GEI Consultants

Geotechnical
Environmental and
Water Resources
Engineering

Quarterly Groundwater Monitoring Report
July 2012 Semiannual Sampling Event

Glen Cove
Former MGP Site

City of Glen Cove
Nassau County, Long Island, New York
Site ID No. 1-30-089P

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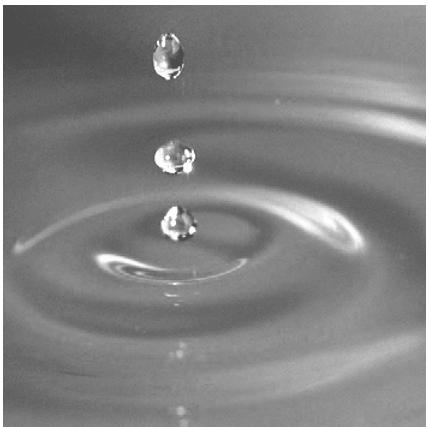

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1. Introduction and Site Background

This report presents the July 2012 groundwater monitoring results for the Glen Cove Former Manufactured Gas Plant (MGP) site located in Glen Cove, Nassau County, New York (the Site). 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* (RAP), *Glen Cove Former Manufactured Gas Plant, Town of Oyster Bay, Nassau Country, New York* 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. Two additional recovery wells were installed in May 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 post-

remedy 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 remaining 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 inter-bedded 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, historically, 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 well clusters at the Site are less than 0.25 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 Second Semiannual 2012 Groundwater Monitoring Event Summary

Event Dates: July 17 and 18, 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. Three recovery wells GCRW-01, GCRW-02 and GCRW-03 were installed in Q1 and Q2 2012. 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, recovery 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 July 17, 2012. Depth to groundwater and calculated groundwater elevations are provided in **Table 1**. Shallow groundwater contours and intermediate groundwater elevations for the July 2012 semiannual sampling event are depicted on **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	8.81	55.05
PZ-06	5.06	54.40
GCMW-08S	27.28	53.37
GCMW-11S	8.69	50.38
GCMW-12S	12.52	55.08
GCMW-13S	9.86	48.87
GCMW-15	5.99	46.73
GCMW-16	6.10	46.62

The average calculated shallow hydraulic gradient was 0.0248 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	27.70	52.30
GCMW-11I	8.58	50.27
GCMW-13I	9.50	49.40

The calculated intermediate hydraulic gradient was 0.009 feet/foot.

2.2.3 NAPL Gauging

All of the existing wells in the groundwater monitoring network and the three newly installed recovery wells are gauged for the presence of non-aqueous phase liquid (NAPL) during each semiannual groundwater monitoring event. The three new recovery wells GCRW-01, GCRW-02 and GCRW-03, were installed in Q1 (GCRW-01) and Q2 2012, in the vicinity of the substation (**Figure 2**). Dense non-aqueous phase liquid (DNAPL) was present in one well, MW-13S, at a thickness of 0.70 feet. Historically, measurable DNAPL has only been observed in this well. DNAPL was measured in MW-13S 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 increasing in the two 2012 sampling events.

2.2.4 Groundwater Analytical Sampling

The second semiannual 2012 groundwater sampling event was performed on July 17 and 18, 2012 and included all accessible wells on the quarterly sampling list. A total of 14 monitoring wells, recovery 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.

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 14 wells sampled, to 983 micrograms per liter (µg/L) in GCMW-11S. BTEX concentrations above the New York State Ambient Water Quality Standards (AWQS) were identified in each of the six wells with detections. The detections and exceedances of the Standards are summarized in the following table.

Table 2c – BTEX Detections Above AWQS

Sample Name:	GCMW-11S	GCMW-11I	GCMW-13S	GCRW-01	GCRW-02	GCRW-03
Sample Date:	7/17/12	7/17/12	7/18/12	7/18/12	7/17/12	7/17/12
Benzene	**83**	**5**	1 U	**1**	**1**	**3**
Toluene	**20**	1 U	**16**	**3**	**1**	**8**
Ethylbenzene	**530 D**	1 U	**270 D**	**99**	**7**	**42**
Xylene, total	**350**	1 U	**370**	**190**	**7**	**69**
Total BTEX	**983**	**5**	**656**	**293**	**16**	**122**

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

Excluding monitoring well GCMW-11S, BTEX detections in the second semiannual 2012 monitoring event generally remained stable with the majority being at, or near, detections levels. The BTEX concentration in GCMW-11S increased relative to the previous sampling event (January 2012), which were the lowest historical values recorded, but remained within the historical concentration range. BTEX concentrations in two of the newly installed recovery wells (GCRW-01 and GCRW-03), were above 100 µg/L, while the BTEX concentration in the other recovery well (GCRW-02) was near detection levels (16 µg/L).

SVOCs

Excluding a low-level exceedance of phenol in the duplicate sample collected from recovery well GCRW-02, SVOC detections above the Standards were limited to PAHs. Total PAH concentrations ranged from ND in five of the 14 wells sampled to 12,174 µg/L in GCMW-13S. The detections in wells with concentrations above the Standards are summarized in the table below. Detections identified below the Standards were also noted in GCMW-13I and GCMW-15 with concentrations of total PAHs of 13 µg/L and 1 µg/L, respectively.

Table 2d – PAH Detections Above AWQS

Sample Name	GCMW-08S	GCMW-11S	GCMW-11I	GCMW-13S	GCRW-01	GCRW-02	GCRW-03
Sample Date	7/18/12	7/17/12	7/17/12	7/18/12	7/18/12	7/17/12	7/17/12
Acenaphthene	**23**	**260 DJ**	10 U	**160 J**	**140 DJ**	**48**	**41**
Acenaphthylene	**15**	**14**	10 U	**4 J**	**4 J**	**8 J**	**3 J**
Anthracene	**11**	**10**	10 U	**7 J**	**6 J**	**7 J**	**5 J**
Benzo[g,h,i]perylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	**10**	**4 J**	10 U	**4 J**	**3 J**	**5 J**	**4 J**
Fluorene	**21**	**71**	10 U	**40**	**44**	**40**	**19**
2-Methylnaphthalene	10 U	**320 DJ**	**10**	**910 DJ**	**450 DJ**	**120 DJ**	**180 DJ**
Naphthalene	**1 J**	**5,300 D**	**540 D**	**11,000 D**	**5,200 D**	**1,300 D**	**2,000 D**
Phenanthrene	**110 D**	**82 J**	10 U	**44**	**43**	**42**	**17**
Pyrene	**12**	**5 J**	10 U	**5 J**	**4 J**	**6 J**	**5 J**
Benz[a]anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[a]pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenz[a,h]anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total PAHs	**203**	**6,066**	**550**	**12,174**	**5,894**	**1,576**	**2,274**

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

Concentrations of total PAHs were detected above the groundwater standards in four of the 11 monitoring wells sampled, and in each of the recovery wells. The total PAH concentrations in all of the monitoring wells remained within their respective historical concentration ranges. Total PAH concentrations decreased in GCMW-08D and GCMW-13S, but increased in GCMW08S and GCMW-11S. Detections of total PAHs in the other monitoring wells remained stable, or were at, or near, detection levels. Total PAH concentrations above 1,000 µg/L were identified in each of the recovery wells sampled. The

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

2.3 Future Plans

- Design and construct an oxygen injection system as part of the Phase II remedy
- Install replacement and additional monitoring wells as part of the 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	7/17/2012	8 - 18	0930	2	62.88	8.81	54.07	
PZ-06	7/17/2012	7 - 17	0932	2	58.52	5.06	53.46	
PZ-07*	NM	3 - 10	NM	2	50.36	NM	NM	
GCMW-08S	7/17/2012	26 - 36	0850	2	78.59	27.28	51.31	
GCMW-08D	7/17/2012	60 - 70	0852	2	78.82	27.70	51.12	
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	7/17/2012	8 - 20	0942	2	57.52	8.69	48.83	
GCMW-11I	7/17/2012	23 - 28	0940	2	57.45	8.58	48.87	
GCMW-12S	7/17/2012	14 - 24	0930	2	66.63	12.52	54.11	
GCMW-13S	7/17/2012	12 - 22	0947	2	57.73	9.86	47.87	
GCMW-13I	7/17/2012	25 - 30	0948	2	57.73	9.50	48.23	
GCMW-14S*	NM	8 - 18	NM	2	58.74	NM	NM	
GCMW-14I*	NM	25 - 30	NM	2	58.75	NM	NM	
GCMW-15	7/17/2012	6 - 16	0730	2	51.34	5.99	45.35	
GCMW-16	7/17/2012	6 - 16	0735	2	51.29	6.10	45.19	

Notes:
bgs - Below Ground Surface
[1] - Well Elevations Obtained From 2008 RI
MSL - Mean Sea Level
* Destroyed
NM - Not Measured

Table 2
Summary of Groundwater Analytical Results
Glen Cove Former MGP Site
Glen Cove, New York

Sample Name	NYS	GCMW-08S	GCMW-08I	GCMW-11S	GCMW-11I	GCMW-12S	GCMW-13S	GCMW-13I	GCMW-15
Sample Date	AWQS	7/18/2012	7/18/2012	7/17/2012	7/17/2012	7/17/2012	7/18/2012	7/18/2012	7/18/2012
BTEX (ug/L)									
Benzene	1	1 U	1 U	**83**	**5**	1 U	1 U	1 U	1 U
Toluene	5	1 U	1 U	**20**	1 U	1 U	**16**	1 U	1 U
Ethylbenzene	5	1 U	1 U	**530 D**	1 U	1 U	**270 D**	1 U	1 U
Total Xylene	5	1 U	1 U	**350**	1 U	1 U	**370**	1 U	1 U
Total BTEX	NE	ND	ND	**983**	**5**	ND	**656**	ND	ND
Other VOCs (ug/L)									
Acetone	50*	5 U	5 U	5 U	5 U	5 U	**2 J**	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
2-Butanone (Methyl ethyl ketone)	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	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	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
1,1-Dichloroethane	5	1 U	1 U	**2**	1 U	1 U	1 U	1 U	**3**
1,2-Dichloroethane	0.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total 1,2-Dichlorothene	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**4**
1,1-Dichloroethene	0.07	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	0.4	1 U	1 U	1 U	1 U	1 U	1 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 U
2-Hexanone	50*	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyl tert-butyl ether (MTBE)	10*	10 U	10 U	10 U	**55**	10 U	**7 J**	10 U	10 U
4-Methyl-2-pentanone	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	**6**	1 U	1 U
1,1,2,2-Tetrachloroethane	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	**1**	1 U	1 U	**3**	1 U
1,1,1-Trichloroethane	5	1 U	1 U	1 U	1 U	1 U	1 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
Trichloroethene	5	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	**9**
Total VOCs	NE	ND	ND	**985**	**61**	ND	**671**	**3**	**16**
Non-carcinogenic PAHs (ug/L)									
Acenaphthene	20*	**23**	10 U	**260 DJ**	10 U	10 U	**160 J**	10 U	**1 J**
Acenaphthylene	NE	**15**	10 U	**14**	10 U	10 U	**4 J**	10 U	10 U
Anthracene	50*	**11**	10 U	**10**	10 U	10 U	**7 J**	**2 J**	10 U
Benzo[g,h,i]perylene	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	50*	**10**	10 U	**4 J**	10 U	10 U	**4 J**	**4 J**	10 U
Fluorene	50*	**21**	10 U	**71**	10 U	10 U	**40**	10 U	10 U
2-Methylnaphthalene	NE	10 U	10 U	**320 DJ**	**10**	10 U	**910 DJ**	10 U	10 U

Table 2
Summary of Groundwater Analytical Results
Glen Cove Former MGP Site
Glen Cove, New York

Sample Name	NYS	GCMW-08S	GCMW-08I	GCMW-11S	GCMW-11I	GCMW-12S	GCMW-13S	GCMW-13I	GCMW-15
Sample Date	AWQS	7/18/2012	7/18/2012	7/17/2012	7/17/2012	7/17/2012	7/18/2012	7/18/2012	7/18/2012
Naphthalene	10*	**1 J**	10 U	**5300 D**	**540 D**	10 U	**11000 D**	10 U	10 U
Phenanthrene	50*	**110 D**	10 U	**82 J**	10 U	10 U	**44**	**2 J**	10 U
Pyrene	50*	**12**	10 U	**5 J**	10 U	10 U	**5 J**	**5 J**	10 U
Carcinogenic PAHs (ug/L)									
Benz[a]anthracene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[a]pyrene	ND	10 U	10 U	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	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002*	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	10 U	10 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total PAHs (ug/L)									
Total PAHs	NE	**203**	ND	**6066**	**550**	ND	**12174**	**13**	**1**
Other SVOCs (ug/L)									
Bis(chloroisopropyl)ether	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-chloroethyl)ether	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-chloroethoxy)methane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-ethylhexyl)phthalate	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butyl benzyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	NE	10 U	10 U	**33**	10 U	10 U	**8 J**	10 U	10 U
4-Chloro-3-methylphenol	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	NE	**7 J**	10 U	**12**	10 U	10 U	**9 J**	10 U	10 U
1,2-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3-Dichlorobenzidine	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dimethyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl phthalate	50	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	NE	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4-Dinitrophenol	10*	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4-Dinitrotoluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	0.04	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	0.5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 2
Summary of Groundwater Analytical Results
Glen Cove Former MGP Site
Glen Cove, New York

Sample Name	NYS	GCMW-08S	GCMW-08I	GCMW-11S	GCMW-11I	GCMW-12S	GCMW-13S	GCMW-13I	GCMW-15
Sample Date	AWQS	7/18/2012	7/18/2012	7/17/2012	7/17/2012	7/17/2012	7/18/2012	7/18/2012	7/18/2012
2-Methylphenol (o-Cresol)	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol (p-Cresol)	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	5	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
3-Nitroaniline	5	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
4-Nitroaniline	5	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Nitrobenzene	0.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	NE	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodi-n-propylamine	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Phenol	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total SVOCs	NE	**210**	**1**	**6111**	**550**	ND	**12191**	**13**	**1**

Table 2
Summary of Groundwater Analytical Results
Glen Cove Former MGP Site
Glen Cove, New York

Sample Name	NYS	GCMW-16	GCRW-01	GCRW-02	Duplicate of: GCRW-02	GCRW-03	PZ-05	PZ-06	Duplicate of: PZ-06
Sample Date	AWQS	7/18/2012	7/18/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012
BTEX (ug/L)									
Benzene	1	1 U	**1**	**1**	**1**	**3**	1 U	1 U	1 U
Toluene	5	1 U	**3**	**1**	**1**	**8**	1 U	1 U	1 U
Ethylbenzene	5	1 U	**99**	**7**	**6**	**42**	1 U	1 U	1 U
Total Xylene	5	1 U	**190**	**7**	**6**	**69**	1 U	1 U	1 U
Total BTEX	NE	ND	**293**	**16**	**14**	**122**	ND	ND	ND
Other VOCs (ug/L)									
Acetone	50*	5 U	**16**	**11**	**12**	**8**	5 U	**7**	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
2-Butanone (Methyl ethyl ketone)	50*	5 U	**45**	**9**	**9**	**2 J**	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	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	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 UJ	1 UJ	1 UJ
Dibromochloromethane	50*	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	1 U	1 U	1 U	1 U	1 U	1 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
Total 1,2-Dichlorothene	NE	**1**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	0.07	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	0.4	1 U	1 U	1 U	1 U	1 U	1 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 U
2-Hexanone	50*	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyl tert-butyl ether (MTBE)	10*	10 U	**15**	**2 J**	**2 J**	**2 J**	10 U	10 U	10 U
4-Methyl-2-pentanone	NE	5 U	5 U	**5**	**5**	**2 J**	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	**4**	1 U	1 U	**3**	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	**2**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	5	1 U	1 U	1 U	1 U	1 U	1 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
Trichloroethene	5	**2**	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	**5**	**373**	**43**	**42**	**139**	ND	**7**	ND
Non-carcinogenic PAHs (ug/L)									
Acenaphthene	20*	10 U	**140 DJ**	**48**	**50**	**41**	10 U	10 U	10 U
Acenaphthylene	NE	10 U	**4 J**	**8 J**	**8 J**	**3 J**	10 U	10 U	10 U
Anthracene	50*	10 U	**6 J**	**7 J**	**7 J**	**5 J**	10 U	10 U	10 U
Benzo[g,h,i]perylene	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	50*	10 U	**3 J**	**5 J**	**6 J**	**4 J**	10 U	10 U	10 U
Fluorene	50*	10 U	**44**	**40**	**39**	**19**	10 U	10 U	10 U
2-Methylnaphthalene	NE	10 U	**450 DJ**	**120 DJ**	**120 DJ**	**180 DJ**	10 U	10 U	10 U

Table 2
Summary of Groundwater Analytical Results
Glen Cove Former MGP Site
Glen Cove, New York

Sample Name	NYS	GCMW-16	GCRW-01	GCRW-02	Duplicate of: GCRW-02	GCRW-03	PZ-05	PZ-06	Duplicate of: PZ-06
Sample Date	AWQS	7/18/2012	7/18/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012
Naphthalene	10*	10 U	**5200 D**	**1300 D**	**1200 D**	**2000 D**	10 U	10 U	10 U
Phenanthrene	50*	10 U	**43**	**42**	**31**	**17**	10 U	10 U	10 U
Pyrene	50*	10 U	**4 J**	**6 J**	**7 J**	**5 J**	10 U	10 U	10 U
Carcinogenic PAHs (ug/L)									
Benz[a]anthracene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[a]pyrene	ND	10 U	10 U	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	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002*	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	10 U	10 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total PAHs (ug/L)									
Total PAHs	NE	ND	**5894**	**1576**	**1468**	**2274**	ND	ND	ND
Other SVOCs (ug/L)									
Bis(chloroisopropyl)ether	5	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	10 UJ
Bis(2-chloroethyl)ether	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-chloroethoxy)methane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-ethylhexyl)phthalate	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butyl benzyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	NE	10 U	**4 J**	**1 J**	**1 J**	**2 J**	10 U	10 U	10 U
4-Chloro-3-methylphenol	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	NE	10 U	**9 J**	**7 J**	**7 J**	**4 J**	10 U	10 U	10 U
1,2-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3-Dichlorobenzidine	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dimethyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl phthalate	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	NE	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4-Dinitrophenol	10*	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4-Dinitrotoluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	0.04	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	0.5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 2
Summary of Groundwater Analytical Results
Glen Cove Former MGP Site
Glen Cove, New York

Sample Name	NYS				Duplicate of:	GCRW-03	PZ-05	PZ-06	Duplicate of:
		GCMW-16	GCRW-01	GCRW-02	GCRW-02	GCRW-03	PZ-05	PZ-06	PZ-06
Sample Date	AWQS	7/18/2012	7/18/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012
2-Methylphenol (o-Cresol)	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol (p-Cresol)	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	5	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
3-Nitroaniline	5	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
4-Nitroaniline	5	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Nitrobenzene	0.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	NE	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodi-n-propylamine	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1	25 U	25 U	25 U	25 U	25 U	25 UJ	25 UJ	25 UJ
Phenol	1	10 U	10 U	**1 J**	**2 J**	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total SVOCs	NE	ND	**5907**	**1585**	**1478**	**2280**	ND	ND	ND

Table 2
Summary of Groundwater Analytical Results
Glen Cove Former MGP Site
Glen Cove, New York

Notes:

Analytes in blue are not detected in any sample

ug/L - micrograms per liter or parts per billion (ppb)
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOCs - volatile organic compounds
PAHs - polycyclic aromatic hydrocarbons
SVOCs - semivolatile organic compounds
Total BTEX, Total VOCs, Total PAHs, and Total SVOCs are calculated using detects only.

NYS AWQS - New York State Ambient Water Quality Standards and Guidance Values for GA groundwater
* indicates the value is a guidance value and not a standard

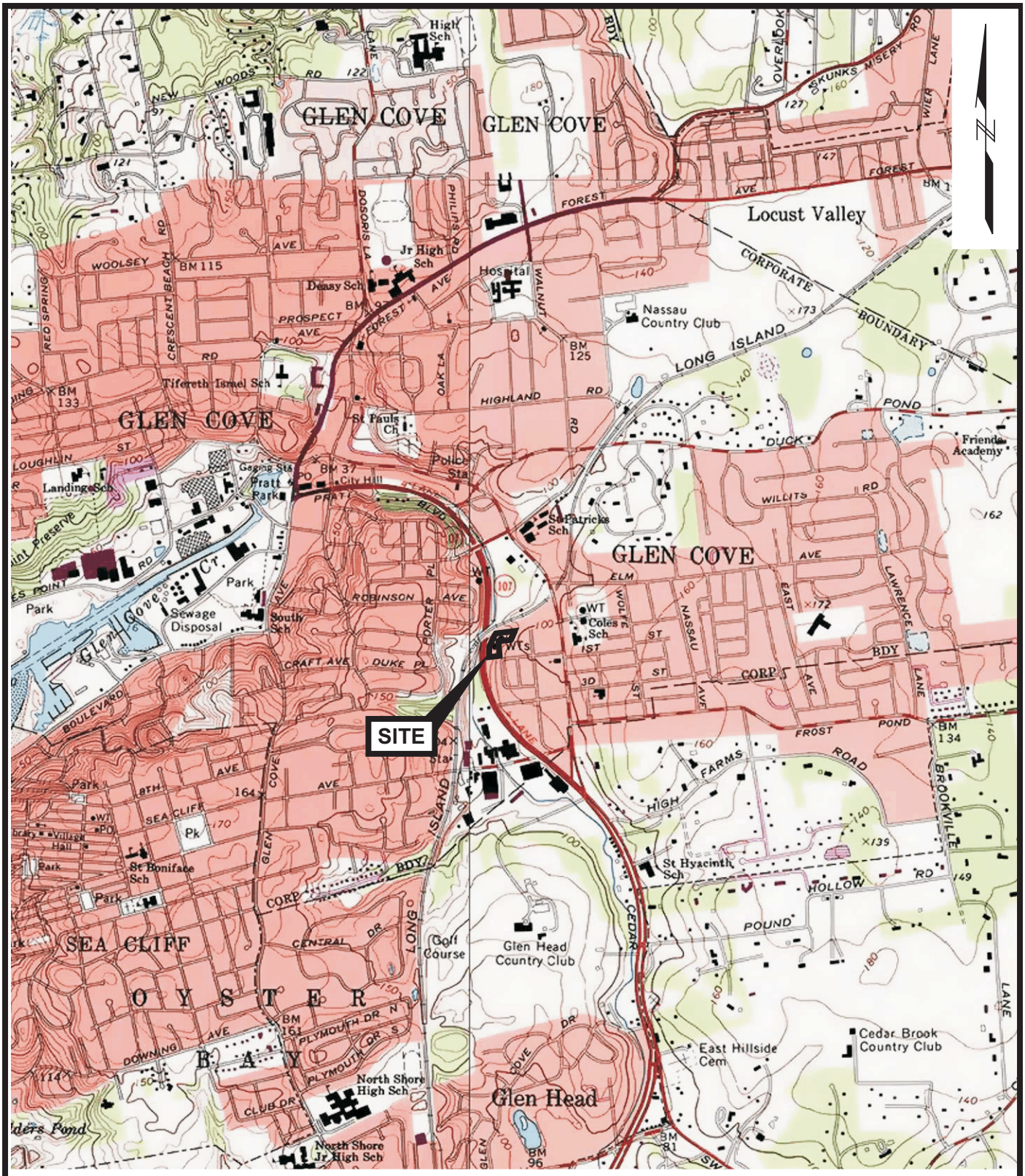
NE - not established
NA - not analyzed
ND - not detected; total concentration is listed as ND because no compounds were detected in the group

Bolding indicates a detected concentration
Gray shading indicates that the detected result value exceeds NYS AWQS

Data Qualifiers:

D - results for dilution
DJ - result for dilution and is an estimated value
J - estimated value
U - indicates not detected to the reporting limit
UJ - not detected at or above the reporting limit shown and the reporting limit is estimated

Figures



SOURCE: MAP CREATED WITH TOPO!™ ©2000 WILDFLOWER PRODUCTIONS (www.topo.com)

GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

nationalgrid

GEI Consultants

SITE LOCATION MAP

Project 093270-5-1504 | November 2012 | Figure 1

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N

GCMW08D GCMW08S

TOP

SLOPE

BOTTOM

BOTTOM SLOPE

PZ06

PZ03

GCMW11S GCMW11I

CONTROL HOUSE

TAR TANK

BOILER

COAL SHED

RETORTS

CESSPOOL

GCMW12S

PZ05

CONCRETE SLAB WITH STEEL SUPER-STRUCTURE

PURIFIER

CONCRETE SLAB WITH STEEL SUPER-STRUCTURE

OIL TANK

OIL TANK

ENGINE ROOM

PZ01A

RETAINING WALL

GCMW09S

GCMW09I

GCRW01*

GCMW13I

GCMW13S

GCRW02*

GCRW03*

GAS TANKS

60,000 cu ft GAS HOLDER

GCMW14I

GCMW14S

RETAINING WALL

LONG ISLAND RAILROAD

SHOULDER

CREEK

COVE

GLEN

ROUTE 107

CULVERT HEADWALL

GCMW15

GCMW16

PZ02A

PZ04

RETAINING WALL

RETAINING WALL

GCMW10I

GCMW10S

METER HOUSE

TOP SLOPE

40,000 cu ft GAS HOLDER (HORTONSPHERE)

PZ07

TOP

SLOPE

LEGEND:

———	PROPERTY BOUNDARIES
- - - -	FORMER STRUCTURES (REMOVED OR DESTROYED)
GCMW13I	MONITORING WELL
GCRW02	RECOVERY WELL
PZ05	PIEZOMETER
GCMW10S	MONITORING WELL (ABANDONED OR DESTROYED)
PZ07	PIEZOMETER (ABANDONED OR DESTROYED)
*	LOCATION APPROXIMATE PENDING SURVEY

0 16 32

SCALE, FEET

GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

nationalgrid

PROJECT 093270-5-1504

GEI Consultants
110 WALT WHITMAN ROAD
SUITE 204
HUNTINGTON STATION, NY 11746

WELL LOCATION MAP

November 2012 Figure 2

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LONG ISLAND RAILROAD

ROUTE 107

GLEN COVE CREEK

SHOULDER

RETAINING WALL

CULVERT HEADWALL

RETAINING WALL

RETAINING WALL

RETAINING WALL

TOP

SLOPE

BOTTOM SLOPE

BOTTOM

SLOPE

BOTTOM

SLOPE

TOP

TOP SLOPE

GCMW08S
51.31

GCMW11S
48.83

GCMW09S

GCMW13S
47.87

GCMW14S

GCMW15
45.35

45.19
GCMW16

GCMW10S

PZ07

53.46
PZ06

GCMW12S
54.11

PZ05
54.07

CONTROL HOUSE

TAR TANK

BOILER

COAL SHED

RETORTS

CESSPOOL

CONCRETE SLAB WITH STEEL SUPER-STRUCTURE

PURIFIER

CONCRETE SLAB WITH STEEL SUPER-STRUCTURE

ENGINE ROOM

OIL TANK

OIL TANK

GAS TANKS

GAS TANKS

60,000 cu ft GAS HOLDER

40,000 cu ft GAS HOLDER (HORTONSPHERE)

METER HOUSE

48

50

52

54

46

N

0 16 32
SCALE, FEET

LEGEND:

- PROPERTY BOUNDARIES
- FORMER STRUCTURES (REMOVED OR DESTROYED)
- GCMW10S — MONITORING WELL
- PZ05 — PIEZOMETER
- GCMW10S — MONITORING WELL (ABANDONED OR DESTROYED)
- PZ07 — PIEZOMETER (ABANDONED OR DESTROYED)
- 48 — GROUNDWATER CONTOUR (FEET RELATIVE TO MSL)
- 54.07 — GROUNDWATER ELEVATION (FEET RELATIVE TO MSL)
- APPROXIMATE GROUNDWATER FLOW DIRECTION

GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

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GROUNDWATER CONTOUR MAP
SHALLOW WELLS
JULY 17, 2012

November 2012 Figure 3

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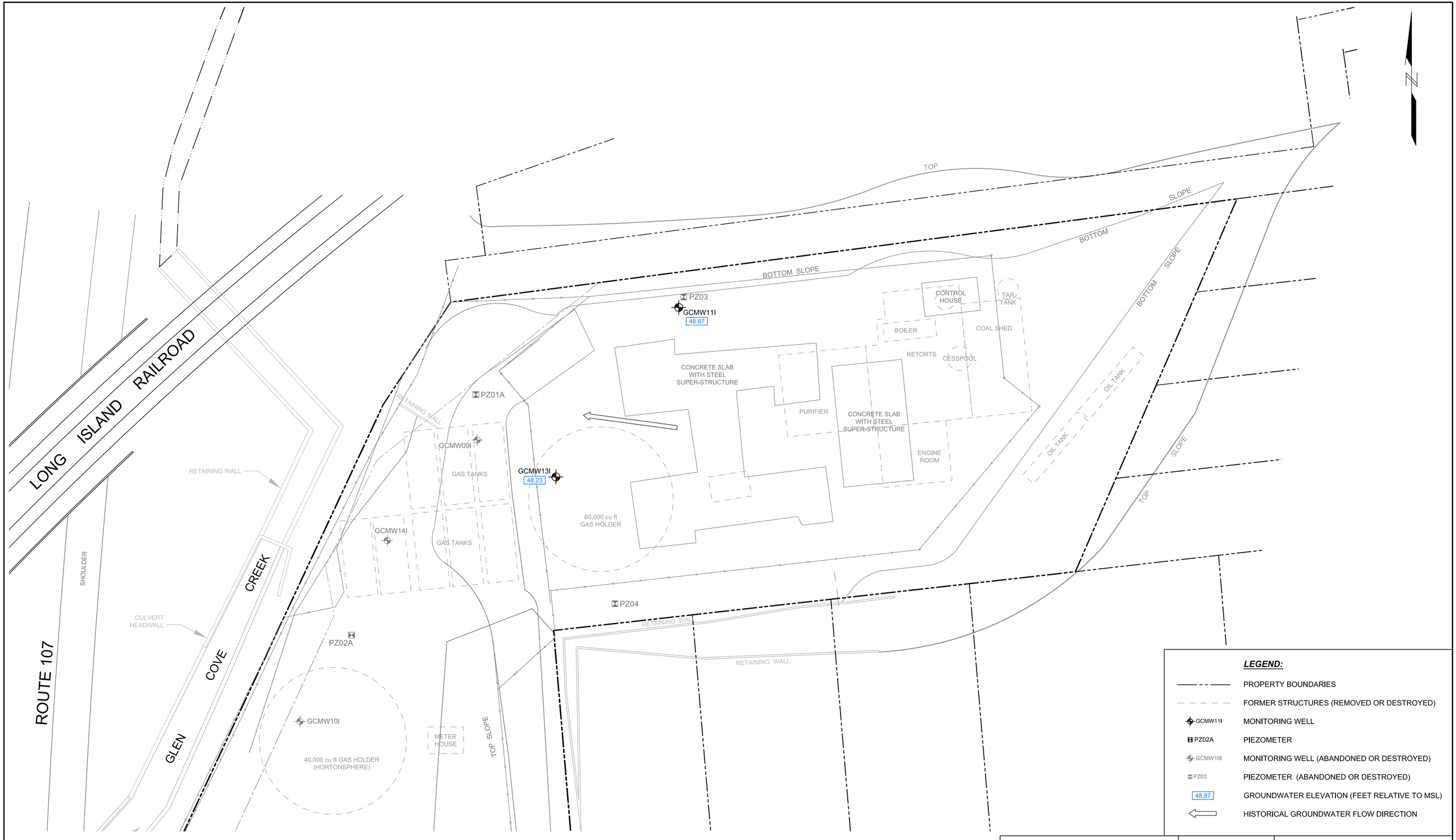

LEGEND:

———	PROPERTY BOUNDARIES
- - - -	FORMER STRUCTURES (REMOVED OR DESTROYED)
GCMW11I	MONITORING WELL
PZ02A	PIEZOMETER
GCMW10I	MONITORING WELL (ABANDONED OR DESTROYED)
PZ03	PIEZOMETER (ABANDONED OR DESTROYED)
48.87	GROUNDWATER ELEVATION (FEET RELATIVE TO MSL)
⇦	HISTORICAL GROUNDWATER FLOW DIRECTION

GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

nationalgrid

PROJECT 093270-5-1504

GEI Consultants
110 WALT WHITMAN ROAD
SUITE 204
HUNTINGTON STATION, NY 11746

GROUNDWATER CONTOUR MAP
INTERMEDIATE WELLS
JULY 17, 2012

November 2012 Figure 4

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Sample ID:	GCMW-09S						
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10
BTEX (µg/L)	30	133	2	98	118	65	45
PAHs (µg/L)	305	272	380	543	1,907	495	451

Sample ID:	GCMW-09I						
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10
BTEX (µg/L)	38	9	35	ND	ND	1	ND
PAHs (µg/L)	1,564	633	281	55	342	286	22

Sample ID:	GCMW-14I						
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10
BTEX (µg/L)	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	10	ND	ND	ND	ND	1	ND

Sample ID:	GCMW-14S						
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10
BTEX (µg/L)	3	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	9	ND	21	ND	ND	2	ND

Sample ID:	PZ-03					
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10
BTEX (µg/L)	283	221	NS	NS	NS	NS
PAHs (µg/L)	3,321	1,242	NS	NS	NS	NS

Sample ID:	GCMW-11I									
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	July-11	Jan-12	Jul-12
BTEX (µg/L)	1,062	275	ND	21	34	47	23	12	13	5
PAHs (µg/L)	1,488	16	5	ND	ND	617	ND	ND	529	550

Sample ID:	GCMW-11S									
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	July-11	Jan-12	Jul-12
BTEX (µg/L)	1,003	1,776	1,319	1,163	1,070	1,048	1,002	1,073	449	983
PAHs (µg/L)	6,523	4,455	7,421	6,462	4,964	5,036	4,750	5,685	5,206	6,066

Sample ID:	PZ-01A						
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10
BTEX (µg/L)	223	116	4	ND	ND	ND	ND
PAHs (µg/L)	581	199	7	2	ND	ND	ND

Sample ID:	GCMW-08D										
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	July-11	Jan-12	Jul-12	
BTEX (µg/L)	ND	ND	ND	2	ND	ND	ND	ND	ND	ND	
PAHs (µg/L)	10	ND	ND	ND	ND	ND	ND	ND	230	ND	

Sample ID:	GCMW-08S									
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	July-11	Jan-12	Jul-12
BTEX (µg/L)	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	346	282	14	180	229	5	322	37	ND	203

GCMW08D GCMW08S

LEGEND:

- PROPERTY BOUNDARIES
- FORMER STRUCTURES (REMOVED OR DESTROYED)
- GCMW10S — MONITORING WELL
- GCRW02 — RECOVERY WELL
- PZ05 — PIEZOMETER
- GCMW10S — MONITORING WELL (ABANDONED OR DESTROYED)
- PZ07 — PIEZOMETER (ABANDONED OR DESTROYED)
- NS — NOT SAMPLED
- ND — NOT DETECTED
- PAHs — POLYCYCLIC AROMATIC HYDROCARBONS
- BTEX — BENZENE, TOLUENE, ETHYLBENZENE, XYLENE
- * — LOCATION APPROXIMATE PENDING SURVEY

LONG ISLAND RAILROAD
ROUTE 107
GLEN COVE CREEK
SHOULDER
SHOULDER
CULVERT HEADWALL
RETAINING WALL
RETAINING WALL
RETAINING WALL
TOP
SLOPE
BOTTOM
BOTTOM SLOPE
TOP SLOPE
BOTTOM SLOPE
TOP SLOPE
ACCESS ROAD
FLOW
METER
GAS TANKS
60,000 cu ft GAS HOLDER
40,000 cu ft GAS HOLDER (HORTONSPHERE)
CONTROL HOUSE
TAR TANK
BOILER
COAL SHED
RETORTS
CESSPOOL
CONCRETE SLAB WITH STEEL SUPER-STRUCTURE
PURIFIER
CONCRETE SLAB WITH STEEL SUPER-STRUCTURE
ENGINE ROOM
OIL TANK
OIL TANK

PZ01A PZ02A PZ03 PZ04 PZ05 PZ06 PZ07
GCMW09S GCMW09I GCMW10S GCMW10I GCMW11S GCMW11I GCMW12S GCMW13S GCMW13I GCMW14S GCMW14I GCMW15 GCMW16
GCRW01* GCRW02* GCRW03*

Sample ID:	GCRW01
Sample Date:	Jul-12
BTEX (µg/L)	293
PAHs (µg/L)	5,894

Sample ID:	GCRW02
Sample Date:	Jul-12
BTEX (µg/L)	16
PAHs (µg/L)	1,576

Sample ID:	GCRW03
Sample Date:	Jul-12
BTEX (µg/L)	122
PAHs (µg/L)	2,274

Sample ID:	PZ-06							
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	Jul-12
BTEX (µg/L)	ND	ND	NS	ND	ND	ND	ND	ND
PAHs (µg/L)	ND	3	ND	ND	ND	ND	ND	ND

Sample ID:	GCMW-12S									
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	July-11	Jan-12	Jul-12
BTEX (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	6	1	ND	ND	ND	ND	ND	ND	ND	ND

Sample ID:	PZ-05							
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	Jul-12
BTEX (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND

Sample ID:	GCMW-13I									
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	July-11	Jan-12	Jul-12
BTEX (µg/L)	438	25	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	3,748	48	ND	25	ND	9	ND	ND	16	13

Sample ID:	GCMW-13S									
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	July-11	Jan-12	Jul-12
BTEX (µg/L)	456	NS	1327	564	836	939	950	821	624	656
PAHs (µg/L)	4,581	NS	11,047	7,128	10,498	8,591	11,885	13,387	16,538	12,174

Sample ID:	PZ-04						
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10
BTEX (µg/L)	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	11	3	ND	ND	ND	ND	ND

Sample ID:	PZ-02A							
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	July-11
BTEX (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND

Sample ID:	GCMW-15									
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	July-11	Jan-12	Jul-12
BTEX (µg/L)	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	NS	10	ND	2	3	ND	2	4	1	1

Sample ID:	GCMW-10I							
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	June-11
BTEX (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND

Sample ID:	GCMW-10S							
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	June-11
BTEX (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND

Sample ID:	PZ-07							
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	June-11
BTEX (µg/L)	3	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	ND	ND	ND	ND	ND	ND	ND	ND

Sample ID:	GCMW-16									
Sample Date:	2004	2005	Feb-08	Mar-10	Jun-10	Sep-10	Dec-10	July-11	Jan-12	Jul-12
BTEX (µg/L)	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (µg/L)	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND

0 20 40
SCALE, FEET

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GROUNDWATER ANALYTICAL RESULTS

November 2012 Figure 5

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