1 UJ	NA	NA
Total Cyanide (ug/L)						
Cyanide, Total	200	10 UJ	10 UJ	10 UJ	NA	NA



				Duplicate of:		
Sample Name:	NYS	GCMW-15	GCMW-16	GCMW-16	PZ-05	PZ-06
Sample Date:	AWQS	1/24/2012	1/24/2012	1/24/2012	1/27/2012	1/27/2012
Other (ug/L)						
Alkalinity	NE	184000	62700	60700	NA	NA
Biochemical Oxygen Demand	NE	3000	2000 U	2000 U	NA	NA
Carbon Dioxide, Free	NE	99000	51100	44100	NA	NA
Chemical Oxygen Demand	NE	27000	10000 U	10000 U	NA	NA
Chloride	250000	365000	56200	61100	NA	NA
Cyanide, Total	200	10 UJ	10 UJ	10 UJ	NA	NA
Ferrous iron	NE	21000	400 U	400 U	NA	NA
Nitrogen, Nitrate	10000	180	6330	6460	NA	NA
Nitrogen, Nitrite	1000	100 U	100 U	100 U	NA	NA
Standard Plate Count (cfu/mL)	NE	25	18	18	NA	NA
Sulfate	250000	7410	39100	40300	NA	NA
Sulfide	50*	2000 U	2000 U	2000 U	NA	NA
Total Organic Carbon	NE	5500	1200 J	1000 UJ	NA	NA
Total Phosphorous	NE	90	50 U	50 U	NA	NA



Figures











