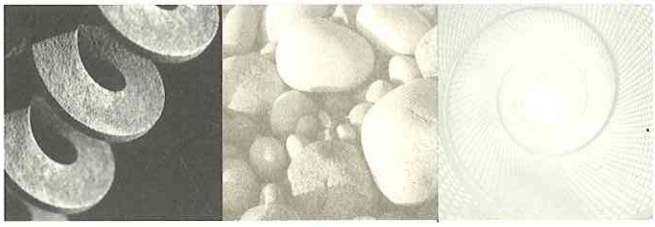

GEI Consultants

Geotechnical
Environmental and
Water Resources
Engineering

Remedial Design Document – Addendum 1
Plume Tail System Design

Bay Shore/Brightwaters Former MGP Site

Operable Unit No. 2
Bay Shore, New York
AOC Index No. D1-0001-98-11

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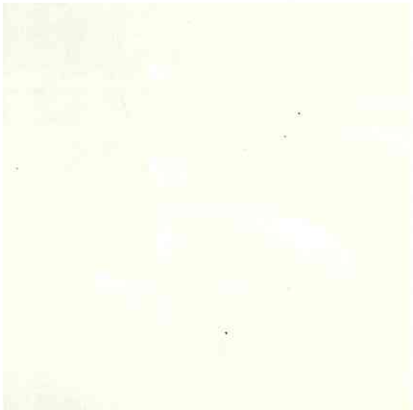

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Abbreviations and Acronyms

ASME	American Society of Mechanical Engineers
AWQS	Ambient Water Quality Standards
bgs	Below ground surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
COCs	Contaminants Of Concern
DNAPL	Dense Non-Aqueous Phase Liquid
EPA	United States Environmental Protection Agency
HP	Horse Power
IRM	Interim Remedial Measure
MGP	Manufactured Gas Plant
NAPL	Non-aqueous Phase Liquids
NEMA	National Electrical Manufacturers Association
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OM & M	Operations, Maintenance & Monitoring
ORP	Oxidation/Reduction Potential
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbon
PVC	Polyvinyl chloride
RAP	Remedial Action Plan
RAWP	Remedial Action Work Plan
RDD	Remedial Design Document
RI	Remedial Investigation
SCDEE	Suffolk County Department of Environment and Energy
SCDHS	Suffolk County Department of Health Services
SCH	Schedule
STP	Standard Temperature and Pressure
SVOC	Semivolatile Organic Compound
TAL	Total Analyte List
TEFC	Totally Enclosed, Fan Cooled
TOC	Total Organic Carbon
TPAH	Total PAH
VOC	Volatile Organic Compound

Abbreviations and Acronyms (cont.)

MEASUREMENTS

ACFM	Actual cubic feet per minute
CF	Cubic feet
ft	feet
gmol	gram-mole
g	gram
g/L	gram per liter,
Hz	hertz
H	hour
L	liter
lbs	pounds
lbs/day	pounds per day
lbs/min	pounds per minute
MG	million gallons
MGal	Million Gallons
MGD	million gallons per day
mg/L	Milligrams per liter
ppb	Parts per billion
ppm	Parts per million
psi	Pounds per square inch
psig	Pounds per square inch-gauge
SCFH	Standard cubic feet per hour
ug/L	Micrograms per liter
ug/m^3	Microgram per meter cubed
mg	milligrams

1. Introduction

This design document presents the design criteria and calculations for the oxygen injection system that will operate at Plume Tail in Operable Unit No. 2 (OU-2) of the Bay Shore/Brightwaters Former Manufactured Gas Plant (MGP) site located in Bay Shore, in the Town of Islip, Suffolk County, New York (Figure 1). The system (herein referred to as the "Plume Tail Injection Line") will be installed in May and June 2009 and is scheduled to begin operation in July 2009. This document is intended to supplement the Remedial Design Document (RDD) submitted by National Grid to the New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), Suffolk County Department of Environment and Energy (SCDEE), and Suffolk County Department of Health Services (SCDHS) on January 12, 2008.

OU-2 encompasses approximately 39 acres as depicted in Figure 2 of the RDD. The OU-2 area includes a mixture of residential and light commercial properties. The OU-2 groundwater plume appears to migrate south to southeast from OU-1 in the direction of natural groundwater flow. The dissolved phase contaminants within the groundwater plume primarily consist of BTEX (benzene, toluene, ethylbenzene, and xylene) and naphthalene. The remedial investigation (RI) and subsequent groundwater sampling events have bounded the width of the plume to an approximately 400 to 500 foot wide path that extends from OU-1 and the southeast corner of the Bay Shore/Brightwaters West Parcel. The total length of the plume is estimated to be approximately 3,400 feet extending from OU-1 to the discharge point at Lawrence Creek.

The Plume Tail Injection Line will operate along the bulkhead of Lawrence Creek, down-gradient from the injection line operating along Manatuck Lane which was installed as part of the 2004 Interim Remedial Measure (2004 IRM) (GEI, 2004). The Plume Tail Injection Line will inject oxygen into the subsurface below the water table within the groundwater plume just prior to discharging into Lawrence Creek. Groundwater data used to design this system was collected during groundwater sampling events performed up-gradient from the bulkhead on the 18 Garner Lane property. The injected oxygen will facilitate and promote the bioremediation of the MGP-related contaminants dissolved in the groundwater.

1.1 Design Document Organization

Section 1 of this design document provides a summary of OU-2 and the intent of the oxygen injection systems proposed for OU-2. Section 2 provides a summary of the remedial goals for the oxygen injection systems and the respective performance monitoring activities. Section 3 provides a description of the oxygen injection technology, and the development of the Plume Tail Injection Line design.

2. Remedial Goals and Performance Monitoring

2.1 Remedial Goals

The goal of the OU-2 remedy is to hasten the bioremediation of the dissolved phase contaminant plume emanating from OU-1 through the operation of a minimum of three additional oxygen injection lines. The RDD required that National Grid install a total of four treatment systems to inject oxygen into the groundwater to create an aerobic environment which will facilitate and promote the bioremediation of the dissolved MGP-related contaminants. The proposed oxygen injection treatment lines described in this design document will operate in conjunction with both the up-gradient and down-gradient oxygen injection treatment lines that were installed as part of the 2004 IRM (GEI, 2004b) and as a temporary system at the OU-1 boundary in February 2008 (KeySpan, 2007). The Plume Tail Injection Line is intended to further augment the four systems being installed as part of the RDD.

As discussed in the 2004 IRM report and the Draft OU-2 Remedial Alternatives Analysis (GEI, 2008a), these systems will not serve as the final measure to address groundwater contamination associated with the Bay Shore/Brightwaters former MGP site. A source removal, containment, and in-situ treatment remedy is being implemented at OU-1. The subsurface barrier wall has been installed to prevent migration dense non-aqueous phase liquid (DNAPL) from OU-1. Recent groundwater sampling down-gradient of the subsurface barrier wall indicate that it is also proving effective as a hydraulic barrier. Groundwater concentrations at depths below the perforated window have been reduced significantly (see RDD Plate 2). Furthermore, the temporary oxygen injection system is treating the groundwater exiting the perforated window until the final groundwater treatment system is installed. This treatment system is designed to mitigate contamination discharge from the former Bay Shore/Brightwaters MGP site into OU-2. The reduction in the flux of MGP-related contaminants into OU-2 following complete implementation of the OU-1 Remedial Action Plan (RAP) will, over time, reduce or eliminate the discharge to OU-2.

National Grid proposes to implement and maintain the proposed oxygen injection systems until the following performance based goals are met.

- A permanent remedy is implemented at the Bay Shore site (OU-1) leading to control of the source of the groundwater contamination; and,

- Groundwater concentrations of MGP-related contaminants of concern (COC) meet the Ambient Groundwater Quality Standards (AGWQS) and Guidance Values for a GA aquifer in OU-2; or,
- Continued operation of the systems produces diminishing returns as indicated by periodic groundwater monitoring up and down-gradient of the oxygen injection treatment systems.

2.2 Performance Monitoring

Soil vapor, ambient air, and groundwater sampling have been monitored for each system installed as part of the RDD in accordance with Operations, Maintenance, and Monitoring Plan (OM&M) Plan. This has included sampling at the point of injection and down-gradient of the point of injection prior to start-up, during each system's start-up phase, and at regular intervals during system operation. The purpose of these activities has been to ensure that the system's operation remains consistent with previous studies.

The Plume Tail Injection Line differs from the previous injection lines in that there is no down-gradient soil vapor/groundwater from the system. The injection wells are located along the existing bulkhead. Monitoring well GMP-04, located on the adjacent parcel to the north of the Plume Tail Injection Line, will be used as a side gradient monitoring point to the north. To the south, the injection line ends at the property boundary and the existing bulkhead, so no side gradient monitoring point can be installed.

2.2.1 Soil Vapor and Ambient Air Monitoring

The existing up-gradient soil vapor locations will continue to be sampled in accordance with the existing quarterly monitoring protocol established. These points are located between the Manatuck Lane Injection Line and the Plume Tail Injection Line.

2.2.2 Groundwater Monitoring

Two additional groundwater monitoring wells were installed during the pre-design investigations, OU2MW-52 and OU2MW-53. These well clusters are located up-gradient of the Plume Tail Injection Line at either side of the injection line. They will be monitored prior to start-up of the Plume Tail Injection Line and at quarterly intervals during system operation. The analytical results and field measurements will be used to aid in evaluating the performance of the Manatuck Lane Injection Line. Specifically, the data collected is focused on monitoring the aerobic environments created by the system; the bioactivity of the aquifer; and the ability of the bioactivity to reduce dissolved phase MGP-related contaminant concentrations in the area between the two systems. The monitoring well locations are identified in Figure 3. The draft un-validated results of the first sampling event from these two monitoring well clusters are included in Table 5.

National Grid will present the final validated results for this sampling event and future sampling events in the Quarterly OM&M reports.

2.2.3 Hydrologic Evaluation

Immediately up-gradient of the proposed oxygen injection line is a residential in-ground pool that has fallen into disrepair. The pool foundation intercepts the water table approximately 25 feet up-gradient of the injection line and approximately 40 feet up-gradient of Lawrence Creek. The localized hydrologic effects of the pool foundation in proximity of the shallow groundwater plume are unknown. If the shallow plume is diverting around the pool foundation, the rate of injection may need to be adjusted to account for higher loads at the pool edges than in the area down-gradient of the pool. To address this concern, four piezometers will be installed in the vicinity of the pool foundation. Three piezometers will be installed at the up-gradient edge of the pool and one piezometer will be installed between the pool and the bulkhead of Lawrence Creek.

The piezometers will be installed using Geoprobe direct push technologies to a maximum of depth of 12 feet below ground surface (bgs). Each piezometer will be installed using 1-inch diameter schedule 40 polyvinyl chloride (PVC) well materials. A 10-foot long PVC 0.10 slot screen will be installed from 2 to 12 feet below ground surface. The annual space will be filled with #00 sand to 1 foot above the screen. The remaining annual space will be filled with a 6-inch bentonite seal and a traffic-rated well box. Following installation, the piezometers will be developed in accordance with the procedures described in the RDD.

Groundwater elevation measurements will be collected at both low and high tide on a monthly basis for three months from each of the piezometers and monitoring wells OU2MW-52S and OU2MW-53S. Groundwater samples will also be collected and analyzed for VOCs and polycyclic aromatic hydrocarbons (PAHs) from each piezometer to identify any potential changes in concentrations up and down-gradient of the pool foundation as a result of localized hydrologic conditions adjacent to the pool foundation.

The results of the evaluation will be used to modify the system injection rates as necessary.

3. Oxygen Injection System Design Details

3.1 Oxygen Injection Technology Overview

Oxygen injection technology involves the injection of a 90 to 95 percent pure oxygen gas into groundwater to increase the dissolved oxygen concentration and enhance aerobic biodegradation of BTEX and naphthalene. The technology filters ambient air to generate 90 to 95 percent pure oxygen gas, which is then injected in pulsed intervals into the subsurface through a series of injection wells at low flow rates. The low flow rates and pulsed injection intervals are cycled to allow for the maximum transfer of vapor-phase oxygen to dissolved-phase oxygen. Unlike air sparging, the goal of oxygen injection is to transfer the injected vapor to the aqueous phase. The goal of air sparging is to maintain the injected vapors in the vapor phase where they can strip the volatile organic compounds (VOCs), such as BTEX, from the groundwater for collection in the vadose zone and subsequent treatment. Slowly injecting oxygen at 90 to 95 percent purity can increase dissolved oxygen concentrations to a maximum of approximately 40 milligrams per liter (mg/L). Whereas air injected under sparge processes yields maximum dissolved oxygen concentrations of approximately 9 mg/L. The injected oxygen in the dissolved-phase is then used by indigenous microorganisms to aerobically degrade the organic chemicals. Therefore, by injecting oxygen under these conditions, an aerobically active treatment zone is formed in the vicinity of the injection well. When groundwater passes through this zone, it becomes oxygenated and stimulates the aerobic microbes in the groundwater to biodegrade the dissolved-phase COCs.

The injection lines designed for OU-2 are constructed to traverse the flow path of the groundwater plume at various transects from OU-1 to Lawrence Creek. By creating and maintaining multiple aerobic environments along the flow path of the plume, the oxygen injection system will supplement one another by reducing the groundwater contaminant mass as the groundwater flows through each transect. The Plume Tail Injection Line will operate along the bulkhead of Lawrence Creek and supplement the injection lines currently operating up-gradient along Montauk Highway and Manatuck Lane.

3.2 Oxygen Requirement

As described above, an oxygen injection system will slowly inject oxygen into the subsurface to increase levels of dissolved oxygen in the groundwater. This increase is necessary to stimulate the biodegradation of organic compounds by native microorganisms. The following calculations determine the oxygen requirements for the plume based on the average compound mass loadings estimated in the vicinity of the proposed injection line.

These calculations will determine the minimum required oxygen generating capacity to meet the project objectives for the proposed system.

Plume VOC and semivolatile organic compound (SVOC) data from historic and recent site monitoring activities are detailed in Figure 4 and summarized in Tables 1 and 2. This data was selected to represent the average plume conditions approaching the bulkhead along plume tail and was used to estimate the average compound mass loading.

3.2.1 Groundwater Plume Flowrate

In the design documents provided in Appendix A through C of the RDD, the groundwater plume flowrate was estimated by using an approximate cross-sectional shape of the plume as it approached the injection line. For this injection line, the plume flowrate was estimated using the approximate cross-sectional area of the plume that is discharging into Lawrence Creek along the bulkhead at the plume tail. The oxygen generator will be designed to produce enough oxygen required to treat the highest average compound mass that is projected to make first contact with the creek.

The shape of the cross-sectional area of the groundwater plume approaching Lawrence Creek along the bulkhead of the 18 Garner Lane property is estimated by using data collected from groundwater probes OU2GP-30 through OU2GP-34, and groundwater monitoring well clusters OU2MW-07 and GMP-04. The analytical data used is summarized in Tables 1 (groundwater probe data) and 2 (groundwater monitoring well data), and a cross-section of the approaching groundwater plume is depicted in Figure 4. The volumetric flow rate of the portion of the groundwater plume that will be treated by the Plume Tail Injection Line was estimated using the following assumptions:

- The cross-sectional area of the groundwater plume is estimated by assuming the cross-sectional shape of the plume is made up of a rectangle. The rectangle represents the plume's shape from approximately 5 feet below ground surface (ft bgs) to 35 ft bgs (Figure 4). The dimensions of the rectangle are approximately 313 feet wide (length of bulkhead along the 18 Garner Lane property) by 30 feet deep.
- The formation porosity is 30%.
- The groundwater seepage velocity is approximately 1 foot/day.

Using the data and these assumptions, the volumetric flow rate of the groundwater plume projected to pass through the Plume Tail Injection Line is approximately 2,817 cubic feet per day (CF/day) or 0.021 million gallons per day (MGD). See calculation below.

EQUATION 3.1

Cross-Sectional Area of Approaching Groundwater Plume

$$= (313FTx30FT) = 9{,}390FT^2$$

EQUATION 3.2 and 3.3

Volumetric Flow Rate = $(9{,}390FT^2 x 1FT/DAY) x 0.3 = 2{,}817FT^3/DAY$

Converting to Million Gallons per Day (Mgal/Day) =

$$2{,}817FT^3/DAY * 7.45gallons/FT^3 * 1Mgallon/1{,}000{,}000gal = 0.021MGal/DAY$$

3.2.2 Average Compound Mass Loading

The average concentration loading of total VOCs, total SVOCs, and total metals was estimated using data collected from each 5 foot sample interval between 10 and 70 feet below ground surface at each groundwater probe (OU2GP-30 through OU2GP-34) and the designated sample intervals at the monitoring wells adjacent to and up-gradient of the system location. The analytical data collected from the groundwater probes and monitoring well clusters listed above are summarized in Tables 1 and 2. The estimated average contaminant (VOCs and SVOCs) concentration loading ranges between 0.01 to 0.517 mg/L across the cross-sectional area of the plume approaching the 18 Garner Injection System.

However, because a large portion of the oxygen demand is derived from the amount of oxygen consumed by the amount of carbon in a compound, this loading is converted to a carbon loading. Assuming that the estimated concentration loading for oxygen consumption is comprised of 94% carbon, the average carbon concentration loading due to the average concentration loadings across the cross-sectional area of the plume ranges between 0.01 and 0.486 mg/L. Applying the average carbon concentration load to the estimated plume flow rate of 0.021 MGD as found in Section 3.2.1 with a unit conversion factor of 8.34 (lbs)(L)/(MG)(mg), the average carbon mass loading can be estimated:

EQUATION 3.4

Average Carbon Mass Loading (lbs/DAY) =

$$0.486mg/L * 0.021Mgal/Day * 8.34lbs \cdot L/Mgal \cdot mg = 0.085lbs/DAY$$

Using the above equation, the total carbon mass loading for this plume ranges from 0.002 to 0.085 lbs/day (Table 3).

In addition to oxygen demand from the carbon mass load, a percentage of dissolved metals will also consume oxygen as it passes through the injection line. Total dissolved metals data was not collected from groundwater probes OU2GP-30 to OU2GP-34 or monitoring wells OU2MW-52 or OU2MW-53.

Dissolved metals data was collected in June and July of 2007 for the 2007 Hydrologic Study and was used to estimate the load due to dissolved metals. The data used for this calculation is summarized in Table 3. The dissolved metals in Table 3 was summed for each well, converted to mg/L, and then averaged across all wells. It is assumed that 50% of this average will contribute to the compound mass load; therefore, the average total metals concentration load contributing to the compound mass loading is 35 mg/L or 6.13 lbs/day.

The total compound mass loading is then estimated by adding the carbon mass loading to the mass loading due to dissolved metals. This yields a range of total compound mass loading rates of 6.132 to 6.215 lbs/day. The system will be designed and operated such that higher amounts of oxygen can be directed to the sections of the plume that have the highest concentration loadings.

3.2.3 Estimated Oxygen Demand

As estimated in Section 3.2.2, the highest average compound loading entering the treatment zone is approximately 6.215 lbs/day. This value was used to design the system for this location. For the purpose of design, the ratio of oxygen to contaminant mass is estimated from the reaction of oxygen with a carbon source (naphthalene) producing entirely carbon dioxide and water. Naphthalene was chosen based on its dominating presence within the plume and its higher recalcitrance to attenuation when compared to the BTEX molecules.

Oxidation Reaction for Naphthalene

$$C_{10}H_8 + 12O_2 \rightarrow 10CO_2 + 4H_2O$$

As noted in the reaction above, 12 gram-mole (gmol) of oxygen are required for the oxidation of 1 gmol of naphthalene. Expressed in molecular weights:

EQUATIONS 3.5 AND 3.6

$\text{Oxygen} = (12) * (2 * 16) = 384$

$\text{Naphthalene} = (1 * ((10 * 12) + (8 * 1))) = 128$

This calculates a ratio of approximately 3.0 grams of oxygen per gram of naphthalene. This oxygen to carbon ratio was used to estimate the required oxygen demand.

A small percentage of injected oxygen will either not get dissolved or be consumed by cations or other organic matter. A factor of safety of 2.0 was applied to oxygen in the 3:1 oxygen to carbon ratio in order to ensure that the required amount of oxygen is available for contaminant biodegradation. Therefore, a minimum of 6 pounds of oxygen per pound of carbon must be injected into the treatment zone to sufficiently degrade the BTEX and PAH mass in the plume.

Using the highest average compound loading entering the treatment zone of 6.215 lbs/day, approximately 37.29 pounds of oxygen must be injected daily to effectively remediate the groundwater plume approaching the Plume Tail Injection Line.

3.2.4 System Details

Typical injection well spacing within treatment transects for this technology with similar subsurface conditions is approximately 20-25 feet. Eighteen to twenty feet spacing was selected for the Plume Tail Injection Line based on the distribution of contaminated groundwater (Figure 4), aquifer hydrogeologic properties, and performance of the systems operating down-gradient along Montauk Highway and Manatuck Lane.

Based on this information, the injections system was designed using 16 injection wells to provide coverage of the approaching groundwater plume (Figure 4). The total system capacity will be greater than the required 16 injection points to facilitate system expansion if needed. Additional system installation details are included in Figure 6.

The oxygen injection system will be provided by Matrix Environmental and include the following minimum specifications:

- Oxygen Production Capacity of 160 standard cubic feet per hour (SCFH)
- Oxygen Delivery Manifold with 32 points (4 banks of 8)
- Power Supply = Three phase 230-volts
- Six foot by 14-foot insulated double axle cargo trailer with rear locking double doors, trailer jacks, lighting, wall-mounted heater, ceiling-mounted ventilator and 120-volt duplex receptacle. This may be modified based on the final location of the system as dictated by pending access agreements.
- AirSep Model AS-160 oxygen generator with a 120-gallon surge tank and regulator. Single phase/60 Hz/110 volts.
- Kaeser SM-8 rotary screw air compressor with air dryer, pressure tank with auto drain, and low sound enclosure. Rated for 32 ACFM @ 100 PSIG. 7.5 HP TEFC motor, three phase/60 Hz/230 volts. The compressor should include a programmable logic controller.
- Manifold for 32 injection points to include individual pressure gauge (0-30 PSI) and Dwyer variable area flow meter (10-100 SCFH).
- Four adjustable timers and solenoid valves (per set of eight points) to control oxygen flow for pulse injection.
- 125-amp electrical panel (NEMA 1 load center) with breakers located inside the trailer and 100-amp (NEMA 3R rainproof) safety switch on outside of trailer. All wiring is copper in Liquid-Tight flexible conduit (steel jacket) or UL listed SCH40 PVC rigid electrical conduit.

- Fully integrated remediation system with all plumbing, electrical, and mechanical components installed.
- All pressure tanks will be ASME National Board Certified for compressed gas storage (200 PSI rating).
- The pressure relief valve will be muffled for noise reduction.
- U.L. certification.
- Operations manual with plumbing and instrumentation diagrams.

3.2.5 System Equipment Capacity

The oxygen generating equipment is rated for a maximum generation capacity of 160 standard cubic feet per hour (SCFH). However, the oxygen output should not exceed 75% of the oxygen production capacity. This is an operational guideline that serves to maintain adequate oxygen gas pressure in the storage tank for injection, maintain high oxygen gas purity, and prevents excessive motor starts and load time on the compressor. Therefore, a flow rate of 120 SCFH was used for design purposes. The corresponding mass flow rate of oxygen into the aquifer is calculated below.

EQUATION 3.7

Flow Rate = $120 SCF/H * 28.317 L/CF = 3{,}398.0 L/H$

For an Ideal Gas @ STP: 1 mole of gas = 22.4 L; 1 mole of Oxygen = 32 grams

EQUATION 3.8

$$\frac{X}{32g} = \frac{3{,}398.0L}{22.4L} \rightarrow X = 4{,}854.28g * 0.0022 lbs/g = 10.68 lb \text{ Oxygen}$$

Alternately using the vapor density of Oxygen @ STP of 1.43g/L

EQUATION 3.9

$$\frac{X}{1.43g} = \frac{3{,}398.0L}{1L} \rightarrow X = 4{,}859.14g * 0.0022 lbs/g = 10.69 lb \text{ Oxygen}$$

However, the oxygen transfer efficiency to groundwater is not 100%. It is very difficult to estimate this variable. It is dependant on both the oxygen solubility and the depth of injection. Oxygen solubility is site specific and affected by water temperature, cation content, and other factors. Oxygen solubility in groundwater is usually from 20-30 mg/L, but can range as high as 40-50 mg/L. However, oxygen solubility does not have as significant an effect on the transfer efficiency as depth of injection. The deeper the point of injection is installed below the water table, the higher the transfer efficiency due to longer contact time

between the oxygen gas molecule and the groundwater. For injection points at depths of 25 to 80 feet below ground surface, the assumed transfer efficiency ranges from 75-95%, respectively.

Assuming 90% oxygen generation efficiency, a flow stream of up to 10.68 pounds of oxygen per hour is available for injection into the aquifer. This equates to a maximum daily injection of approximately 256.3 pounds of oxygen across all injection points at a continuous injection rate. At a transfer efficiency range of 75-90%, approximately 8.0 to 9.6 pounds of oxygen per hour is available. This equates to a daily available injection range of approximately 192 to 230.4 pounds of oxygen at a continuous injection rate.

As detailed in Section 3.2.3, approximately 37.29 lbs of oxygen a day is required to effectively degrade the average compound loading of 6.215 lbs/day from the plume. The minimum of 192 lbs/day of oxygen delivered by the oxygen system is sufficient enough to supply the 37.29 lbs/day requirement. Based on an oxygen supply rate of 192 lbs/day, it would take approximately 280 minutes/day to inject 37.29 lbs of oxygen into the plume. This equates to a rate of approximately 0.13 pounds of oxygen per minute. Injecting oxygen at this rate across a 16 injection point system will inject approximately 2.08 pounds of oxygen into the aquifer every minute [0.13 lbs/min x 16 injection points = 2.08 lbs/min]. Therefore, to satisfy the estimated requirement of 37.29 lbs of oxygen, the system will need to inject oxygen for approximately 18 minutes. To maintain and increase the transfer efficiency of the oxygen gas into the aqueous phase, the injection system will inject oxygen on a cycle of at least 20 minutes every hour.

One operational advantage of this system is that larger amounts of oxygen mass can be routed to any particular section of the plume. Therefore, if monitoring activities during system operation indicates that a specific section of the approaching plume has a higher carbon loading relative to the rest of the plume, then higher amounts of oxygen mass can be directed to this section without sacrificing the lower oxygen demand across the rest of the plume.

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Tables

Table 1
Groundwater Probe Analytical Results
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Sample Name: / Sample Interval (feet): / Sample Date:	NYS AWQS	OU2GP-30 (3-7) 03/05/09	OU2GP-30 (16-20) 03/05/09	OU2GP-30 (26-30) 03/05/09	OU2GP-30 (36-40) 03/05/09	OU2GP-31 (3-7) 03/05/09	OU2GP-31 (16-20) 03/05/09	OU2GP-31 (26-30) 03/05/09
BTEX (ug/L)								
Benzene	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene, m,p-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene, o-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Other VOCs (ug/L)								
Acetaldehyde	8*	**9**	**11**	**9**	**3 J**	**5**	**7**	**9**
Acetone	50*	**7**	**9**	**7**	10 U	**3 J**	**5 J**	**5**
Allyl chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butadiene, 1,3-	NE	R	R	R	R	R	R	R
Butanone, 2-	50*	**1 J**	**1 J**	**1 J**	10 U	10 U	10 U	10 U
Carbon disulfide	60*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorotoluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cryofluorane	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyclohexane	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromoethane, 1,2-	0.0006	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,2-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,3-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,4-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethane, 1,1-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethane, 1,2-	0.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethene, 1,1-	0.07	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethene, cis-1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropane, 1,2-	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropene, cis-1,3	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropene, trans-1,3	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dioxane, 1,4-	NE	R	R	R	R	R	R	R
Ethanol	NE	R	R	R	R	R	R	R
Heptane, n-	NE	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
Hexane, n-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexanone, 2-	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isopropyl benzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	10*	10 U	**2 J**	10 U	**8**	10 U	**56**	**4 J**
Methyl-2-pentanone, 4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Propanol, 2-	NE	R	R	R	R	R	R	R
Propylbenzene, n-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethane, 1,1,1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethane,1,1,2,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trans-1,2-dichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloro-1,2,2-trifluoroethane, 1,1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorobenzene, 1,2,4-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethane, 1,1,1-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethane, 1,1,2-	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trimethylbenzene 1,3,5-/P-ethyltoluene	NE	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Trimethylbenzene, 1,2,4-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trimethylpentane, 2,2,4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 1
Groundwater Probe Analytical Results
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Sample Name: Sample Interval (feet): Sample Date:	NYS AWQS	OU2GP-30 (3-7) 03/05/09	OU2GP-30 (16-20) 03/05/09	OU2GP-30 (26-30) 03/05/09	OU2GP-30 (36-40) 03/05/09	OU2GP-31 (3-7) 03/05/09	OU2GP-31 (16-20) 03/05/09	OU2GP-31 (26-30) 03/05/09
Non-carcinogenic PAHs (ug/L)								
Acenaphthene	20*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Acenaphthylene	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Anthracene	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Benzo[g,h,i]perylene	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Fluoranthene	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Fluorene	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Methylnaphthalene, 2-	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Naphthalene	10*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Phenanthrene	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Pyrene	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Total Non-carcinogenic PAHs	NE	ND	ND	ND	ND	ND	ND	ND
Carcinogenic PAHs (ug/L)								
Benz[a]anthracene	0.002*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Benzo[a]pyrene	ND	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Benzo[b]fluoranthene	0.002*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Benzo[k]fluoranthene	0.002*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Chrysene	0.002*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dibenz[a,h]anthracene	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Total Carcinogenic PAHs	NE	ND	ND	ND	ND	ND	ND	ND
Total PAHs								
Total PAHs	NE	ND	ND	ND	ND	ND	ND	ND
Other SVOCs (ug/L)								
Bis(2-chloroethoxy)methane	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Bis(2-chloroethyl)ether	1	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Bis(2-ethylhexyl)phthalate	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Bis(chloroisopropyl)ether	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Bromophenyl phenyl ether, 4-	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Butyl benzyl phthalate	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Carbazole	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Chloro-3-methylphenol, 4-	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Chloroaniline, 4-	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Chloronaphthalene, 2-	10*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Chlorophenol, 2-	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Chlorophenyl phenyl ether, 4-	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dibenzofuran	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dichlorobenzene, 1,2-	3	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dichlorobenzene, 1,3-	3	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dichlorobenzene, 1,4-	3	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dichlorobenzidine, 3,3-	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dichlorophenol, 2,4-	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Diethyl phthalate	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dimethyl phthalate	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dimethylphenol, 2,4-	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Di-n-butyl phthalate	50	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dinitro-2-methylphenol, 4,6-	NE	25 UJ	25 U	25 U	25 U	25 UJ	25 U	25 U
Dinitrophenol, 2,4-	10*	25 UJ	25 U	25 U	25 U	25 UJ	25 U	25 U
Dinitrotoluene, 2,4-	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Dinitrotoluene, 2,6-	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Di-n-octyl phthalate	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Hexachlorobenzene	0.04	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Hexachlorobutadiene	0.5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Hexachlorocyclopentadiene	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Hexachloroethane	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Isophorone	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Methylphenol, 2-	1	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Methylphenol, 4-	1	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Nitroaniline, 2-	5	25 UJ	25 U	25 U	25 U	25 UJ	25 U	25 U
Nitroaniline, 3-	5	25 UJ	25 U	25 U	25 U	25 UJ	25 U	25 U
Nitroaniline, 4-	5	25 UJ	25 U	25 U	25 U	25 UJ	25 U	25 U
Nitrobenzene	0.4	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Nitrophenol, 2-	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Nitrophenol, 4-	NE	25 UJ	25 U	25 U	25 U	25 UJ	25 U	25 U
Nitrosodi-n-propylamine, N-	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Nitrosodiphenylamine, N-	50*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Pentachlorophenol	1	25 UJ	25 U	25 U	25 U	25 UJ	25 U	25 U
Phenol	1	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Trichlorobenzene, 1,2,4-	5	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U
Trichlorophenol, 2,4,5-	NE	25 UJ	25 U	25 U	25 U	25 UJ	25 U	25 U
Trichlorophenol, 2,4,6-	NE	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U

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Groundwater Probe Analytical Results
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Sample Name: / Sample Interval (feet): / Sample Date:	NYS AWQS	Duplicate of: OU2GP-31 (26-30) 03/05/09	OU2GP-31 (36-40) 03/05/09	OU2GP-32 (3-7) 03/09/09	OU2GP-32 (16-20) 03/09/09	OU2GP-32 (26-30) 03/09/09	OU2GP-32 (36-40) 03/09/09	OU2GP-33 (3-7) 03/05/09
BTEX (ug/L)								
Benzene	1	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene, m,p-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene, o-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Other VOCs (ug/L)								
Acetaldehyde	8*	**9**	10 U	**3 J**	**4 J**	**5 J**	10 U	**6**
Acetone	50*	**5**	10 U	**3 J**	**4 J**	**4 J**	10 U	**6**
Allyl chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butadiene, 1,3-	NE	R	R	R	R	R	R	R
Butanone, 2-	50*	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**
Carbon disulfide	60*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorotoluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cryofluorane	NE	10 U	10 U	10 U	10 UJ	10 UJ	10 UJ	10 U
Cyclohexane	NE	10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ	10 U
Dibromochloromethane	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromoethane, 1,2-	0.0006	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,2-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,3-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,4-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethane, 1,1-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethane, 1,2-	0.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethene, 1,1-	0.07	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethene, cis-1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropane, 1,2-	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropene, cis-1,3	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropene, trans-1,3	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dioxane, 1,4-	NE	R	R	R	R	R	R	R
Ethanol	NE	R	R	R	R	R	R	R
Heptane, n-	NE	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
Hexane, n-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexanone, 2-	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isopropyl benzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	10*	**4 J**	**6**	10 U	**1 J**	**35**	**7**	10 U
Methyl-2-pentanone, 4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10*	10 U	**9**	10 U	10 U	10 U	10 U	10 U
Propanol, 2-	NE	R	R	R	R	R	R	R
Propylbenzene, n-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethane, 1,1,1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethane,1,1,2,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trans-1,2-dichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloro-1,2,2-trifluoroethane, 1,1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorobenzene, 1,2,4-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethane, 1,1,1-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethane, 1,1,2-	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trimethylbenzene 1,3,5-/P-ethyltoluene	NE	10 UJ	10 UJ	10 U	10 U	10 U	10 U	10 UJ
Trimethylbenzene, 1,2,4-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trimethylpentane, 2,2,4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U

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Groundwater Probe Analytical Results
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Sample Name: Sample Interval (feet): Sample Date:	NYS AWQS	Duplicate of: OU2GP-31 (26-30) 03/05/09	OU2GP-31 (36-40) 03/05/09	OU2GP-32 (3-7) 03/09/09	OU2GP-32 (16-20) 03/09/09	OU2GP-32 (26-30) 03/09/09	OU2GP-32 (36-40) 03/09/09	OU2GP-33 (3-7) 03/05/09
Non-carcinogenic PAHs (ug/L)								
Acenaphthene	20*	10 U	10 U	10 U	10 U	10 U	**4 J**	R
Acenaphthylene	NE	10 U	10 U	10 U	10 U	10 U	**3 J**	R
Anthracene	50*	10 U	10 U	10 U	10 U	10 U	10 U	R
Benzo[g,h,i]perylene	NE	10 U	10 U	10 U	10 U	10 U	10 U	R
Fluoranthene	50*	10 U	10 U	10 U	10 U	10 U	10 U	R
Fluorene	50*	10 U	10 U	10 U	10 U	10 U	10 U	R
Methylnaphthalene, 2-	NE	10 U	10 U	10 U	10 U	10 U	10 U	R
Naphthalene	10*	10 U	10 U	10 U	10 U	10 U	10 U	R
Phenanthrene	50*	10 U	10 U	10 U	10 U	10 U	10 U	R
Pyrene	50*	10 U	10 U	10 U	10 U	10 U	10 U	R
Total Non-carcinogenic PAHs	NE	ND	ND	ND	ND	ND	**7**	ND
Carcinogenic PAHs (ug/L)								
Benz[a]anthracene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	R
Benzo[a]pyrene	ND	10 U	10 U	10 U	10 U	10 U	10 U	R
Benzo[b]fluoranthene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	R
Benzo[k]fluoranthene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	R
Chrysene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	R
Dibenz[a,h]anthracene	NE	10 U	10 U	10 U	10 U	10 U	10 U	R
Indeno[1,2,3-cd]pyrene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	R
Total Carcinogenic PAHs	NE	ND	ND	ND	ND	ND	ND	ND
Total PAHs								
Total PAHs	NE	ND	ND	ND	ND	ND	**7**	ND
Other SVOCs (ug/L)								
Bis(2-chloroethoxy)methane	5	10 U	10 U	10 U	10 U	10 U	10 U	R
Bis(2-chloroethyl)ether	1	10 U	10 U	10 U	10 U	10 U	10 U	R
Bis(2-ethylhexyl)phthalate	5	11 U	10 U	10 U	10 U	10 U	10 U	10 UJ
Bis(chloroisopropyl)ether	5	10 U	10 U	10 U	10 U	10 U	10 U	R
Bromophenyl phenyl ether, 4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	R
Butyl benzyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	R
Carbazole	NE	10 U	10 U	10 U	10 U	10 U	10 U	R
Chloro-3-methylphenol, 4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroaniline, 4-	5	10 U	10 U	10 U	10 U	10 U	10 U	R
Chloronaphthalene, 2-	10*	10 U	10 U	10 U	10 U	10 U	10 U	R
Chlorophenol, 2-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorophenyl phenyl ether, 4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	R
Dibenzofuran	NE	10 U	10 U	10 U	10 U	10 U	10 U	R
Dichlorobenzene, 1,2-	3	10 U	10 U	10 U	10 U	10 U	10 U	R
Dichlorobenzene, 1,3-	3	10 U	10 U	10 U	10 U	10 U	10 U	R
Dichlorobenzene, 1,4-	3	10 U	10 U	10 U	10 U	10 U	10 U	R
Dichlorobenzidine, 3,3-	5	10 U	10 U	10 U	10 U	10 U	10 U	R
Dichlorophenol, 2,4-	5	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	R
Dimethyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	R
Dimethylphenol, 2,4-	50*	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	R
Dinitro-2-methylphenol, 4,6-	NE	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Dinitrophenol, 2,4-	10*	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Dinitrotoluene, 2,4-	5	10 U	10 U	10 U	10 U	10 U	10 U	R
Dinitrotoluene, 2,6-	5	10 U	10 U	10 U	10 U	10 U	10 U	R
Di-n-octyl phthalate	50*	10 U	10 U	10 U	10 U	10 U	10 U	R
Hexachlorobenzene	0.04	10 U	10 U	10 U	10 U	10 U	10 U	R
Hexachlorobutadiene	0.5	10 U	10 U	10 U	10 U	10 U	10 U	R
Hexachlorocyclopentadiene	5	10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ	R
Hexachloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	R
Isophorone	50*	10 U	10 U	10 U	10 U	10 U	10 U	R
Methylphenol, 2-	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylphenol, 4-	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline, 2-	5	25 U	25 U	25 U	25 U	25 U	25 U	R
Nitroaniline, 3-	5	25 U	25 U	25 U	25 U	25 U	25 U	R
Nitroaniline, 4-	5	25 U	25 U	25 U	25 U	25 U	25 U	R
Nitrobenzene	0.4	10 U	10 U	10 U	10 U	10 U	10 U	R
Nitrophenol, 2-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Nitrophenol, 4-	NE	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Nitrosodi-n-propylamine, N-	NE	10 U	10 U	10 U	10 U	10 U	10 U	R
Nitrosodiphenylamine, N-	50*	10 U	10 U	10 U	10 U	10 U	10 U	R
Pentachlorophenol	1	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
Trichlorobenzene, 1,2,4-	5	10 U	10 U	10 U	10 U	10 U	10 U	R
Trichlorophenol, 2,4,5-	NE	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Trichlorophenol, 2,4,6-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 1
Groundwater Probe Analytical Results
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Sample Name: / Sample Interval (feet): / Sample Date:	NYS AWQS	OU2GP-33 (16-20) 03/05/09	OU2GP-33 (26-30) 03/05/09	OU2GP-33 (36-40) 03/05/09	OU2GP-34 (3-7) 03/05/09	OU2GP-34 (16-20) 03/05/09	OU2GP-34 (26-30) 03/05/09	OU2GP-34 (36-40) 03/05/09
BTEX (ug/L)								
Benzene	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene, m,p-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene, o-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Other VOCs (ug/L)								
Acetaldehyde	8*	**8**	**3 J**	10 U	**15**	**5 J**	10 U	10 U
Acetone	50*	**6**	10 U	10 U	**10**	**4 J**	10 U	10 U
Allyl chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butadiene, 1,3-	NE	R	R	R	R	R	R	R
Butanone, 2-	50*	**1 J**	10 U	10 U	**2 J**	10 U	10 U	10 U
Carbon disulfide	60*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	**12**	10 U	10 U	10 U	**13**	10 U	10 U
Chloromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorotoluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cryofluorane	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyclohexane	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromoethane, 1,2-	0.0006	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,2-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,3-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,4-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethane, 1,1-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethane, 1,2-	0.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethene, 1,1-	0.07	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethene, cis-1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropane, 1,2-	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropene, cis-1,3	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropene, trans-1,3	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dioxane, 1,4-	NE	R	R	R	R	R	R	R
Ethanol	NE	R	R	R	R	R	R	R
Heptane, n-	NE	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
Hexane, n-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexanone, 2-	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isopropyl benzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	10*	10 U	**18**	**1 J**	10 U	10 U	**12**	10 U
Methyl-2-pentanone, 4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Propanol, 2-	NE	R	R	R	R	R	R	R
Propylbenzene, n-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethane, 1,1,1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethane,1,1,2,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trans-1,2-dichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloro-1,2,2-trifluoroethane, 1,1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorobenzene, 1,2,4-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethane, 1,1,1-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethane, 1,1,2-	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trimethylbenzene 1,3,5-/P-ethyltoluene	NE	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Trimethylbenzene, 1,2,4-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trimethylpentane, 2,2,4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 1
Groundwater Probe Analytical Results
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Sample Name: Sample Interval (feet): Sample Date:	NYS AWQS	OU2GP-33 (16-20) 03/05/09	OU2GP-33 (26-30) 03/05/09	OU2GP-33 (36-40) 03/05/09	OU2GP-34 (3-7) 03/05/09	OU2GP-34 (16-20) 03/05/09	OU2GP-34 (26-30) 03/05/09	OU2GP-34 (36-40) 03/05/09
Non-carcinogenic PAHs (ug/L)								
Acenaphthene	20*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Acenaphthylene	NE	10 U	10 U	**3 J**	10 UJ	10 U	10 U	10 U
Anthracene	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Benzo[g,h,i]perylene	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Fluoranthene	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Fluorene	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Methylnaphthalene, 2-	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Naphthalene	10*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Phenanthrene	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Pyrene	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Total Non-carcinogenic PAHs	NE	ND	ND	**3**	ND	ND	ND	ND
Carcinogenic PAHs (ug/L)								
Benz[a]anthracene	0.002*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Benzo[a]pyrene	ND	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Benzo[b]fluoranthene	0.002*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Benzo[k]fluoranthene	0.002*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Chrysene	0.002*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dibenz[a,h]anthracene	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Total Carcinogenic PAHs	NE	ND	ND	ND	ND	ND	ND	ND
Total PAHs								
Total PAHs	NE	ND	ND	**3**	ND	ND	ND	ND
Other SVOCs (ug/L)								
Bis(2-chloroethoxy)methane	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Bis(2-chloroethyl)ether	1	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Bis(2-ethylhexyl)phthalate	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Bis(chloroisopropyl)ether	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Bromophenyl phenyl ether, 4-	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Butyl benzyl phthalate	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Carbazole	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Chloro-3-methylphenol, 4-	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Chloroaniline, 4-	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Chloronaphthalene, 2-	10*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Chlorophenol, 2-	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Chlorophenyl phenyl ether, 4-	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dibenzofuran	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dichlorobenzene, 1,2-	3	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dichlorobenzene, 1,3-	3	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dichlorobenzene, 1,4-	3	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dichlorobenzidine, 3,3-	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dichlorophenol, 2,4-	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Diethyl phthalate	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dimethyl phthalate	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dimethylphenol, 2,4-	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Di-n-butyl phthalate	50	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dinitro-2-methylphenol, 4,6-	NE	25 U	25 U	25 U	25 UJ	25 U	25 U	25 U
Dinitrophenol, 2,4-	10*	25 U	25 U	25 U	25 UJ	25 U	25 U	25 U
Dinitrotoluene, 2,4-	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Dinitrotoluene, 2,6-	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Di-n-octyl phthalate	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Hexachlorobenzene	0.04	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Hexachlorobutadiene	0.5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Hexachlorocyclopentadiene	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Hexachloroethane	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Isophorone	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Methylphenol, 2-	1	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Methylphenol, 4-	1	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Nitroaniline, 2-	5	25 U	25 U	25 U	25 UJ	25 U	25 U	25 U
Nitroaniline, 3-	5	25 U	25 U	25 U	25 UJ	25 U	25 U	25 U
Nitroaniline, 4-	5	25 U	25 U	25 U	25 UJ	25 U	25 U	25 U
Nitrobenzene	0.4	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Nitrophenol, 2-	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Nitrophenol, 4-	NE	25 U	25 U	25 U	25 UJ	25 U	25 U	25 U
Nitrosodi-n-propylamine, N-	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Nitrosodiphenylamine, N-	50*	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Pentachlorophenol	1	25 U	25 U	25 U	25 UJ	25 U	25 U	25 U
Phenol	1	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Trichlorobenzene, 1,2,4-	5	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U
Trichlorophenol, 2,4,5-	NE	25 U	25 U	25 U	25 UJ	25 U	25 U	25 U
Trichlorophenol, 2,4,6-	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U

Table 1
Groundwater Probe Analytical Results
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Notes:

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 PAHs 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
ND - not detected; total concentration is listed as ND because no compounds were detected in the group

Bolding indicates a detected concentration
Shading and bolding indicates that the detected concentration is above the NYS AWQS objective it was compared to

Validation Qualifiers:

J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - not detected at or above the reporting limit shown and the reporting limit is estimated
R - rejected

Table 2
Groundwater Monitoring Well Analytical Results
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Operable Unit: Well ID: Screened Interval (feet): Date Sampled:	NYS AWQS	OU2 GMP-04 15.5-20.5 12/03/08	OU2 OU2MW-07 15-25 11/21/08	OU2 OU2MW-07S 3-8 11/21/08	OU2 OU2MW-10D 35-40 12/02/08	OU2 OU2MW-10I 20-25 12/02/08	OU2 OU2MW-10S 3-7 12/02/08
BTEX (ug/L)							
Benzene	1	10 U	10 U	10 U	**300**	**130**	10 U
Toluene	5	10 U	10 U	10 U	**3 J**	**1 J**	10 U
Ethylbenzene	5	10 U	10 U	10 U	**7**	10 U	10 U
Xylene, m,p-	5	10 U	10 U	10 U	**14**	**3 J**	10 U
Xylene, o-	5	10 U	10 U	10 U	**27**	**9**	10 U
Total BTEX	NE	ND	ND	ND	**351**	**143**	ND
Other VOCs (ug/L)							
Acetone	50*	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U
Bromomethane	5	10 UJ	10 U	10 U	10 UJ	10 UJ	10 U
Butanone, 2-	50*	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	5	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Cyclohexane	NE	10 UJ	10 U	10 U	10 UJ	10 U	10 UJ
Dichlorobenzene, 1,2-	3	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,3-	3	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,4-	3	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	5	10 UJ	10 U	10 U	10 UJ	10 UJ	10 UJ
Dichloroethane, 1,1-	5	10 UJ	**1 J**	10 U	10 UJ	10 U	10 U
Dichloroethene, 1,1-	0.07	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethene, cis-1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U
Heptane, n-	NE	10 UJ	10 U	10 U	10 UJ	10 U	10 UJ
Hexane, n-	NE	10 UJ	10 U	10 U	10 UJ	10 U	10 UJ
Isopropyl benzene	5	10 U	10 U	10 U	**26**	**9**	10 U
Methyl tert-butyl ether	10*	10 UJ	**45 J**	10 UJ	**1 J**	**6 J**	10 UJ
Naphthalene	10*	10 U	**3 J**	10 U	**1200**	**27**	10 U
Nonane	NE	NA	NA	NA	NA	NA	NA
Octane, n-	NE	NA	NA	NA	NA	NA	NA
Propylbenzene, n-	5	10 U	10 U	10 U	**4 J**	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	**2 J**	10 U	10 U	10 U	10 U
Tetrahydrofuran	50*	10 U	10 U	10 U	10 U	10 UJ	10 U
Trichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U
Trimethylbenzene 1,3,5-/P-ethyltoluene	NE	10 U	10 U	10 U	**20**	10 U	10 U
Trimethylbenzene, 1,2,4-	5	10 U	10 U	10 U	**2 J**	10 U	10 U
Trimethylpentane, 2,2,4-	NE	10 UJ	10 U	10 U	10 UJ	10 U	10 UJ
Total VOCs		0	51	0	1604	185	0
Non-carcinogenic PAHs (ug/L)							
Acenaphthene	20*	10 U	10 U	10 U	**19**	10 U	10 U
Acenaphthylene	NE	10 U	10 U	10 U	**16**	10 U	10 U
Anthracene	50*	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	50*	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	50*	10 U	10 U	10 U	10 U	10 U	10 U
Methylnaphthalene, 2-	NE	10 U	10 U	10 U	**2 J**	10 U	10 U
Naphthalene	10*	10 U	10 U	10 U	**690**	**2 J**	10 U
Phenanthrene	50*	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	50*	10 U	10 U	10 U	10 U	10 U	10 U
Total Non-carcinogenic PAHs	NE	ND	ND	ND	**727**	**2**	ND
Carcinogenic PAHs (ug/L)							
Total Carcinogenic PAHs	NE	ND	ND	ND	ND	ND	ND
Total PAHs (ug/L)							
Total PAHs	NE	ND	ND	ND	**727**	**2**	ND
Total SVOCs		0	51	0	1604	185	0

Table 2
Groundwater Monitoring Well Analytical Results
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Operable Unit: Well ID: Screened Interval (feet): Date Sampled:	NYS AWQS	OU2 GMP-04 15.5-20.5 12/03/08	OU2 OU2MW-07 15-25 11/21/08	OU2 OU2MW-07S 3-8 11/21/08	OU2 OU2MW-10D 35-40 12/02/08	OU2 OU2MW-10I 20-25 12/02/08	OU2 OU2MW-10S 3-7 12/02/08
Total Metals (ug/L)							
Aluminum	NE	NA	NA	NA	NA	NA	NA
Arsenic	25	NA	NA	NA	NA	NA	NA
Barium	1000	NA	NA	NA	NA	NA	NA
Cadmium	5	NA	NA	NA	NA	NA	NA
Calcium	NE	NA	NA	NA	NA	NA	NA
Chromium	50	NA	NA	NA	NA	NA	NA
Cobalt	NE	NA	NA	NA	NA	NA	NA
Copper	200	NA	NA	NA	NA	NA	NA
Iron	300	NA	NA	NA	NA	NA	NA
Lead	25	NA	NA	NA	NA	NA	NA
Magnesium	35000*	NA	NA	NA	NA	NA	NA
Manganese	300	NA	NA	NA	NA	NA	NA
Nickel	100	NA	NA	NA	NA	NA	NA
Potassium	NE	NA	NA	NA	NA	NA	NA
Selenium	10	NA	NA	NA	NA	NA	NA
Silver	50	NA	NA	NA	NA	NA	NA
Sodium	20000	NA	NA	NA	NA	NA	NA
Thallium	0.5*	NA	NA	NA	NA	NA	NA
Vanadium	NE	NA	NA	NA	NA	NA	NA
Zinc	2000*	NA	NA	NA	NA	NA	NA
Other (mg/L)							
Nitrogen, Ammonia	2000	NA	NA	NA	NA	NA	NA
Nitrogen, Nitrate	10000	NA	NA	NA	NA	NA	NA
Nitrogen, Total	NE	NA	NA	NA	NA	NA	NA
Nitrogen, Total Kjeldahl	NE	NA	NA	NA	NA	NA	NA
Standard Plate Count	NE	NA	NA	NA	NA	NA	NA
Sulfate	250000	NA	NA	NA	NA	NA	NA
Total Phosphorous	NE	NA	NA	NA	NA	NA	NA

Table 2
Groundwater Monitoring Well Analytical Results
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Notes:

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 PAHs 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
ND - not detected; total concentration is listed as ND because no compounds were detected in the group

Bolding indicates a detected concentration
Shading and bolding indicates that the detected concentration is above the NYS AWQS objective it was compared to

Validation Qualifiers:

J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - not detected at or above the reporting limit shown and the reporting limit is estimated
R - rejected

Table 3
Groundwater Monitoring Well Analytical Results from 2007 Hydrologic Study
Operable Unit No. 2 Hydrologic Study
Bay Shore/Brightwaters Former MGP Site

Sample ID: / Sample Date:	NYS AWQS	OU2IW-01S 7/25/2007	OU2MW-11D 6/25/2007	OU2MW-11D 7/23/2007	OU2MW-11I 6/25/2007	OU2MW-11I 7/23/2007	OU2MW-11I2 6/25/2007	OU2MW-11I2 7/23/2007	OU2MW-11S 6/25/2007	OU2MW-11S 7/23/2007	OU2MW-12D 6/22/2007	OU2MW-12D 7/23/2007	OU2MW-12I 6/22/2007	OU2MW-12I 7/23/2007	OU2MW-12I2 6/22/2007	OU2MW-12I2 7/23/2007	OU2MW-12S 6/21/2007	OU2MW-12S 7/23/2007
BTEX (ug/L)																		
Benzene	1	10 U	**3 J**	10 U	**67**	**2 J**	**120**	10 U	10 U	10 U	**11**	**10**	**62**	**170**	**8**	**12**	10 U	10 U
Toluene	5	10 U	10 U	10 U	**4 J**	10 U	**5 J**	10 U	10 U	10 U	10 U	10 U	**5**	**12**	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	**35**	**2 J**	**98**	10 U	10 U	10 U	**1 J**	10 U	**29**	**81**	**4 J**	**5 J**	10 U	10 U
Xylene, total	5	10 U	10 U	10 U	**62**	**3**	**70**	10 U	10 U	10 U	**11**	**9**	**132**	**203**	**15**	**13**	10 U	10 U
Total BTEX	NE	ND	**3**	ND	**168**	**7**	**293**	ND	ND	ND	**23**	**19**	**228**	**466**	**27**	**30**	ND	ND
Other VOCs (ug/L)																		
Acetaldehyde	NE	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	**4 J**	10 U	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Acetone	50*	10 U	10 U	**4 J**	10 U	**4 J**	**3 J**	**6 J**	10 U	10 UJ	10 UJ	10 UJ	**4 J**	**5 J**	10 UJ	10 UJ	**5 J**	10 UJ
Allyl chloride	NE	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	10 U	10 U
Bromodichloromethane	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	10 U	10 U	10 U	10 U
Bromoform	NE	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	10 U	10 U
Bromomethane	5	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	10 U	10 U
Butadiene, 1,3-	NE	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ
Butanone,2-	50*	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	**2 J**	**2 J**
Carbon disulfide	NE	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	10 U	10 U
Carbon tetrachloride	5	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorotoluene	NE	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	10 U	10 U
Cryofluorane	NE	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	10 U	10 U
Cyclohexane	NE	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromoethane,1,2-	NE	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	10 U	10 U
Dichlorobenzene,1,2-	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	10 U	10 U
Dichlorobenzene,1,3-	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	10 U	10 U
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	10 U	10 U
Dichlorodifluoromethane	NE	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	**1 J**	**4 J**
Dichloroethane,1,1-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**3 J**	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethane,1,2-	0.6	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	10 U	10 U
Dichloroethene, cis-1,2-	5	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	10 U	10 U
Dichloroethene,1,1-	5	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	10 U	10 U
Dichloropropane,1,2-	1	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	10 U	10 U
Dichloropropene, cis-1,3	NE	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	10 U	10 U
Dichloropropene, trans-1,3	NE	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	10 U	10 U
Dioxane,1,4-	NE	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Ethanol	NE	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Heptane, n-	NE	10 UJ	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Hexachlorobutadiene	0.5	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexane, n-	NE	10 UJ	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 UJ	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Hexanone,2-	NE	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ
Isopropyl benzene	5	10 U	**3 J**	10 U	**4 J**	10 U	**5 J**	10 U	10 U	10 U	**14**	**10**	10 U	**5 J**	10 U	10 U	10 U	10 U
Isopropyltoluene,4-	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	NE	10 U	**3 J**	10 U	**2 J**	10 U	**5**	10 U	10 U	10 U	**93**	**71**	**11**	**20**	**37**	**15**	10 U	10 U
Methyl-2-pentanone,4-	NE	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	10 U	10 U
Methylene chloride	5	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	10 U	10 U
Propanol,2-	NE	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Propylbenzene, n-	5	10 U	10 U	10 U	**8**	10 U	**4 J**	10 U	10 U	10 U	**3 J**	10 U	**3 J**	**7 J**	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 3
Groundwater Monitoring Well Analytical Results from 2007 Hydrologic Study
Operable Unit No. 2 Hydrologic Study
Bay Shore/Brightwaters Former MGP Site

Sample ID: / Sample Date:	NYS AWQS	OU2IW-01S 7/25/2007	OU2MW-11D 6/25/2007	OU2MW-11D 7/23/2007	OU2MW-11I 6/25/2007	OU2MW-11I 7/23/2007	OU2MW-11I2 6/25/2007	OU2MW-11I2 7/23/2007	OU2MW-11S 6/25/2007	OU2MW-11S 7/23/2007	OU2MW-12D 6/22/2007	OU2MW-12D 7/23/2007	OU2MW-12I 6/22/2007	OU2MW-12I 7/23/2007	OU2MW-12I2 6/22/2007	OU2MW-12I2 7/23/2007	OU2MW-12S 6/21/2007	OU2MW-12S 7/23/2007
Tetrachloroethane,1,1,1,2-	NE	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	10 U	10 U
Tetrachloroethane,1,1,2,2-	5	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	10 U	10 U
Tetrachloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	**1 J**	**2 J**	**1 J**	**2 J**	**2 J**	10 U	10 U
Tetrahydrofuran	NE	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	10 U	10 U
Trans-1,2-dichloroethene	5	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	10 U	10 U
Trichloro-1,2,2-trifluoroethane, 1,1,2-	5	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorobenzene,1,2,4-	5	10 U	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethane,1,1,1-	5	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	10 U	10 U
Trichloroethane,1,1,2-	1	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	10 U	10 U
Trichloroethene	5	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	**1 J**	10 U	10 U	10 U
Trichlorofluoromethane	NE	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	10 U	10 U
Trimethylbenzene, 1,3,5-/P-ethyltoluene	NE	10 U	10 U	10 U	**47**	10 U	**36**	10 U	10 U	10 U	**15**	**11**	**120**	**150**	**23**	**31**	10 U	10 U
Trimethylbenzene,1,2,4-	5	10 U	10 UJ	10 U	**250 D**	**12**	**55**	10 U	10 U	10 U	**4 J**	**4 J**	**190 D**	**200 D**	**29**	**36**	10 U	10 U
Trimethylpentane, 2,2,4-	NE	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U
Vinyl acetate	NE	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	10 U	10 U
Vinyl chloride	2	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	10 U	10 U
Non-carcinogenic PAHs (ug/L)																		
Acenaphthene	20*	10 U	**2 J**	10 U	**9**	10 U	**24**	10 U	10 U	10 U	**14**	**8 J**	**10**	**11**	**3 J**	**4 J**	10 U	10 U
Acenaphthylene	NE	10 U	**6**	10 U	**49**	**3 J**	**63**	10 U	10 U	10 U	**66**	**53 J**	**39**	**90 J**	**22**	**44**	10 U	10 U
Anthracene	50*	10 U	10 U	10 U	**4 J**	10 U	**6**	10 U	10 U	10 U	10 U	10 U	**3 J**	**2 J**	10 U	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	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	50*	10 U	10 U	10 U	**1 J**	10 U	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	50*	10 U	10 U	10 U	**9**	10 U	**24**	10 U	10 U	10 U	10 U	**1 J**	**17**	**18**	**3 J**	**5 J**	10 U	10 U
Methylnaphthalene,2-	NE	10 U	10 U	10 U	**19**	**5 J**	**45**	10 U	10 U	10 U	10 U	10 U	**59**	**120 J**	**13**	**16**	10 U	10 U
Naphthalene	10*	10 U	10 U	10 U	**970 D**	**70 D**	**220 D**	10 U	10 U	10 U	**15**	**11**	**350 D**	**1400 D**	**130 D**	**150 D**	**1 J**	10 U
Phenanthrene	50*	10 U	10 U	10 U	**15**	10 U	**40**	10 U	10 U	10 U	**13**	**9 J**	**5**	**5 J**	**3 J**	**5 J**	10 U	10 U
Pyrene	50*	10 U	10 U	10 U	**1 J**	10 U	**2 J**	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U
Total Noncarcinogenic PAHs	NE	ND	**8**	ND	**1077**	**78**	**426**	ND	ND	ND	**108**	**82**	**484**	**1646**	**174**	**224**	**1**	ND
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	10 U	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	10 U	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 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	0.002*	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 UJ
Chrysene	0.002*	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	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	10 U	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	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Carcinogenic PAHs	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PAHs (ug/L)																		
Total PAHs	NE	ND	**8**	ND	**1077**	**78**	**426**	ND	ND	ND	**108**	**82**	**484**	**1646**	**174**	**224**	**1**	ND
Metals (ug/L)																		
Calcium	NE	**24500**	**4860 J**	**1780 J**	**38500**	**2390 J**	**36400**	**1600 J**	**19000**	**22200**	**18100**	**17600**	**37600**	**39900**	**26600**	**29000**	**41400**	**42300**
Iron	300	**91.8 J**	**3870**	**157**	**53600**	**280**	**61600**	**141**	62.8 UJ	**329**	**3700**	**4860**	**583**	**12100**	**2370**	**6210**	**383**	71.4 UJ
Magnesium	35000*	**8740**	**1850 J**	**552 J**	**4950 J**	**673 J**	**7830**	**323 J**	**7740**	**8890**	**5210**	**4970 J**	**6180**	**6550**	**4630 J**	**4730 J**	**11900**	**13400**
Manganese	300	**5.8 J**	**1640**	**104**	**973**	**12.6 J**	**7980**	**46.8**	**11.8 J**	**545**	**7100**	**7600**	**1430**	**1710**	**7640**	**8540**	**4.9 J**	**10.8 J**
Potassium	NE	**1570 J**	**596 J**	**2070 J**	**3530 J**	**2090 J**	**4630 J**	**1210 J**	**1480 J**	**2470 J**	**2570 J**	**2940 J**	**4030 J**	**4750 J**	**3670 J**	**4150 J**	**9510 J**	**4360 J**
Sodium	20000	**6910**	**7200**	**2960 J**	**51200**	**2830 J**	**77600**	**2060 J**	**8600**	**9960**	**42200**	**39300**	**63500**	**71700**	**66100**	**70100**	**22300**	**14500**

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Operable Unit No. 2 Hydrologic Study
Bay Shore/Brightwaters Former MGP Site

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UJ - not detected at or above the reporting limit shown and the reporting limit is estimated
R - rejected

Table 4
Average Compound Mass Loading
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

Sample Depth Interval (feet below ground surface)	Average Total Contaminant Concentration Loading (mg/L)	Average Total Carbon Concentration Loading (mg/L)	Average Total Carbon Mass Loading (lbs/day)[1]	Average Total Metals Concentration Loading (mg/L)[2]	Average Total Metals Mass Loading (lbs/day)[1]	Total Compound Mass Loading (lbs/day)
3 to 7	0.010	0.0095	0.002	35	6.130	6.132
16 to 20	0.029	0.0269	0.005	35	6.130	6.135
26 to 30	0.024	0.0226	0.004	35	6.130	6.134
36 to 40	0.517	0.4861	0.085	35	6.130	6.215

1 - Calculated by (concentration in mg/L) x (plume flow rate in Mgal/day) x (unit conversion factor of 8.34)
Where the plume flow rate is estimated at 0.021 Mgal/day

2 - This value was calculated based on data provided in the OU-2 Hydrologic Study for Monitoring well OU2IW-01S and monitoring well clusters OU2MW-11 and OU2MW-12.
Dissolved Metals data was summed, converted to mg/L, averaged across all wells, then divided by 2.
mg/L = milligrams per liter
Mgal/day = million gallons per day
lbs/day = pounds per day

Table 5
Groundwater Monitoring Well Analytical Results - Q3 2009
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

DRAFT
Unvalidated

Sample Name: / Sample Date:	NYS AWQS	OU2MW-52S 06/01/09	OU2MW-52I 06/01/09	Duplicate of OU2MW-52I 06/01/09	OU2MW-52D 06/01/09	OU2MW-53S 06/01/09	OU2MW-53I 06/01/09	OU2MW-53D 06/01/09
BTEX (ug/L)								
Benzene	1	10 U	**71**	**73**	10 U	10 U	10 U	10 U
Toluene	5	10 U	**2 J**	**2 J**	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	**4 J**	**4 J**	10 U	10 U	10 U	10 U
Xylene, m,p-	5	10 U	**9 J**	**9 J**	10 U	10 U	10 U	10 U
Xylene, o-	5	10 U	**42**	**42**	10 U	10 U	10 U	10 U
Other VOCs (ug/L)								
Acetaldehyde	8*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Allyl chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butadiene, 1,3-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butanone, 2-	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	60*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U	**14**	10 U
Chloromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorotoluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cryofluorane	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyclohexane	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Decane, n-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	50*	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U
Dibromoethane, 1,2-	0.0006	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,2-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,3-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorobenzene, 1,4-	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethane, 1,1-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethane, 1,2-	0.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethene, 1,1-	0.07	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloroethene, cis-1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropane, 1,2-	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropene, cis-1,3	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichloropropene, trans-1,3	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dioxane, 1,4-	NE	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Dodecane, n-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethanol	NE	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Heptane, n-	NE	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
Hexane, n-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexanone, 2-	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isopropyl benzene	5	10 U	**14**	**14**	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	10*	10 U	10 U	10 U	**30**	10 U	10 U	**27**
Methyl-2-pentanone, 4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Nonane	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Octane, n-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Propanol, 2-	NE	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Propylbenzene, n-	5	10 U	**5 J**	**5 J**	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethane, 1,1,1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethane,1,1,2,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trans-1,2-dichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloro-1,2,2-trifluoroethane, 1,1,2-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorobenzene, 1,2,4-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethane, 1,1,1-	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethane, 1,1,2-	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 5
Groundwater Monitoring Well Analytical Results - Q3 2009
Operable Unit No. 2 Plume Tail
Bay Shore/Brightwaters Former MGP Site

DRAFT
Unvalidated

Sample Name: / Sample Date:	NYS AWQS	OU2MW-52S 06/01/09	OU2MW-52I 06/01/09	Duplicate of OU2MW-52I 06/01/09	OU2MW-52D 06/01/09	OU2MW-53S 06/01/09	OU2MW-53I 06/01/09	OU2MW-53D 06/01/09
Trichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trimethylbenzene 1,3,5-/P-ethyltoluene	NE	10 U	**16**	**16**	10 U	10 U	10 U	10 U
Trimethylbenzene, 1,2,4-	5	10 U	**61**	**62**	10 U	10 U	10 U	10 U
Trimethylpentane, 2,2,4-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl acetate	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL VOCs	**NE**	**0**	**224**	**227**	**30**	**0**	**16**	**27**
Non-carcinogenic PAHs (ug/L)								
Acenaphthene	20*	10 U	**20**	**19**	10 U	10 U	10 U	10 U
Acenaphthylene	NE	10 U	**16**	**16**	10 U	10 U	10 U	10 U
Anthracene	50*	10 U	10 U	10 U	10 U	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
Fluoranthene	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	50*	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U
Methylnaphthalene, 2-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10*	10 U	**64**	**61**	10 U	10 U	10 U	10 U
Phenanthrene	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	50*	10 U	10 U	10 U	10 U	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
Benzo[a]pyrene	ND	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
Benzo[k]fluoranthene	0.002*	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
Dibenz[a,h]anthracene	NE	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
TOTAL SVOCs	**NE**	**0**	**101**	**96**	**0**	**0**	**0**	**0**
Total Metals (ug/L)								
Aluminum	NE	**1670**	9.2 U	NA	9.2 U	**1500**	9.2 U	9.2 U
Antimony	3	2.7 U	2.7 U	NA	2.7 U	2.7 U	2.7 U	2.7 U
Arsenic	25	2.8 U	2.8 U	NA	2.8 U	2.8 U	2.8 U	**5.5 B**
Barium	1000	**6.0 B**	**24.0 B**	NA	**11.3 B**	**4.3 B**	**4.1 B**	**7.9 B**
Beryllium	3*	0.16 U	0.16 U	NA	0.16 U	0.16 U	0.16 U	0.16 U
Cadmium	5	0.23 U	0.23 U	NA	**0.34 B**	0.23 U	0.23 U	0.23 U
Calcium	NE	**4550 B**	**35900**	NA	**7810**	**12800**	**7170**	**11200**
Chromium	50	**3.0 B**	**2.2 B**	NA	**2.5 B**	**2.9 B**	**0.89 B**	**2.4 B**
Cobalt	NE	1.2 U	1.2 U	NA	**3.6 B**	1.2 U	1.2 U	**15.4 B**
Copper	200	**5.1 B**	**3.8 B**	NA	**3.5 B**	**8.8 B**	**3.5 B**	**4.0 B**
Iron	300	**1590**	**55.5 B**	NA	**96.4 B**	**1260**	**36.0 B**	**25200**
Lead	25	**1.7 B**	1.5 U	NA	**1.8 B**	1.5 U	1.5 U	1.5 U
Magnesium	35000*	**1390 B**	**5370**	NA	**2990 B**	**2600 B**	**830 B**	**4170 B**
Manganese	300	**7.6 B**	**412**	NA	**9030**	**11.7 B**	**6.3 B**	**5660**
Mercury	0.7	0.10 U	0.10 U	NA	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	100	**2.0 B**	**2.4 B**	NA	**2.6 B**	**2.2 B**	**1.6 B**	**3.0 B**
Potassium	NE	**1050 B**	**2610 B**	NA	**1210 B**	**1910 B**	**863 B**	**1310 B**
Selenium	10	2.7 U	2.7 U	NA	2.7 U	2.7 U	2.7 U	2.7 U
Silver	50	0.60 U	0.60 U	NA	**0.88 B**	0.60 U	0.60 U	**0.81 B**
Sodium	20000	6650 E	53500 E	NA	31400 E	**4580 BE**	5170 E	21700 E
Thallium	0.5*	3.3 U	3.3 U	NA	3.3 U	3.3 U	3.3 U	3.3 U
Vanadium	NE	**2.8 B**	0.97 U	NA	0.97 U	**3.2 B**	0.97 U	0.97 U
Zinc	2000*	**18.2 B**	**8.9 B**	NA	**3.9 B**	**17.2 B**	**8.7 B**	1.3 U
Other								
Nitrogen, Ammonia (mg/l)	2000	0.5 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	**0.22**
Nitrogen, Nitrate (mg/l)	10000	**0.26**	**6.42**	NA	**0.32**	**1.67**	**0.10**	**0.10**
Nitrogen, Nitrite (mg/l)	1000	0.1 U	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.1 U
Nitrogen, Total (mg/l)	NE	**0.46**	**6.73**	NA	**0.54**	**2.56**	**0.10**	**0.71**
Nitrogen, Total Kjeldahl (mg/l)	NE	**0.20**	**0.31**	NA	**0.22**	**0.89**	0.1 U	**0.61**
Sulfate (mg/l)	250000	**7.56**	**22.4**	NA	**16.5**	**7.02**	5 U	**10.2**
Sulfide (mg/l)	50*	1 U	1 U	NA	1 U	1 U	1 U	1 U
Total Phosphorous (mg/l)	NE	0.05 U	0.05 U	NA	0.05 U	**0.18**	0.05 U	**0.06**
Standard Plate Count (cfu/ml)	NE	**100**	**480**	NA	**340**	**240**	**120**	**65**

Notes:

Data for these sampling events have not been validated. Qualifiers are Lab Qualifiers.
mg/l - milligrams/liter
ug/L - micrograms per liter or parts per billion (ppb)
cfu/ml - colony forming units per 1 milliliter
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOCs - volatile organic compounds
PAHs - polycyclic aromatic hydrocarbons
SVOCs - semivolatile organic compounds

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
Shading and bolding indicates that the detected concentration is above the NYS AWQS objective it was compared to

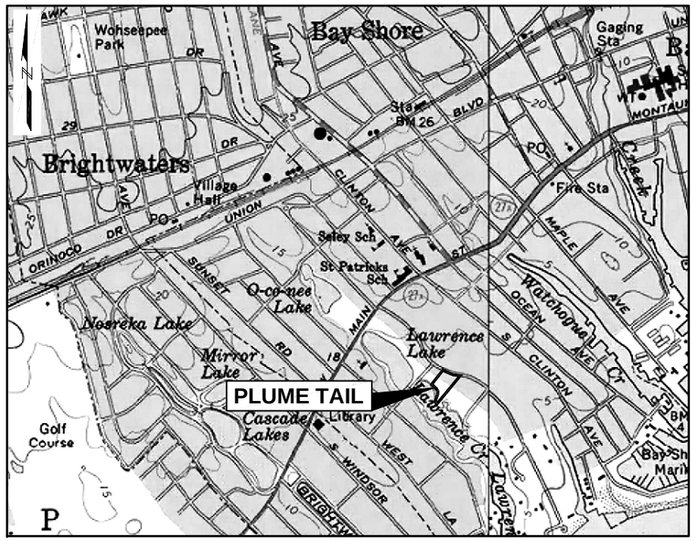
Laboratory Qualifiers:

J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
E - Value above quantitation range
B - Analyte detected in the associated method blank
BE - analyte detected in the associated method blank; value above quantitation range

Figures

OXYGEN INJECTION SYSTEM DESIGN SCHEMATICS
PLUME TAIL WORK PLAN

OPERABLE UNIT NO. 2
BAY SHORE/BRIGHTWATERS FORMER MANUFACTURED GAS PLANT SITE
BAY SHORE, NEW YORK



SITE LOCATION

SCALE: 1" = 1000'

SCHEDULE OF DRAWINGS

1 EXISTING CONDITIONS

2 INDEX MAP WITH TRAFFIC ROUTE

3 PROPOSED SYSTEM LOCATION

4 INJECTION POINT LAYOUT AND SCHEMATIC FOR PLUME TAIL LINE

5 PROPOSED MONITORING LOCATIONS

6 TRENCH AND INJECTION POINT DETAILS

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GEI Consultants

110 WALT WHITMAN ROAD, SUITE 204
HUNTINGTON STATION, NY 11746
631-760-9300, FAX 631-760-9301
www.geiconsultants.com

PROJECT NUMBER: 061140-10-1905

JULY 2009

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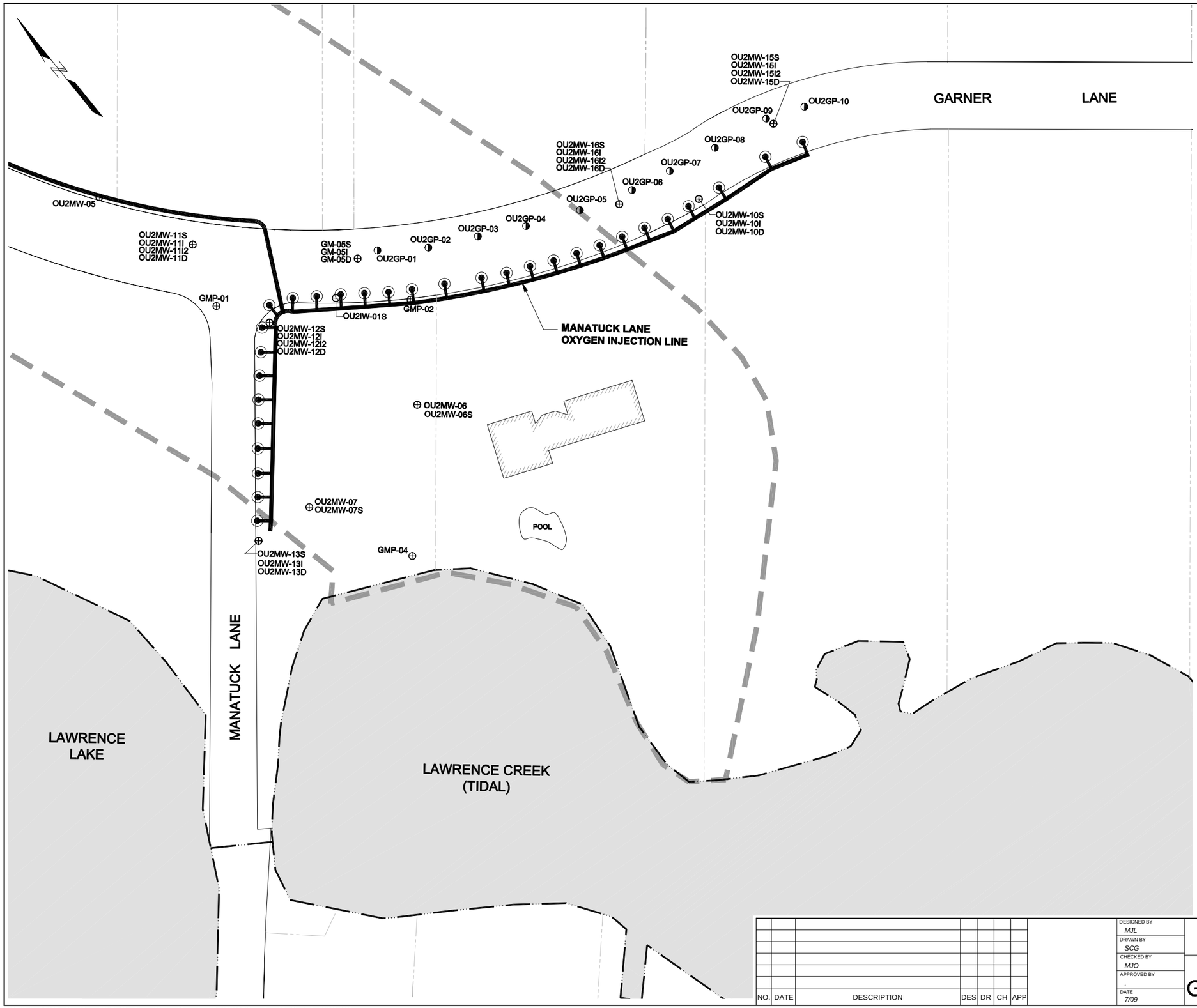

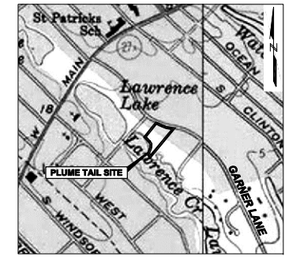

SITE LOCATION
SCALE: 1" = 1000'

LEGEND

⊕ OU2MW-01S OU2MW-01I OU2MW-01I2 OU2MW-01D	EXISTING MONITORING WELL CLUSTER LOCATION S=SHALLOW I=INTERMEDIATE I2= INTERMEDIATE TWO D=DEEP
◑ OU2GP-01	EXISTING GROUNDWATER PROBE LOCATION
	OU-2 EXTENT FROM 2004 RI BASED ON >100 ug/L TOTAL BTEX OR >100 ug/L TOTAL PAHs DETECTED IN GROUNDWATER

0 40 80
SCALE, FEET

SOURCES:

1. MAP TITLED "BAY SHORE/BRIGHTWATERS, FORMER MGP SITE FINAL REMEDIAL INVESTIGATION, BAY SHORE, NEW YORK, OFF-SITE SAMPLE LOCATION MAP" DATED: SEPT. 2002 BY DVIRKA AND BARTILUCCI.
2. FIGURE 2, GROUNDWATER MONITORING WELL AND SURFACE WATER GAUGING STATION LOCATION MAP, BAY SHORE/BRIGHTWATERS FORMER MGP SITE, SCALE: 1"=200', DATED JANUARY 2004, PREPARED BY VANASSE HANGEN BRUSTLIN, INC., MIDDLETOWN, CONNECTICUT.
3. DRAWING C-1, OFF-SITE SAMPLE LOCATION MAP, BAY SHORE/BRIGHTWATERS FINAL REMEDIAL INVESTIGATION, SCALE: 1"=200', DATED OCTOBER 15, 2003, PREPARED BY VANASSE HANGEN BRUSTLIN, INC., MIDDLETOWN, CONNECTICUT.
4. PROPERTY BOUNDARY LOCATIONS WERE DETERMINED BY OTHERS USING AERIAL PHOTOGRAPHS AND TAX MAPS. PROPERTY BOUNDARIES ARE APPROXIMATE AND MONITORING WELLS LOCATED NEAR OR AT PROPERTY BOUNDARIES DEPICTED ON THE MAP ARE WITHIN THE ROAD RIGHT-OF-WAY.
5. WELL SURVEY CONDUCTED IN NOVEMBER 2007 BY NELSON & POPE, 572 WALT WHITMAN ROAD, MELVILLE, NY.

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NO.	DATE	DESCRIPTION	DES	DR	CH	APP

DESIGNED BY: MJL
DRAWN BY: SCG
CHECKED BY: MJO
APPROVED BY: .
DATE: 7/09

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OXYGEN INJECTION SYSTEM DESIGN SCHEMATICS
PLUME TAIL - OPERABLE UNIT NO. 2
BAYSHORE/BRIGHTWATERS FORMER MANUFACTURED GAS PLANT SITE
BAY SHORE, NEW YORK

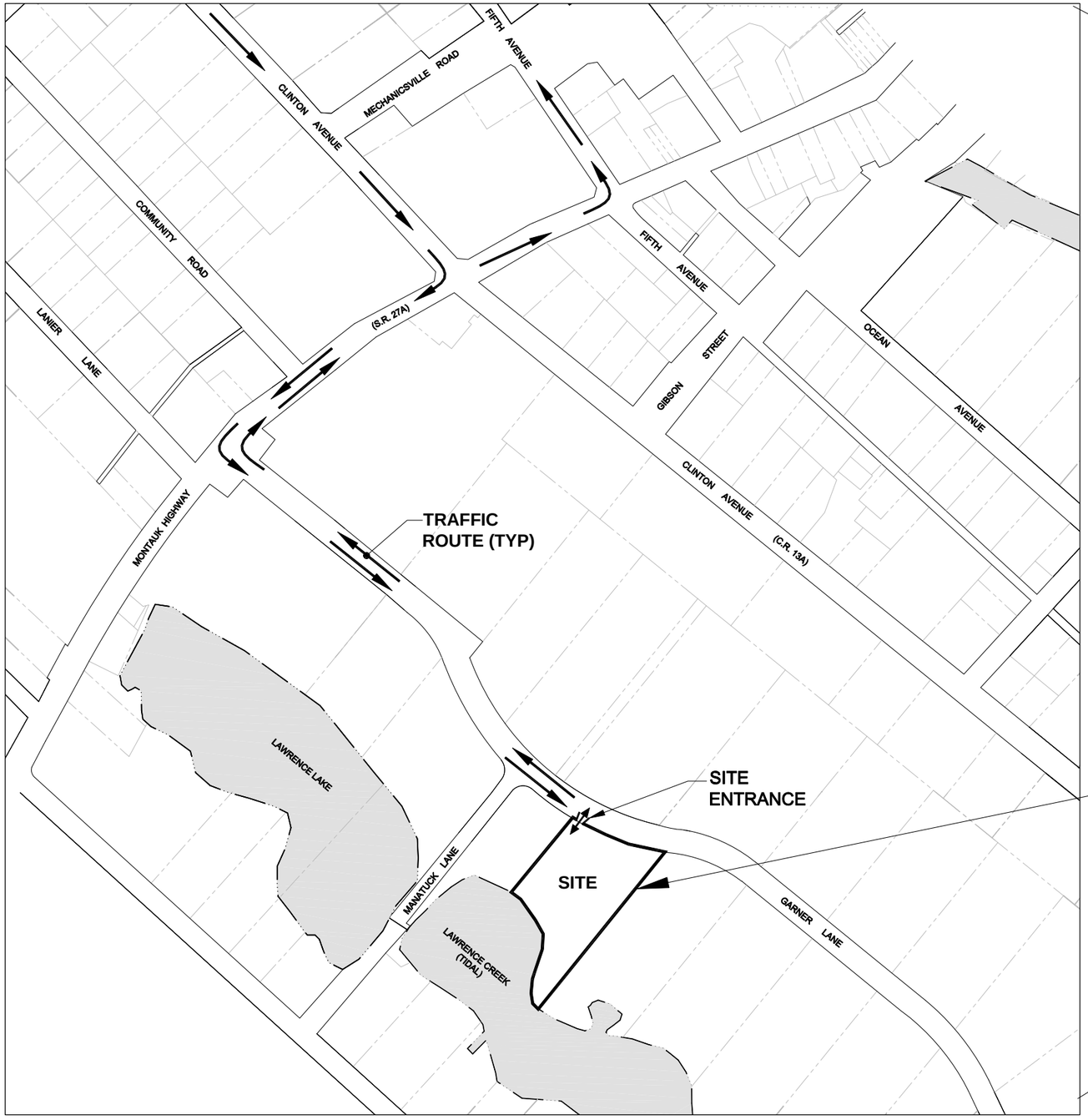
GEI Consultants
110 WALT WHITMAN ROAD
SUITE 204
HUNTINGTON STATION, NY 11746
631-760-9300, FAX 631-760-9301
WWW.GEICONSULTANTS.COM

EXISTING CONDITIONS

FIG. NO. 1

GEI PROJECT: 061140-10-1905
SHEET NO.: 1 of 6
ISSUE: A

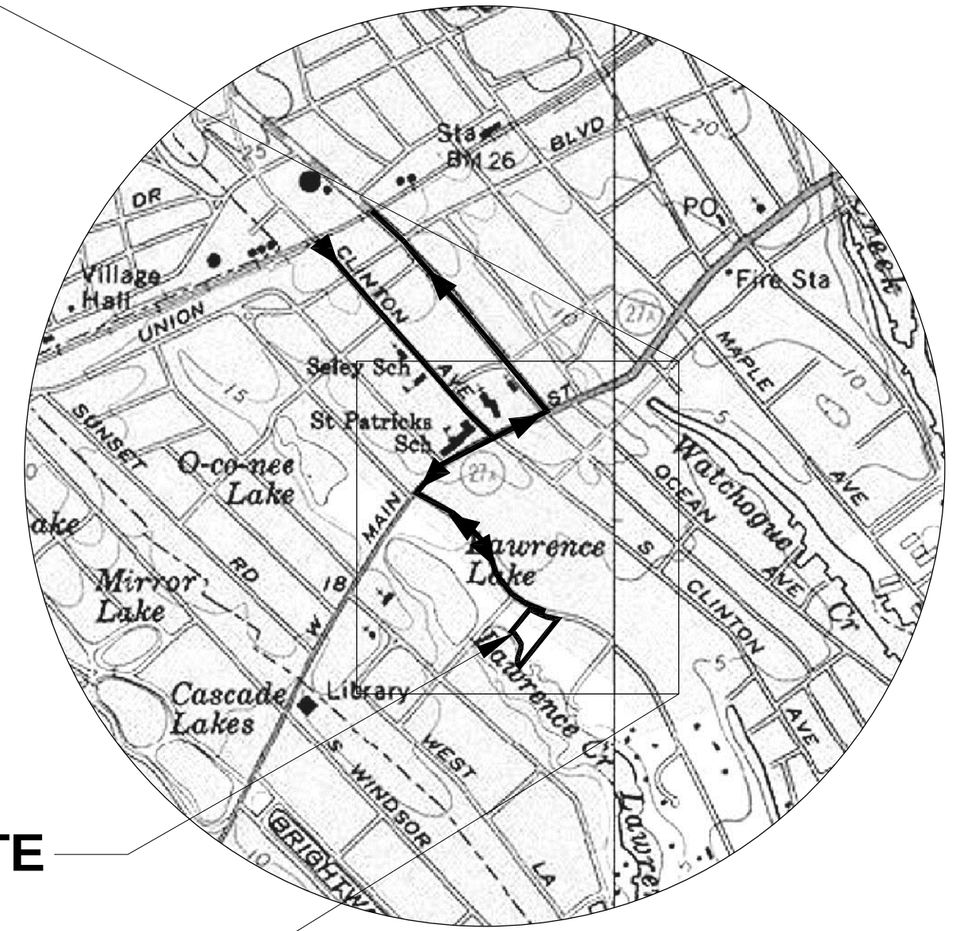
I:\GEI\National Grid\Bay Shore\Ozone Pilot Test\Supplemental Systems\Garner Lane\ BAY SHORE-Garner Lane Plan Sheets.dwg \Jul 08, 2009



SCALE: 1"=100'

0 150 300

SCALE, FEET



SITE

INDEX MAP

SCALE: 1"=600'

0 600 1200

SCALE, FEET

LEGEND

DIRECTION OF TRUCK TRAFFIC ROUTE TO AND FROM THE SITE

SITE LOCATION

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FOR AGENCY REVIEW
NOT FOR CONSTRUCTION

SOURCES:

1. MAP TITLED "BAY SHORE/BRIGHTWATERS, FORMER MGP SITE FINAL REMEDIAL INVESTIGATION, BAY SHORE, NEW YORK, OFF-SITE SAMPLE LOCATION MAP" DATED: SEPT. 2002 BY DVIRKA AND BARTILUCCI.

2. PROPERTY BOUNDARY LOCATIONS WERE DETERMINED BY OTHERS USING AERIAL PHOTOGRAPHS AND TAX MAPS. PROPERTY BOUNDARIES ARE APPROXIMATE AND MONITORING WELLS LOCATED NEAR OR AT PROPERTY BOUNDARIES DEPICTED ON THE MAP ARE WITHIN THE ROAD RIGHT-OF-WAY.

NO.	DATE	DESCRIPTION	DES	DR	CH	APP

DESIGNED BY: MJL
DRAWN BY: SCG
CHECKED BY: MJO
APPROVED BY: .
DATE: 7/09

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OXYGEN INJECTION SYSTEM DESIGN SCHEMATICS
PLUME TAIL - OPERABLE UNIT NO. 2
BAYSHORE/BRIGHTWATERS FORMER MANUFACTURED GAS PLANT SITE
BAY SHORE, NEW YORK

GEI Consultants
110 WALT WHITMAN ROAD
SUITE 204
HUNTINGTON STATION, NY 11746
631-760-9300, FAX 631-760-9301
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INDEX MAP WITH TRAFFIC ROUTE

FIG. NO. 2

GEI PROJECT 061140-10-1905

SHEET NO. 2 of 6

ISSUE A

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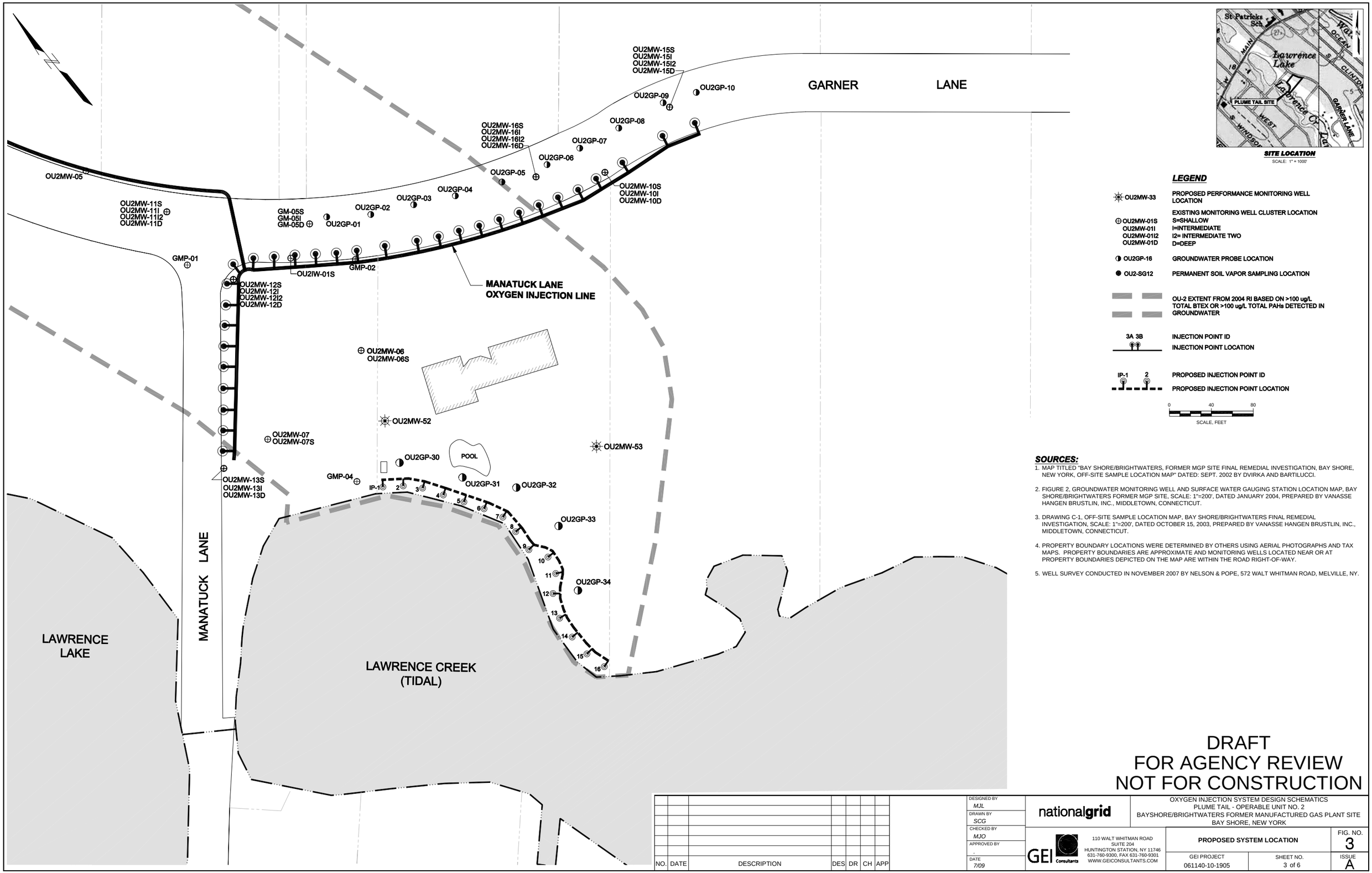

SITE LOCATION
SCALE: 1" = 1000'

LEGEND

- OU2MW-33 — PROPOSED PERFORMANCE MONITORING WELL LOCATION
- OU2MW-01S, OU2MW-01I, OU2MW-01I2, OU2MW-01D — EXISTING MONITORING WELL CLUSTER LOCATION; S=SHALLOW; I=INTERMEDIATE; I2= INTERMEDIATE TWO; D=DEEP
- OU2GP-16 — GROUNDWATER PROBE LOCATION
- OU2-SG12 — PERMANENT SOIL VAPOR SAMPLING LOCATION
- OU-2 EXTENT FROM 2004 RI BASED ON >100 ug/L TOTAL BTEX OR >100 ug/L TOTAL PAHs DETECTED IN GROUNDWATER
- 3A 3B — INJECTION POINT ID; INJECTION POINT LOCATION
- IP-1 2 — PROPOSED INJECTION POINT ID; PROPOSED INJECTION POINT LOCATION

0 40 80
SCALE, FEET

SOURCES:

1. MAP TITLED "BAY SHORE/BRIGHTWATERS, FORMER MGP SITE FINAL REMEDIAL INVESTIGATION, BAY SHORE, NEW YORK, OFF-SITE SAMPLE LOCATION MAP" DATED: SEPT. 2002 BY DVIRKA AND BARTILUCCI.
2. FIGURE 2, GROUNDWATER MONITORING WELL AND SURFACE WATER GAUGING STATION LOCATION MAP, BAY SHORE/BRIGHTWATERS FORMER MGP SITE, SCALE: 1"=200', DATED JANUARY 2004, PREPARED BY VANASSE HANGEN BRUSTLIN, INC., MIDDLETOWN, CONNECTICUT.
3. DRAWING C-1, OFF-SITE SAMPLE LOCATION MAP, BAY SHORE/BRIGHTWATERS FINAL REMEDIAL INVESTIGATION, SCALE: 1"=200', DATED OCTOBER 15, 2003, PREPARED BY VANASSE HANGEN BRUSTLIN, INC., MIDDLETOWN, CONNECTICUT.
4. PROPERTY BOUNDARY LOCATIONS WERE DETERMINED BY OTHERS USING AERIAL PHOTOGRAPHS AND TAX MAPS. PROPERTY BOUNDARIES ARE APPROXIMATE AND MONITORING WELLS LOCATED NEAR OR AT PROPERTY BOUNDARIES DEPICTED ON THE MAP ARE WITHIN THE ROAD RIGHT-OF-WAY.
5. WELL SURVEY CONDUCTED IN NOVEMBER 2007 BY NELSON & POPE, 572 WALT WHITMAN ROAD, MELVILLE, NY.

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DESIGNED BY	MJL
DRAWN BY	SCG
CHECKED BY	MJO
APPROVED BY	.
DATE	7/09

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OXYGEN INJECTION SYSTEM DESIGN SCHEMATICS
PLUME TAIL - OPERABLE UNIT NO. 2
BAYSHORE/BRIGHTWATERS FORMER MANUFACTURED GAS PLANT SITE
BAY SHORE, NEW YORK

GEI Consultants
110 WALT WHITMAN ROAD
SUITE 204
HUNTINGTON STATION, NY 11746
631-760-9300, FAX 631-760-9301
WWW.GEICONSULTANTS.COM

PROPOSED SYSTEM LOCATION

FIG. NO. 3

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SHEET NO. 3 of 6

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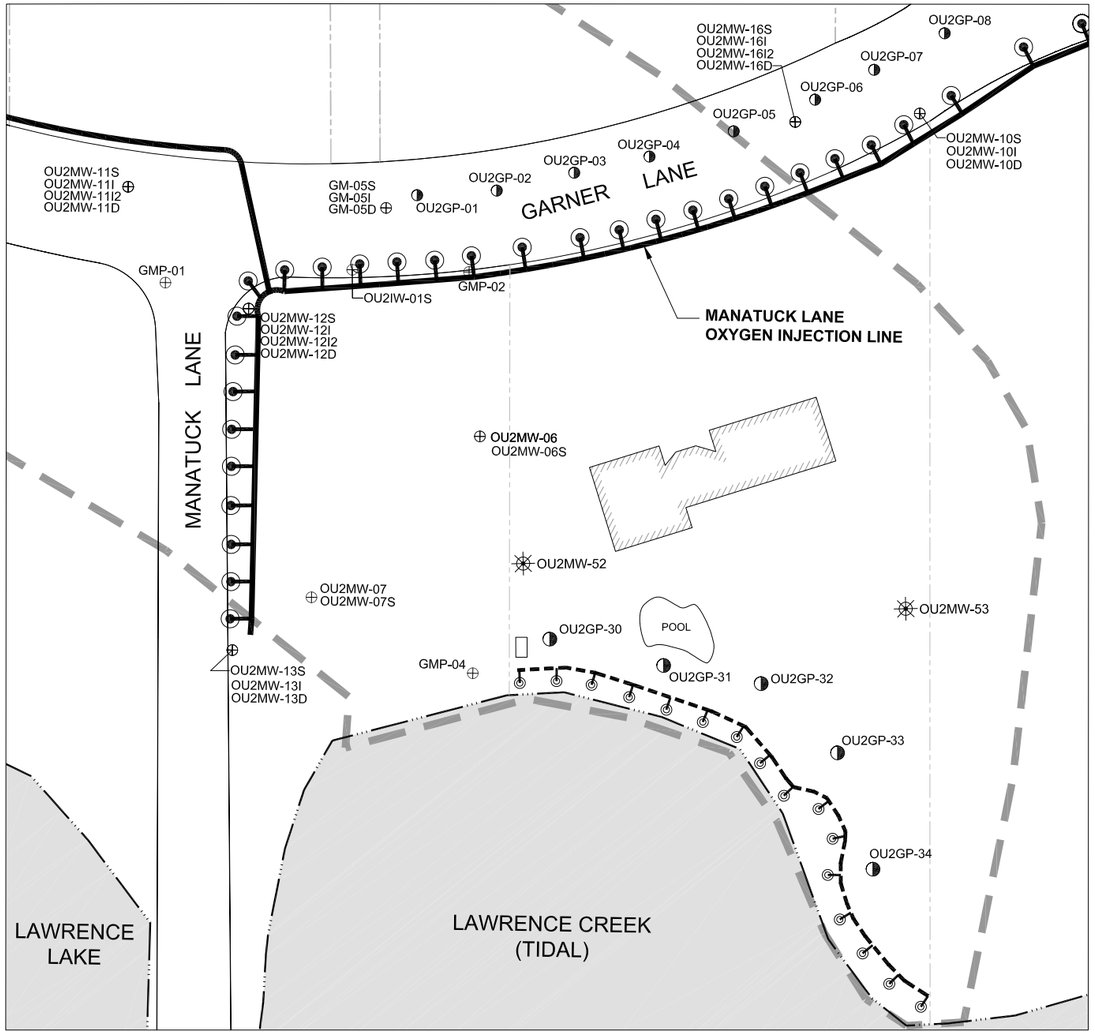
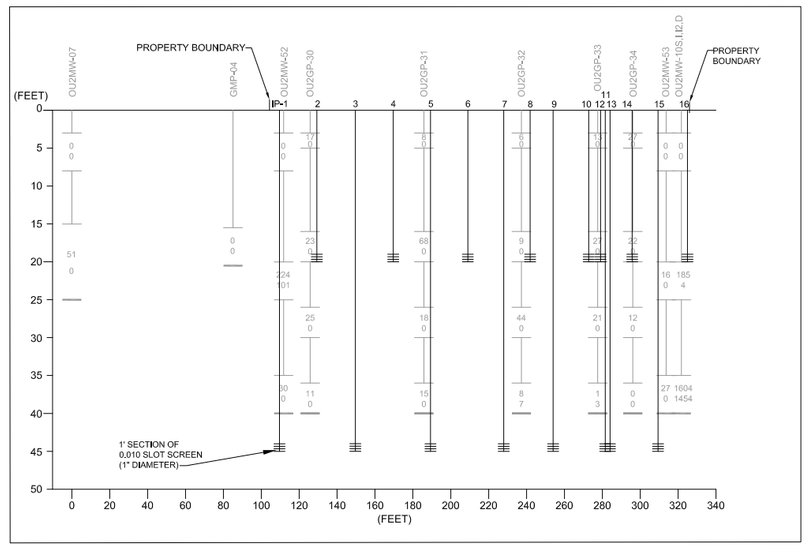
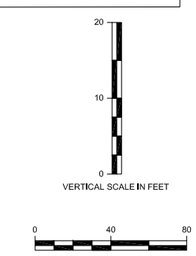
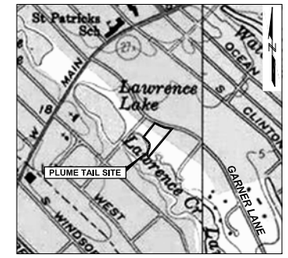




CROSS-SECTION VIEW





SITE LOCATION
SCALE: 1" = 1000'

LEGEND

OU2MW-53	PROPOSED MONITORING WELL LOCATION (NOT SAMPLED [NS] AS YET)
OU2GP-31	GROUNDWATER PROBE LOCATION
OU2MW-11S OU2MW-11I OU2MW-11I2 OU2MW-11D	EXISTING MONITORING WELL CLUSTER LOCATION S=SHALLOW I=INTERMEDIATE I2= INTERMEDIATE TWO D=DEEP
OUGP-31	EXISTING OR PROPOSED MONITORING WELL OR MONITORING POINT ID
	EXISTING OR PROPOSED MONITORING WELL OR MONITORING POINT LOCATION
SAMPLE INTERVAL 8 0	TOTAL VOCs ug/L TOTAL SVOCs ug/L
	WATER LEVEL
	END OF BORING/WELL
VOCs	VOLATILE ORGANIC COMPOUNDS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
ug/L	MICROGRAMS PER LITER
IP-1	INJECTION POINT ID
	INJECTION POINT LOCATION
	0.010 SLOT SCREEN (1" DIAMETER)
3A 3B	INJECTION POINT ID
	INJECTION POINT LOCATION
IP-1 2	PROPOSED INJECTION POINT ID
	PROPOSED INJECTION POINT LOCATION

NOTES:
1. GROUNDWATER PROBE DATA COLLECTED QUARTER 1, 2009 BY GEI CONSULTANTS, INC.
2. MONITORING WELL DATA COLLECTED QUARTER 4, 2008 BY GEI CONSULTANTS, INC.

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APPROVED BY -
DATE 7/09

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OXYGEN INJECTION SYSTEM DESIGN SCHEMATICS
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INJECTION POINT LAYOUT AND SCHEMATIC FOR PLUME TAIL LINE

FIG. NO. 4

GEI PROJECT 061140-10-1905
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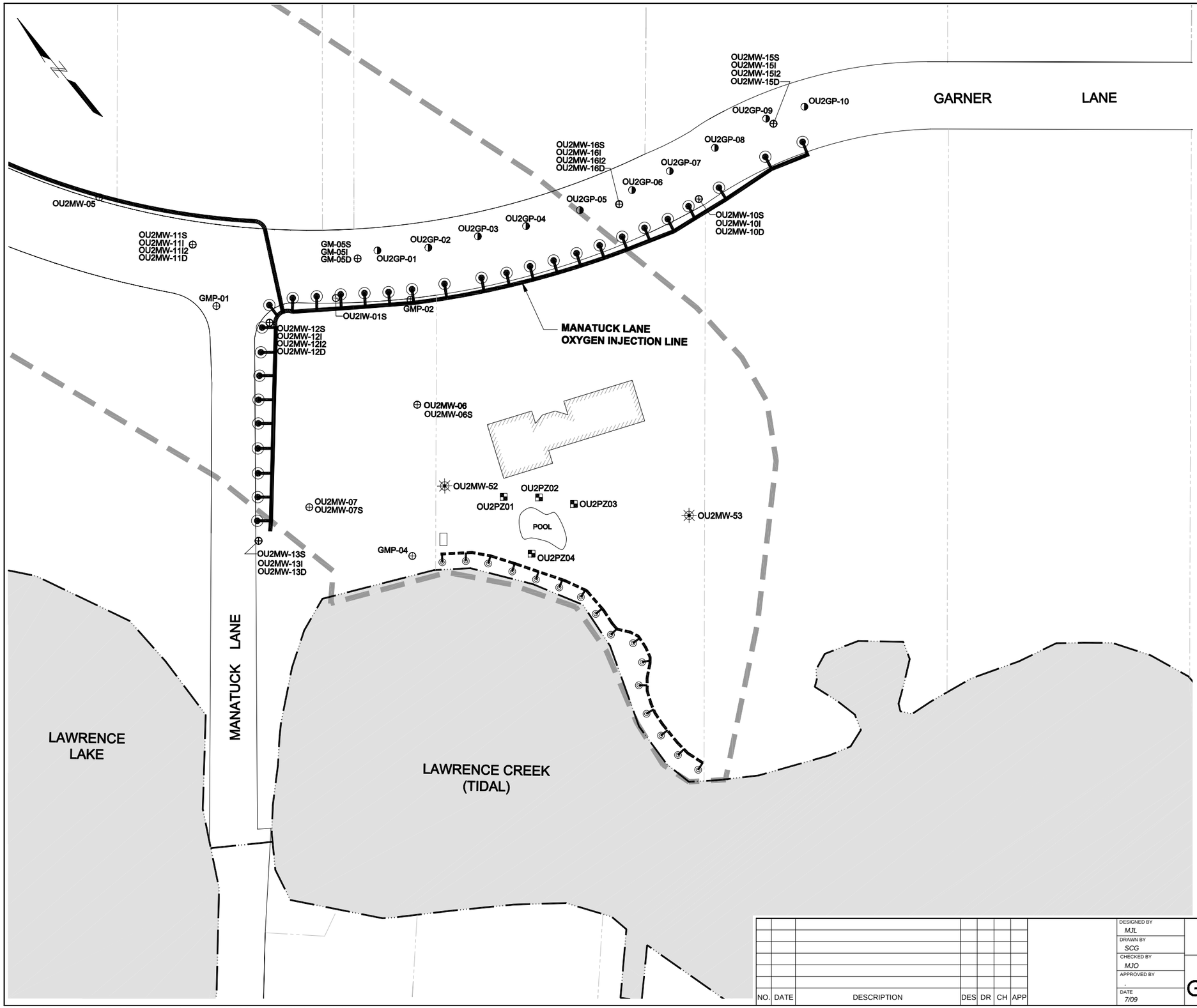

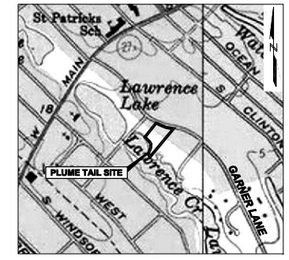

SITE LOCATION
SCALE: 1" = 1000'

LEGEND

OU2MW-33	PROPOSED PERFORMANCE MONITORING WELL LOCATION
OU2SG-26	PROPOSED SOIL VAPOR MONITORING POINT
OU2PZ01	PROPOSED PIEZOMETER LOCATION
OU2MW-01S OU2MW-01I OU2MW-01I2 OU2MW-01D	EXISTING MONITORING WELL CLUSTER LOCATION S=SHALLOW I=INTERMEDIATE I2= INTERMEDIATE TWO D=DEEP
	OU-2 EXTENT FROM 2004 RI BASED ON >100 ug/L TOTAL BTEX OR >100 ug/L TOTAL PAHs DETECTED IN GROUNDWATER

0 40 80
SCALE, FEET

SOURCES:

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5. WELL SURVEY CONDUCTED IN NOVEMBER 2007 BY NELSON & POPE, 572 WALT WHITMAN ROAD, MELVILLE, N.Y

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DRAWN BY: SCG
CHECKED BY: MJO
APPROVED BY: .
DATE: 7/09

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PROPOSED MONITORING LOCATIONS

FIG. NO. 5

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SHEET NO.: 5 of 6
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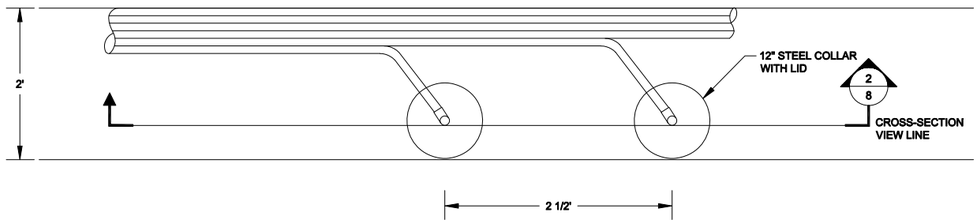
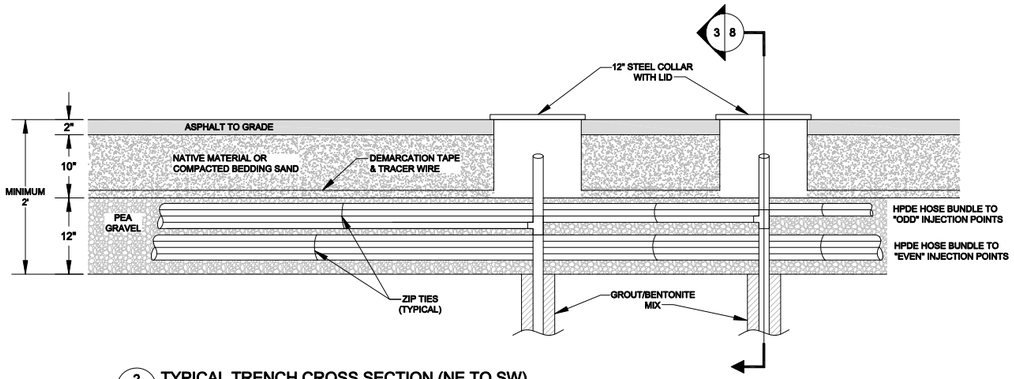
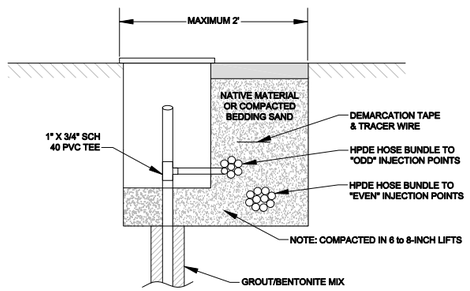


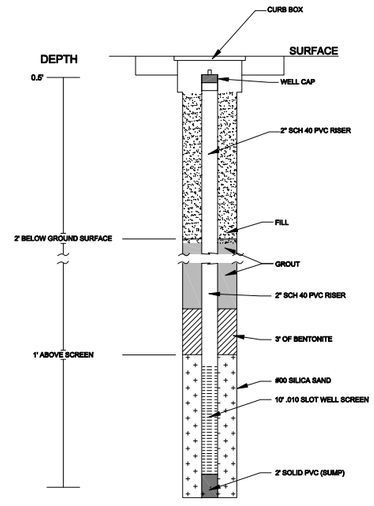
1/7 TYPICAL TRENCH PLAN VIEW



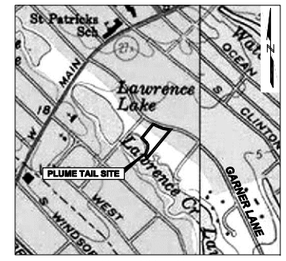
2/8 TYPICAL TRENCH CROSS SECTION (NE TO SW)



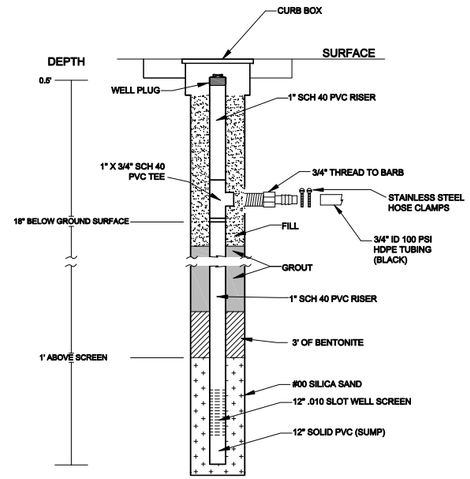
3/8 TYPICAL TRENCH DETAIL



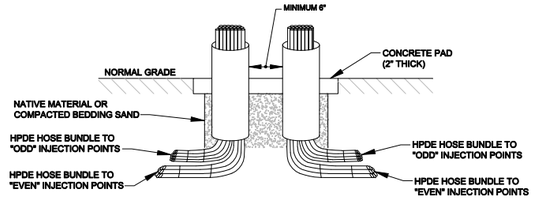
TYPICAL MONITORING WELL DETAIL
NOT TO SCALE



SITE LOCATION
SCALE: 1" = 1000'



TYPICAL INJECTION WELL CONSTRUCTION DIAGRAM
NOT TO SCALE



STUB-UP SCHEMATIC
NOT TO SCALE

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NOTES:

1. SCALE: 1" = 10' EXCEPT PIPE/HOSE SIZE.
2. CONNECTION TO INJECTION POINT SHOULD BE MADE WITH SCH 40 PVC TEE AT A MINIMUM OF 18" BELOW GROUND SURFACE.
3. NATIVE MATERIAL OR BEDDING SAND WILL BE COMPACTED IN 6-INCH LIFTS.
4. EACH HDPE HOSE LINE WILL BE LABELED ACCORDING TO IT'S RESPECTIVE INJECTION POINT EVERY TWENTY FEET.

NO.	DATE	DESCRIPTION	DES	DR	CH	APP

DESIGNED BY: MJL
DRAWN BY: SCG
CHECKED BY: MJO
APPROVED BY: -
DATE: 7/09

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TRENCH AND INJECTION POINT DETAILS

FIG. NO. 6

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