DRAFT
Remedial Investigation Report
93B Maple Avenue
Former MGP Site
Haverstraw, New York

Orange and Rockland Utilities, Inc.
Volume 1
Text, Tables, Figures, Plates, Appendices

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LIST OF ACRONYMS

ADT	Aquifer Drilling and Testing
AOC	Administrative Order on Consent
bgs	Below ground surface
Brown's Directory	*Brown's Directory of American Gas Companies*
BTEX	Benzene, ethylbenzene, toluene, and xylene
cm/sec	centimeter per second
COCs	Compounds of concern
COI	Compounds of Interest
DNAPL	Dense nonaqueous phase liquid
DPW	Department of Public Works
EPA	United States Environmental Protection Agency
ft/d	feet per day
ft/yr	feet per year
FWIA	Fish and Wildlife Impact Assessment
GEI	GEI Consultants, Inc.
IRM	Interim Remedial Measures
LNAPL	Light nonaqueous phase liquid
mg/kg	Milligrams per kilogram
MGP	Manufactured Gas Plant
ml/min	Milliliters/minute
mm	Millimeters
NAPL	Nonaqueous phase liquid
NEA	Northern Ecological Associates, Inc.
NGVD	National Geodetic Vertical Datum
NTUs	Nephelometric turbidity units
NYSASP	New York State Analytical Services Protocol
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSWQS	New York State Water Quality Standards
O.D.	Outer diameter
O&R	Orange and Rockland Utilities, Inc.
PAHs	Polycyclic aromatic hydrocarbons
PCBs	Polychlorinated biphenyls
PCE	Perchloroethylene
PID	Photoionization detector
ppb	Parts per billion
ppm	Parts per million
PPE	Personal protective equipment
PSA	Preliminary Site Assessment
PVC	Polyvinyl chloride
QAPP	Quality Assurance Project Plan
RCHD	Rockland County Health Department
RETEC	Remediation Technologies, Inc.

LIST OF ACRONYMS (continued)

RI ..... Remedial Investigation
RSCOs ..... Recommended Soil Cleanup Objectives
Sanborn ..... Sanborn Fire Insurance
SCG ..... Standards Criteria and Guidance
SOP ..... Standard Operating Procedure
STL ..... Severn Trent Laboratories
SVOCs ..... Semivolatile organic compounds
TCLP ..... Toxicity Characteristic Leaching Procedure
USGS ..... United States Geological Survey
UWNY ..... United Water of New York
VOCs ..... Volatile organic compounds
WAD ..... Weak acid dissociable

Executive Summary

A comprehensive Remedial Investigation (RI) was performed at the former manufactured gas plant (MGP) site at 93B Maple Avenue in Haverstraw, New York under the terms of an Administrative Order on Consent (AOC) between the New York State Department of Environmental Conservation (NYSDEC) and Orange and Rockland Utilities, Inc. (O&R). GEI Consultants, Inc. (GEI) was retained by O&R to conduct the investigation and this report presents the findings of the RI.

The site is the location of a former MGP that operated between 1859 and 1893/1894. An Initial Hazard Investigation and Assessment for the site was completed in November 1996. A Preliminary Site Assessment (PSA) was completed in August 1997. Based on the results of the preliminary studies, an RI and a supplemental RI (SRI) were conducted in 1998 and 2001, respectively, to generate the additional information required to characterize the site and the potential risks to human health and the environment.

The results of the RI, along with supporting information from the previous studies, are as follow.

- The former MGP is located on a parcel of land (93B Maple Avenue) that houses a small commercial business and contains an open yard. The site is surrounded on three sides by residential properties and on one side by an alleyway.

- Access is semirestricted. The site is fenced and monitored by the owner. As such, neither surface nor subsurface soils pose an immediate threat to trespassers.

- The only MGP-era structure remaining on the site is the lower section of the gas holder foundation which is located between 5 and 12.5 feet below ground surface. Its condition is relatively intact.

- Typical MGP-related contamination (hydrocarbons such as coal tar) is present at the site as residual dense nonaqueous phase liquids (DNAPL) in the form of discrete blebs, lenses, or sheen. Very little free-phase tar (tar-saturated soil) was observed. Most residual DNAPL were located in or adjacent to the former gas holder foundation or in coarse sand and gravel lenses within 40 feet of the holder.

- Subsurface soils at the site consist of alluvial deposits, primarily of a fine-grained nature (silts and clays), which inhibit migration of tar. Relatively minor sand lenses are present. Glacial till underlies the alluvium. The overall lack of free-phase tar and the confining nature of site soils appear to have restricted (and are expected to continue to prevent) off-site migration of MGP residuals.

- Surface soils have been impacted by polycyclic aromatic hydrocarbons (PAHs), metals and, to a slight degree, cyanide. The concentrations of these contaminants exceeded the NYSDEC-recommended soil cleanup objective (RSCO) on the site. Surrounding properties had PAHs in exceedance of the RSCOs; however, a background study of surface-soil concentrations of PAHs also found exceedances of PAHs in excess of RSCOs.

- Subsurface soils had concentrations of volatile organic compounds (VOCs) and PAHs in exceedance of the RSCO to depths of up to 20 feet. Both visible and chemical impacts from the MGP operation appear to be limited to depths less than 20 feet.

- On-site groundwater (which is not used) has sustained measurable impacts above New York State Water Quality Standards (NYSWQS). However, the MGP-related impacts do not appear to be contributing to groundwater quality degradation downgradient of the 93B Maple Avenue site. Although some privately owned groundwater wells may be present at upgradient locations, there are no known wells downgradient of the site. Therefore, site groundwater is not regarded as a risk to potential users.

- Stormwater in the culvert behind the site contains VOCs, PAHs, and cyanide; however, since neither subsurface soils or groundwater collected adjacent to the culvert were impacted by these MGP waste constituents, there do not appear to be any site-related impacts to the local stormwater.

A NYSDEC Step IIA and IIB fish and wildlife impact analysis (FWIA) concluded:

- Surface soils have the potential to present an ecological risk due to the presence of numerous PAHs and metals above ecological benchmarks. Detected concentrations of several compounds were significantly above benchmarks, and constituents were those typical of MGP sites.

- The sediments of an embayment to the Hudson River have the potential to present an ecological risk because of the presence of PAHs and metals above background concentrations. However, many sources for these constituents exist around the

embayment, so detected concentrations cannot be solely attributed to the site. The distribution of constituents in the embayment suggests that other sources play a predominant role.

The use of benchmarks as a screening tool is an inherently conservative approach designed primarily to identify compounds that are not likely to present an ecological risk. Whether or not compounds that exceed benchmark values present a risk under actual site conditions must be determined by additional site-specific studies.

The results of the PSA and RI have been incorporated into the design of an interim remedial measure (IRM), which will include the excavation and removal of the former gas holder foundation and the surrounding DNAPL-impacted soils. Once this IRM is completed (scheduled for the fall of 2002), no further remedial actions are expected to be necessary since all source material will have been removed.

A qualitative human health risk assessment was conducted to identify potential exposure pathways to contaminated media for each portion of the site. Based on the known distribution of contaminants and the land uses of each parcel, the following conclusions are drawn.

- There are exposure pathways posed to O'Kane Associates employees (occupants of 93B Maple Avenue), utility workers, construction workers, trespassers, and potential future residents at the 93B Maple Avenue former MGP parcel. The presence of gravel cover on this parcel limits exposure to surface soils, and exposure to subsurface soils and groundwater is only a concern if excavation activities are undertaken.

- There are exposure pathways posed to O'Kane Associates employees, passersby, utility workers, construction workers, trespassers, and possible future residents at the 93A Maple Avenue parcel. The presence of paving over the majority of this parcel limits the potential for exposure. Subsurface exposures would only be of concern if excavation activities were undertaken.

- There are exposure pathways posed to passersby, residents, utility workers, and construction workers at the residential parcels located at 6 Tor Avenue and 91 Maple Avenue. Grass on the 6 Tor Avenue parcel will limit the potential for exposure to surface soils through inhalation of airborne particulates. Subsurface exposures would only be of concern if excavation activities were undertaken.

- There are exposure pathways posed to residents, utility workers, and construction workers at the residential parcel located at 87 Maple Avenue. Surface soils on this parcel

do not pose an exposure pathway concern. Subsurface exposures would only be of concern if excavation activities were undertaken.

It is important to note that, as determined through a qualitative risk assessment, the existence of complete or potentially complete pathways does not necessarily constitute the presence of actual risk to a potential receptor.

1. Introduction

GEI Consultants, Inc. (GEI) was retained by Orange and Rockland Utilities, Inc. (O&R) to conduct a remedial investigation (RI) and to prepare this RI report which addresses the former manufactured gas plant (MGP) site located at 93B Maple Avenue in Haverstraw, New York (Figure 1). The property on which the MGP was located is owned by O'Kane Associates, and is operated as a contracting business.

The RI was performed in accordance with the Administrative Order on Consent (AOC), dated July 1998, Index #D3-0001-98-03, between O&R and the New York State Department of Environmental Conservation (NYSDEC). The investigation described in this report was conducted pursuant to the NYSDEC-approved RI Work Plan, Supplemental RI (SRI) Work Plan, and the Pre-IRM Characterization Work Plan as follow:

- *Remedial Investigation Work Plan, 93B Maple Avenue Former MGP Site, Haverstraw, New York* (GEI/Atlantic, 1998)
- *Supplemental Remediation Investigation Work Plan, 93B Maple Avenue Former MGP Site and Clove and Maple Avenues Former MGP Site, Haverstraw, New York* (GEI, 2001).
- *Pre-IRM Characterization Work Plan,* (GEI, 2001).

The field work for the RI was completed in two separate mobilizations to the site. The first mobilization was completed between September 1998 and February 1999. This work met the requirements of the scope of work documented in the NYSDEC-approved RI Work Plan for the 93B Maple Avenue MGP Site [GEI, 1998] and the Quality Assurance Project Plan (QAPP) [GEI, 1998], which was developed to specify procedures for data collection and quality control in the field and in the laboratory. This investigation focused only on the former MGP site itself.

The results of the investigation were summarized in a draft RI report dated June 23, 1999. NYSDEC reviewed the report and provided comments in a letter dated January 6, 2000. Several areas were identified where additional historical information and investigation work was required. In addition, NYSDEC requested investigation of off-site adjacent properties. O&R prepared an SRI Work Plan [GEI, 2001] to outline field work to be undertaken to address NYSDEC's comments, which was subsequently approved by NYSDEC in a letter dated

May 23, 2001. The Pre-IRM Characterization Work was conducted in accordance with the Pre-Remedial Characterization Work Plan [GEI, 2001]. The results of the RI, SRI, and the Pre-IRM Characterization field work and analysis are provided in the following sections.

Prior to conducting the RI, an Initial Hazard Investigation and Assessment was completed in November 1996. A Preliminary Site Assessment (PSA) was completed by O&R during 1997. Findings were reported to NYSDEC in August 1997. Findings from the Initial Hazard Investigation and Assessment and PSA have been incorporated in this RI report.

The 93B Maple Avenue site is a rectangular, flat 0.21-acre back lot parcel of land which contains a one-story concrete block building and an open yard. It is surrounded by residential lots identified on the tax map as Section 27.62, Block 1, Lots #75, 76, 77, 78, 79, 80, 85 and 86.1. The 93B Maple Avenue site is found on Lots 77 and 78. The site and the immediate properties are bordered to the northwest by Tor Avenue, to the northeast by an alley and residential properties, to the southeast by a residential property, and to the southwest by Maple Avenue. The area of the site is zoned as light industrial; however, both light industrial and residential land uses are found nearby.

Within this report, the site is referred to as the 93B Maple Avenue site to distinguish it from the other Haverstraw MGP site (referred to as the Clove and Maple Avenues MGP site), which is located southwest of the 93B Maple Avenue site on the opposite side of Maple Avenue.

An interim remedial measure (IRM) is planned for this site. The IRM will include the removal of the subsurface former gas holder foundation, its contents, and surrounding soils impacted by the source material.

1.1 Purpose of Report

The overall goal of the RI was to collect sufficient environmental data to facilitate an evaluation of the following:

- The nature and extent of MGP residuals which may be present at the site
- Whether constituents identified at the site constitute a significant threat to human health or the environment
- Whether IRMs may be appropriate to mitigate an ongoing impact or migration of MGP residuals

1.2 Scope of Work

The scope of work for this RI, as defined in the NYSDEC-approved RI Work Plan, SRI Work Plan, and Pre-IRM Characterization Work Plan, included the following field tasks.

- Surface-soil sampling
- Test pit excavation and subsurface-soil sampling
- Soil boring installation and subsurface-soil sampling
- Groundwater monitoring well installation
- Well development
- Groundwater sampling
- Groundwater conductivity testing
- Surface water sampling
- Sediment sampling
- Nonaqueous phase liquid (NAPL) sampling and identification
- Ecological assessment site reconnaissance
- Site surveying
- Investigation-derived waste management

1.3 Report Organization

This report presents the results of the RI, SRI, Pre-IRM Characterization and previous studies and is organized into eight sections. Section 2 provides a description of the methods and materials for conducting the RI. Section 3 presents the physical characteristics of the study area. Section 4 discusses the nature and extent of contamination. Section 5 describes the mechanisms of fate and transport. Section 6 presents a conceptual site model. Section 7 includes a qualitative risk assessment based upon the analytical findings of the investigations, and Section 8 presents the conclusions and the general approach for the IRM.

Test pit and soil boring completion logs are attached as Appendix A. Validated analytical results, chain-of-custody forms, and data usability reports are included in Appendix B. Hydraulic conductivity calculations are included in Appendix C. Photographic documentation of field activities is included in Appendix D.

A Step I Fish and Wildlife Impact Analysis (FWIA) was conducted by Northern Ecological Associates, Inc. (NEA) and submitted to NYSDEC in February 2000. A Step IIA and IIB FWIA was conducted by NEA and submitted to the NYSDEC under separate cover in March 2002. The FWIA findings are discussed in subsection 3.10 of this RI Report.

1.4 Site Setting and History

This subsection of the report presents information relating to the current site use, surrounding land use, MGP history, previous investigations, and environmental setting.

1.4.1 Current Land Use

The former gas manufacturing plant was located between Maple Avenue and West Street in the village of Haverstraw, Rockland County, New York (Figure 2). Properties investigated as part of the RI extend beyond the MGP and belong to various owners; however, the property containing the footprint of the former MGP is located on 93B Maple Avenue (Lot 78), which is currently owned by O'Kane Associates and is operated as a general contracting business. Two tax map lots (77 and 78) are included as 93B Maple Avenue. Lot 77 of 93B Maple Avenue includes a concrete block structure and lot 78 of 93B Maple Avenue includes a crushed stone parking lot. A storm sewer culvert runs beneath the alley on the eastern side of the site and carries what was once an open channel stream. The culvert intermittently directs stormwater runoff to an outfall in an embayment of the Hudson River. In 1997, the site was covered with refuse piles, abandoned vehicles, and some stored construction materials. Those materials were removed from the site by the property owner in 1997, after completion of the PSA. Figure 2 presents the site plan, the layout of the historical MGP structures, and the tax map numbers of the adjacent properties.

1.4.2 Surrounding Land Use

The surrounding land use is primarily residential. The properties which are adjacent to the site and their respective tax map numbers follow.

- To the north is a residential property located at 6 Tor Avenue (Lot 86.1)
- To the northwest and west is a residential property located at 87 Maple Avenue (Lots 80 and 85)
- To the southwest is a residential parcel located at 91 Maple Avenue (Lot 79)
- To the south is a property owned by O'Kane Associates located at 93A Maple Avenue (Lot 76)
- To the southeast is a residential property fronting on Maple Avenue (Lot 75)

- An alleyway comprised in part of village-owned easements and portions of residential lots 62 and 63 extends along the east to the northeastern border of the site.

1.4.3 Site MGP History

A chronological history of the 93B Maple Avenue former MGP site is as follows.

- The plant was constructed and began initial operation circa 1859.
- *A New Historical Atlas of Rockland County* (1876) and an 1884 lithograph show the presence of a gas plant and gas holder. The plant is located on the northeastern side of the site along a railroad line, and the holder is located along a stream at the southwestern side of the site. According to the Haverstraw Department of Public Works (DPW), the stream was culverted by 1940.
- A reference to a gas plant at the site is included on an 1887 Sanborn Fire Insurance (Sanborn) map, although the site itself is not mapped.
- The 1887 to 1891 editions of *Brown's Directory of American Gas Companies (Brown's Directory)* lists oil gas production for Haverstraw.
- The site was acquired by the Haverstraw Light and Fuel Company in 1894.
- The plant was likely shut down in 1893 or 1894 when the first reference to carbureted water gas production was noted in *Brown's Directory* and operations were shifted to the Clove and Maple Avenues site.

Table 1 presents a summary of the site ownership records for the 93B Maple Avenue site. Table 2 provides a record of gas production.

1.4.4 Previous Investigations

Previous investigations at the site include an Initial Hazard Investigation and Assessment (Remediation Technologies, Inc. [RETEC], 1996) and a PSA (RETEC, 1997). Locations of sampling points from the Initial Hazard Investigation and the PSA are found on Plate 1. The results of these investigations are discussed in this section.

1.4.4.1 Initial Hazard Investigation and Assessment

At the request of O&R, an assessment of the former MGP site at 93B Maple Avenue was performed to consider whether conditions exist that would be considered an immediate threat to human health. The investigation came to the following conclusions.

- Explosive vapors are not an issue at the site because there are no buildings present, and are unlikely off site due to the distance of residences from the site and the elevated foundation of the adjacent concrete block building.
- Explosive vapors in subsurface utilities are unlikely. The storm sewer is a potential receptor if vapors are present, but explosive levels are extremely unlikely.
- There is no evidence of MGP tar at ground surface, and site access was semirestricted.
- No water supply wells are within 1.0 mile of the site, so impacts to drinking water are not an issue.

The last conclusion regarding water supply wells has since been found to be incorrect. An inactive water supply well is located within 1 mile of the site. Additional well information is provided in subsection 3.4.

1.4.4.2 Preliminary Site Assessment

The PSA focused on defining the nature and extent of compounds of interest (COI) in soil gas, soil, and groundwater, and on developing a more detailed understanding of the geology and hydrogeology of the site (Plate 1). The investigation included: soil gas sampling; soil probing to determine the location of subsurface structures; surface-soil sampling; subsurface-soil sampling at monitoring well locations; monitoring well installation; groundwater sampling; test pit excavation; and hydraulic conductivity testing. Results of the PSA are discussed below.

Surface Soils

Two surface-soil samples (SS1 and SS2) were collected from a depth of 0 to 0.5 foot below ground surface (bgs) (Plate 1). No benzene, toluene, ethylbenzene, or xylene (BTEX) compounds were detected, but polycyclic aromatic hydrocarbons (PAHs) were detected above NYSDEC recommended soil cleanup objectives (RSCOs) in both samples. Cadmium and copper were detected above the cleanup levels in both samples. Lead, nickel, mercury, and selenium were detected above their respective RSCOs in SS2. Cyanide was detected in both

samples above the RSCO. Cyanide at former MGP sites typically is found in complex, non-reactive metal cyanide forms (GRI, 1996).

Test Pit Excavation

One test pit was excavated to determine if the stormwater culvert, located under the alley behind the site, was present within the boundary of the site, and to provide additional information regarding subsurface conditions in the area of the former MGP building. The culvert was not observed. The Haverstraw DPW has since stated that the culvert runs along the alleyway.

Soil Borings

A truck-mounted Geoprobe™ drill rig was used to obtain a soil gas sample and to complete subsurface-soil borings with a 2-inch outer diameter (O.D.) macrocore at each of the seven locations shown in Plate 1. Most of the borings were utilized for investigation of subsurface structures.

One soil boring (SG4) was drilled to a depth of 11 feet, and one test pit (TP1) was excavated to a depth of 6 feet within the footprint of the former gas production building. The following observations were recorded during the field work.

- No subsurface structures were found in either the test pit or soil boring completed in the area of the former building.
- Fill at the sample locations was comprised of brick fragments, rock fragments, and sand.
- Evidence of MGP impacts in soil boring SG4 included a strong hydrocarbon odor and detection of organic vapors with a photoionization detector (PID); organic vapors were present in concentrations to 91.2 parts per million (ppm).

Former Holder

Two soil borings (SG3 and SG7) were completed within the footprint of the former gas holder. Observations recorded during the field work include the following.

- Fill is present to a depth of 10.5 feet bgs. Geoprobe™ tools were unable to advance deeper than a brick structure, interpreted as the likely floor of the holder.
- The fill is comprised of cinders, ash and coal fragments, slag chips, and brick fragments.

- Visible evidence of MGP impacts in the fill material was limited to a trace sheen in one of the soil samples.

- A slight hydrocarbon odor was present in the fill; however, no evidence of organic vapors was found during headspace testing of soil.

One boring was completed as a polyvinyl chloride (PVC) groundwater monitoring well (MW-01), screened through the water table. A single subsurface-soil sample from the well boring was analyzed. While BTEX compounds were not detected in soil gas, they were detected in soil; none were present at concentrations greater than RSCOs. Most of the PAHs detected were at concentrations above the RSCO. Cyanide was detected at a low concentration (2.2 milligrams per kilogram [mg/kg]) in the subsurface-soil sample. NYSDEC has not listed an RSCO for cyanide.

The one groundwater sample analyzed contained benzene at a concentration greater than the New York State Water Quality Standards (NYSWQS). Heavy molecular weight PAHs were also detected at concentrations above the NYSWQS. The other typical MGP-associated PAHs were detected at low levels, below the NYSWQS. Total concentrations for nine elements (antimony, chromium, iron, lead, magnesium, manganese, sodium, thallium, and zinc) exceeded the groundwater quality standards, as did the measured concentration of total cyanide.

The PSA concluded that no IRMs are necessary at the site. Although groundwater was determined to be slightly impacted, the low levels of constituents measured in the water, combined with the depth of water (7 feet bgs) and the lack of buildings with basements at the site, made it unlikely that there was an immediate exposure to site residuals. The PSA recommended that additional work be performed to complete the understanding of site conditions.

2. Remedial Investigation Activities

The RI was designed to build on previous site investigations in order to provide a sufficient characterization to determine the nature and extent of impacts from the former MGP operations. The RI focused primarily on the area surrounding the former gas holder location, as shown in Plate 1. Visibly impacted soil and groundwater were found in this area during the PSA. The rationale for each sample location is presented in Table 3. All RI field activities were conducted according to the NYSDEC/New York State Department of Health (NYSDOH) approved RI Work Plan, SRI Work Plan, and Pre-IRM Characterization Work Plan.

Laboratory analysis was performed by Severn Trent Laboratory (STL) of Shelton, Connecticut.

2.1 Site Investigation Areas

The RI field work included surface and subsurface activities in the following areas of the site. Refer to Plate 1 for all RI sampling locations.

2.1.1 93B Maple Avenue

The 93B Maple Avenue Parcel was found to be impacted with MGP residuals during the PSA. Additional sampling was completed during the RI to further define the extent of the impacts. Investigative work included the following.

- **Surface Soil.** Two samples were collected on the site on and near the former gas holder foundation (SS1 and SS2).

- **Test Pits.** Four test pits were excavated at the site as part of the RI. Test pit TP-02 was completed near the PSA boring SG1. Test pit TP-03 was completed to confirm the location and contents of the former gas holder. TP-04 was completed near MW-01 to further investigate the presence of impacted soil and groundwater at this location. At NYSDEC's request, TP-05 was placed between the holder and the MGP building.

  In addition, three geotechnical test pits were dug to evaluate the concrete block building foundation (GT-TP1, GT-TP2, and GT-TP3).

- **Soil Borings.** Sixteen direct-push Geoprobe™ borings (PZ-01, GP-1 through GP-11, GP-7A, GP-13, GP-14/14A, and GP15) were completed to further delineate the extent of

impacted soil surrounding the former underground gas holder on the site. Two Geoprobe™ borings (SG-08 and SG-09) were completed in the alley to the east of the site.

- **Deep Soil Boring.** One deep soil boring (SB-25) was completed through the former gas holder foundation to determine the extent of MGP residuals below the holder foundation and at the till surface.

- **Monitoring Well Installation.** Three subsurface-soil hollow-stem borings were completed as water table monitoring wells (SB/MW-02, SB/MW-03, and MW-27) using a truck-mounted hollow-stem auger. The monitoring wells were installed to determine if impacted groundwater is present at the site and to allow determination of the groundwater flow direction across the site.

- **Groundwater Testing.** Groundwater elevation water measurements were taken six times to monitor groundwater flow. The last two rounds were collected to coincide with high and low tide in the Haverstraw portion of the Hudson River to investigate potential tidal influences. The new wells and the previously installed monitoring well were purged and sampled for MGP indicators and for intrinsic biodegradation parameters.

2.1.2 93A Maple Avenue

The 93A Maple Avenue property adjacent to the former MGP was also evaluated for the presence of MGP residuals. The subsurface investigation of this parcel included four direct-push Geoprobe™ borings (GP-16, GP-17, GP-20, and GP-21) to further delineate the southern extent of MGP residual impacted soil surrounding the former MGP.

2.1.3 91 Maple Avenue

The 91 Maple Avenue property adjacent to the former MGP was also evaluated for the presence of MGP residuals. Two surface-soil samples were collected (HASS91-B and HASS91-F). The subsurface investigation of this parcel included six direct-push GeoProbe™ borings (GP-18, GP-19, and GP-26 through GP-29) to further delineate the southwestern extent of MGP residual impacted soil surrounding the former MGP.

2.1.4 87 Maple Avenue

The 87 Maple Avenue property adjacent to the former MGP was also evaluated for the presence of MGP residuals. Two surface-soil samples were collected (HASS87-A and HASS87-B). The subsurface investigation of this parcel included two direct-push GeoProbe™ borings (GP-22 and

GP-23) to further delineate the northwestern extent of MGP residual impacted soil surrounding the former MGP.

2.1.5 6 Tor Avenue

The 6 Tor Avenue property adjacent to the former MGP was also evaluated for the presence of MGP residuals. Two surface-soil samples were collected (HASS6T-A) and HASS6T-B). The subsurface investigation of this parcel included two direct-push Geoprobe™ borings (GP-24 and GP-25) to further delineate the northern extent of MGP residual impacted soil surrounding the former MGP.

2.1.6 Apartment Complex Parcel

Property located southeasterly of the 93B Maple Avenue parcel was also evaluated for the presence of MGP residuals. The subsurface investigation of this parcel included four soil borings and the installation of four groundwater monitoring wells (Plate 1). The borings (SB-20, SB-21, SB-28, and SB-29) were drilled with a hollow-stem auger drill rig and completed as monitoring wells (SB/MW-20, SB/MW-21, SB/MW-28, and SB/MW-29). The borings and monitoring wells were installed to determine if impacts related to either the 93B Maple Avenue former MGP or the Clove and Maple Avenues former MGP caused impacts to a former stream that is currently channeled by the culvert beneath the alleyway behind the Apartment Complex. These wells were also originally intended to provide additional information regarding groundwater flow directions from both former MGP sites. Following analysis of the groundwater elevations from these wells, it was determined that wells MW-20, 21, 28, and 29 were screened within a semi-confined portion of the aquifer atop the glacial till and beneath an observed clay layer. Because the wells exhibited artesian hydraulic heads the groundwater elevations from these wells could not be used to supplement the water table groundwater elevations monitored by wells on the 93B Maple Avenue parcel.

Two soil samples from each boring were analyzed. One sample was collected from the water table. The second sample was collected from the most apparent visibly impacted interval. If no impact was apparent, a sample was collected at depth, or from above the till unit.

2.1.7 Background Surface Soils

Six background surface-soil samples (BSS-1 through BSS-6) were collected by RETEC in 1997 as part of the PSA; these samples were analyzed for Target Analyte List (TAL) metals. In 2001, six additional background surface-soil samples (HA-BSS01-1 through HA-BSS01-6) were collected as part of the supplemental RI scope of work; these samples were analyzed for BTEX,

semivolatile organic compounds (SVOCs), and cyanide. Figure 3 shows the approximate locations of each of the background surface-soil samples.

2.1.8 Stormwater and Catch Basin Sampling

Stormwater samples were collected from the storm sewer culvert that channels a former stream beneath the alley. The culvert receives stormwater flow from upgradient of the site (north of Tor Avenue) and from downgradient of the site via storm sewer feeder lines from Maple Avenue. The culvert discharges to the Hudson River embayment. Stormwater was sampled from catch basins upstream of the 93B Maple Avenue site from a manhole in Tor Avenue (SW013102-1), and at two locations downstream of the 93B Maple Avenue site (SW013102-5 and SW013102-6). A stormwater sample (SWOUT013002-1) was also collected at the outfall location in the embayment of the Hudson River.

One sediment sample (SD013102-6) was collected downstream of the 93B Maple Avenue site. No sediments were present in the upstream manhole location in Tor Avenue, at the other downstream catch basin location, or within the culvert pipe at the outfall to the Hudson River embayment.

2.2 Field Methods

2.2.1 Sample Identification

In general, sample designations as described in the RI Work Plan, SRI Work Plan, and the Pre-IRM Characterization Work Plan identified the type of sampling and used consecutive sample numbers.

2.2.2 Test Pit Excavation

Four test pits were excavated at the site to investigate former MGP structures and other relevant features. Test pit locations (Plate 1) were selected based on historic site information, including the review of Sanborn maps, topographic maps, and available site plans. The rationale for the placement of the test pits is provided in Table 3.

Test pits were logged to include dimensions, soil lithology, and visual and olfactory evidence of contamination (Appendix A). Still photographs of the excavations were taken (Appendix D). Soils excavated from each test pit were screened in the field for organic vapors, using a PID. All observations regarding odors and air emissions were recorded. Analytical soil samples were collected from test pits TP-04 and TP-05 based on visual, odor, and PID observations. A heavily impacted sample from TP5 was also collected to determine hazardous waste characteristics.

Following excavation and observation, the test pits were backfilled with the excavated material in reverse order of removal (i.e., first out, last in). Replaced backfill was tamped into place.

2.2.3 Surface-Soil Sampling

Eighteen surface-soil samples have been collected to investigate surface-soil conditions at the site and at background locations throughout Haverstraw. On- and near-site sample locations (Plate 1) were selected to build on existing surface soil data collected during the PSA. Six surface-soil samples were collected from the three adjacent parcels to the 93B Maple Avenue parcel (91 and 87 Maple Avenue and 6 Tor Avenue).

Six background surface-soil samples were collected in 1997 by RETEC during the PSA. Six additional background surface-soil samples were collected in 2001 as part of the SRI sampling program from locations on publicly accessible parcels outside of the former MGP footprint. The background surface-soil sample locations are depicted on Figure 3. The SRI surface-soil samples were collected using decontaminated stainless-steel spoons and hand-held trowels. Each sample was collected from the 0- to 2-inch depth increment below any sod or organic layer at the sample locations.

Soil samples were collected for the 0- to 2-inch depth below any turf or vegetative cover. All observations regarding odor and air emissions were recorded. Samples were analyzed for BTEX, PAHs, and total and weak acid dissociable (WAD) cyanide.

2.2.4 Subsurface-Soil Borings With Geoprobe™

GEI, Terraprobe, and Zebra Drilling (Geoprobe™ drilling subcontractors) mobilized to the site to collect subsurface-soil samples in 2001. Geoprobe™ drilling subcontractors provided continuous samples from the ground surface to suitable depths (determined in the field by GEI with NYSDEC concurrence) using a van-mounted, direct-push Geoprobe™-type drill rig. The samples were collected with 4-foot long, 2-inch O.D., stainless-steel macrocore sampling tubes. The sampling tube, equipped with a disposable acetate liner, was driven into the soil to collect the sample. At sampling locations that were overlain by pavement, sampling began directly below the pavement. A fresh acetate liner was used for each sample, and the tube shoes were decontaminated after each down-hole usage in accordance with Standard Operating Procedures (SOPs). A field blank was collected from a decontaminated shoe and an unused acetate liner for laboratory analysis of the same analytical suite as the subsurface-soil samples.

Thirty-two Geoprobe™ borings were completed to depths ranging from 10 to 24 feet bgs (Plate 1). An analytical sample was collected from each 4-foot macrocore sampling tube in all borings with the following exceptions. A sample was not collected from the surface interval (0

to 4 feet) in borings GP-1, GP-2, GP-3, GP-5, and GP-7. GP-7A is located proximate to GP-7, which was advanced to refusal at 12 feet bgs and samples were not conducted for the 0 to 12-foot interval. No analytical samples were collected from borings SG-08 and SG-09.

Parcel	93B Maple	93A Maple	91 Maple	87 Maple	6 Tor
Piezometers	PZ-01	None	None	None	None
Soil Borings:	SG-08	GP-16	GP-18	GP-22	GP-24
	SG-09	GP-17	GP-19	GP-23	GP-25
	GP-1 through GP-13	GP-20	GP-26		
	GP-7A	GP-21	GP-27		
	GP-14/14A		GP-28		
			GP-29		

Three of the borings (GP-6, GP-10, and GP-12) were completed inside the former gas holder foundation to depths of 10 to 10.5 feet bgs. At the completion of each boring, the hole was filled with bentonite pellets.

One boring (PZ-01) was completed to a depth of 10.5 feet and finished as a mini piezometer. A length of ¾-inch inside diameter PVC casing was inserted into the borehole. No sand pack was installed in the annulus; the native soil was left to eventually collapse around the PVC casing. The screened section (0.010-inch, 10 slot) extends from 10 feet bgs to 5 feet bgs, and the riser extends from 5 feet bgs to the ground surface. A small flush-mounted concrete pad with cap and pentagonal bolt was also installed to prevent any tampering.

The lithology and percent recovery were logged for each subsurface-soil sample. Each sample was also screened with a PID for organic vapor concentrations, and the results were noted in the field log. Analytical samples were collected per the RI Work Plan and SRI Work Plan and generally included VOCs, SVOCs, TAL metals, total cyanide, and WAD cyanide.

Soil cuttings were drummed and stored inside the gas regulator station on the nearby Clove and Maple Avenues former MGP site and subsequently disposed of properly by O&R.

2.2.5 Subsurface Soil Borings/Well Installation

GEI and Aquifer Drilling and Testing (ADT) mobilized to the 93B Maple Avenue former MGP site in Haverstraw, New York to install subsurface-soil borings and monitoring wells. Note that SB/MW-01 was installed as part of the PSA. Three monitoring wells and one boring were drilled and installed using hollow-stem auger drilling methods as follows.

Parcel	93B Maple	93A Maple	91 Maple	87 Maple	6 Tor
Monitoring Wells:	SB/MW-02 SB/MW-03 MW-27	None	None	None	None
Soil Borings:	SB-25	None	None	None	None

All borings were installed to 20 feet bgs unless there was refusal. The objectives of these borings were to determine groundwater flow direction, test groundwater quality, and evaluate subsurface geology and level of MGP residuals present beneath the holder. Boring SB-25 was drilled to 35 feet below grade through the former gas holder foundation.

A hollow-stem auger drill rig with a 4.25-inch auger was used to install the borings. A plywood sheet was used to protect the ground surface in the vicinity of the boring and to facilitate collection of drill cuttings. Continuous split-spoon samples were collected from the ground surface to the end of each boring. Samples were collected using a 2-inch split spoon 2 feet in length, and were collected in advance of the auger. After each sample was retrieved, the split spoons and baskets were decontaminated using an Alconox bath, nitric acid rinse, methanol rinse, and a deionized water rinse.

The lithology and any visual or olfactory contamination of each subsurface sample were logged. Each sample was screened with a PID for organic vapors, and these results were logged as well. Selected samples were archived based on apparent impacts. Samples from the water table interface and above a confining unit were collected from SB-02 for laboratory analysis. A soil sample from SB-03 for laboratory analysis was taken just above a confining unit which was coincident with the water table, as determined during drilling.

A soil sample from MW-27 for laboratory analysis was collected from just above the bottom of the boring. Samples from the heaviest impacted area just below the holder floor and underlying the confining layer were collected from SB-25.

Drill cuttings were containerized in labeled 55-gallon drums and staged within the fenced regulator station at the Clove and Maple Avenues former MGP site. These materials were subsequently disposed of properly by O&R.

Each monitoring well was constructed of 2-inch inside diameter, flush-threaded PVC screen and solid casing. Split-spoon sampling for SB/MW-02 was completed to a depth of 18 feet. The borings were backfilled with bentonite chips to 16 feet, at which depth the well was installed with a 1-foot sump and 10-foot screen section. Split-spoon sampling for SB/MW-03 was completed to a depth of 14 feet. The well was installed with a 5-foot screen section and no sump at 13.5 feet. The space between 13.5 and 14 feet was filled with bentonite chips. Split-spoon

sampling for MW-27 was completed to a depth of 14 feet. The well was installed with a 5-foot screen section and no sump at 13.5 feet. The space between 13.5 and 14 feet was filled with bentonite chips. The annular space between the well screen and borehole wall was filled with chemically inert filter sand to promote sufficient groundwater flow to the wells and to minimize the passage of any fine-grained formational material into the wells. A bentonite clay seal was placed directly above the sand pack. The remaining annular space was filled to grade with cement/bentonite grout to prevent the migration of contaminants to the sampling zone (i.e., screened interval) from the surface and overlying material. A concrete pad was constructed around each well at the ground surface and fitted with a flush-mounted curb box, locking cap, and lock. Well construction details are provided in the boring logs (Appendix A).

Well Development

Following drilling operations, all monitoring wells were developed to restore the natural permeability of the formation in the vicinity of the well, and to remove silt and clay. Development was performed by alternately surging and pumping, utilizing either a centrifugal or piston pump for a minimum of 30 minutes. Pumping continued until the turbidity of the development water was less than 50 nephelometric turbidity units (NTUs), as measured in the field with a turbidimeter, or until at least 10 well volumes were removed (where turbidity did not decrease). Wells were not developed until 48 hours after construction, or their recovery was completed (whichever was later). Development water was contained, labeled, and staged for appropriate disposal.

2.2.6 Groundwater Sampling

Monitoring wells were sampled for MGP constituents a minimum of two weeks after installation and development were completed. Groundwater sampling was conducted in accordance with the RI Work Plan and the SRI Work Plan.

Remedial Investigation Work Plan Sampling (February 1999)

Purging

Prior to groundwater sampling, three to five well volumes were purged from each well to ensure that all stagnant water was replaced by representative formation water. A peristaltic pump with dedicated disposable Nalgene® and silicone tubing was used to purge each well at a pumping rate of approximately 1,000 milliliters/minute (ml/min). While the monitoring well was purged, pH, temperature, Eh, and conductivity were monitored and recorded. When at least three well volumes were purged and the pH, temperature, and conductivity values remained within 10 percent over several consecutive readings, the monitoring well was sampled. Purge water was

contained, labeled, and staged within the fenced regulator station at the O&R Clove and Maple Avenues site for appropriate disposal.

Sampling

After each well was purged, groundwater samples were collected and stored in containers provided by the laboratory in accordance with New York State Analytical Services Protocol (NYSASP) requirements. Samples were collected using a dedicated disposable polyethylene bailer (for VOCs) and a peristaltic pump (pumping rate: 100 ml/min). Samples were collected for analysis in the following order: VOCs, SVOCs, polychlorinated biphenyls (PCBs), cyanide, and TAL metals. Filtered and unfiltered metals samples were collected, as discussed in the Work Plan, because it had not been possible during well development to obtain the turbidity goal of 50 NTUs.

Supplemental Remedial Investigation Work Plan Sampling (April 2001)

Purging

Prior to groundwater sampling, the monitoring wells were purged at rates that minimize or eliminate significant drawdown in accordance with the guidelines set forth in *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Ground Water Samples From Monitoring Wells* (EPA Region I, 1996). A peristaltic pump with dedicated polyethylene and silicone tubing was used to purge one tubing volume of groundwater from each well. Upon removal of one tubing volume, water quality was monitored and recorded for pH, temperature, specific conductivity, oxidation-reduction potential (Eh), dissolved oxygen, and turbidity utilizing a Horiba U-22 at five-minute intervals to determine well stability. When stability was reached, pH was within 0.1 standard units, temperature was within 0.5°C, Eh and specific conductivity were within 10% for three consecutive readings, the water was sampled. Purge water was contained in 55-gallon drums, labeled, and staged within the fenced regulator station for appropriate disposal.

Sampling

After each well was purged, groundwater samples were collected and contained in glassware provided by the laboratory in accordance with NYSASP. Samples were collected using a dedicated disposable polyethylene bailer and a peristaltic pump (approximate pumping rate: 100 ml/min). Each sample was analyzed for VOCs (collected with a bailers), SVOCs, total cyanide, and WAD cyanide.

2.2.7 Stormwater and Storm Sewer Sediment Sampling

Four stormwater samples (SW013102-1, SW013102-5, SW013102-6, and SWOUT013002-1) and one storm sewer sediment sample (SD013102-6) were collected to evaluate the quality of stormwater and sediments in the catch basins in vicinity of the site. Sample locations (Plate 1) were selected to determine base-flow conditions upstream and downstream of the site within the storm sewer system.

Stormwater samples were obtained from flow within the catch basin utilizing a polyethylene bailer. Sediment samples were collected with a stainless-steel spoon from the catch basin. All observations regarding odors were recorded.

Each stormwater and storm sewer sediment sample was analyzed for VOCs by NYSASP Method 95-1, SVOCs by NYSASP Method 95-2, total cyanide by CLP methods, WAD cyanide by Method 4500 CN-I, TOC, and pH by CLP Methods. The stormwater samples were also analyzed for hardness by method SM2340.B. One duplicate sample and one equipment rinsate blank sample were collected and analyzed for both the stormwater and the storm sewer sediments.

2.2.8 Hydraulic Conductivity Testing

Two rising head slug tests were performed to determine the hydraulic conductivity of the formations in monitoring wells MW-01 and MW-03. A computerized pressure transducer capable of recording pressure changes over small time increments was used to measure the rate of change in each well after the removal of a known volume (slug). A slug bar was fully submerged into the water column of each well. Once the water level returned to static conditions, the transducer was started using logarithmically spaced data recording interval and the slug was rapidly removed from the well. Data were recorded until the water level within the well recovered to within 15 percent of the original static water level relative to the initial test displacement. The data were then analyzed using the Bouwer and Rice method of slug test analysis to determine the hydraulic conductivity.

2.2.9 Ecological Investigation

A site visit was conducted by GEI and NEA to determine general environmental conditions of the site and to identify obvious factors impacting the fish and wildlife at the site. The investigation included a review of the existing data collected during the PSA, RI, SRI, and Pre-IRM Characterization. Additional field sampling and analysis, over and above the existing data, was not required.

2.2.10 Site Survey

A survey was performed at the conclusion of RI, SRI, and Pre-IRM Characterization field activities by a licensed New York State surveyor (No. 050146). The survey included the following.

- The location, elevation of ground surface, elevation of top of outer casing, and elevation of PVC well riser (reference elevation) for each monitoring well (previously installed and new)
- The location and elevation of ground surface for each soil boring (new borings only)
- The location of important site features such as buildings, roadways, and MGP structures where present
- The location of the property boundary
- The location of relevant structures and features located on adjacent properties such as catch basins, roadways, and buildings where appropriate

The data were tied into the nearest United States Geological Survey (USGS) benchmark to ensure that all groundwater elevation data are National Geodetic Vertical Datum 1927 (NGVD). Survey data were transferred in the form of a digital computer file and used to update base maps for the site.

2.2.11 Decontamination

A decontamination pad was established during the RI. All downhole drilling equipment was pressure washed with hot water between borings. All soil and groundwater equipment was decontaminated with a sequence consisting of the following steps.

- Removal of gross contamination (soil) by brushing and wiping
- Potable water and Alconox (detergent) solution wash
- Distilled/deionized water rinse
- Nitric acid solution rinse
- Reagent grade methanol rinse
- Final distilled/deionized water (laboratory provided) rinse

2.2.12 Waste Management

Fluids generated during the decontamination were containerized on the decontamination pad. The decontamination fluids, well development, and well purge water were containerized, labeled, and temporarily stored in 55-gallon drums.

Drill cuttings generated during the installation of borings and monitoring wells were containerized in 55-gallon drums. Personal protection equipment (PPE), macro-core sampling tubes, and tubing for groundwater sampling were containerized in labeled drums separate from the drill cuttings.

All waste drums were staged within the fenced regulator station. All wastes were properly disposed of by O&R.

2.2.13 Analytical Summary

Analytical procedures were in accordance with NYSASP. Category B deliverables were provided by the laboratory. The QAPP is provided in the RI Work Plan. Analytical data provided by the laboratory were validated in accordance with NYSASP protocol and data usability reports were prepared to accompany the validated data deliverables. Appendix B includes the validated Form I reports and the data usability reports.

3. Physical Characteristics of the Study Area

This section of the report discusses the physical characteristics of the study area from both regional and site-specific perspectives. The footprint of the 93B Maple Avenue former MGP site is located on Lot 78, which is currently an unpaved gravel lot used as an equipment storage area and employee parking lot. Because contaminated soil is also present on the adjacent properties as shown on Plate 2, the study area extends beyond the 93B property. The 93B Maple Avenue parcel has no street frontage, although it can be accessed by an alley that connects to Tor Avenue and by a driveway from Maple Avenue. The remaining parcels front on Maple and Tor Avenues. A storm sewer culvert runs beneath the alley on the eastern side of the site and carries what was once an open channel stream. This culvert drains to the southeast and discharges into an embayment of the Hudson River at West Street and Maple Avenue. The surrounding properties are all residential.

3.1 Climatology

Data on climatology for the site area were obtained by NEA (1999), and were presented in the FWIA (NEA, 2002). The site is located in the Triassic Lowlands Ecozone. The climate is temperate, with January mean temperatures between 25°F and 30°F and July mean temperatures between 70°F and 75°F. The growing season typically ranges from 180 to 200 days in the Triassic Lowlands. The average annual snowfall ranges from 40 to 60 inches. Climatological data recorded at West Point, New York are a good representation of the climatology of the site region. Data collected from 1951 to 1971 are summarized in Table 4.

3.2 Land Use in the Site Vicinity

The primary current land use outside of the site boundaries is generally commercial, residential, estuarine, and forested. Commercial and residential lands surround the site. The eastern edge of the site area is the Hudson River, a tidal estuarine system. Undeveloped forest land is adjacent to the western edge of the project area and includes portions of High Tor State Park, located approximately 1,800 feet southwest of the site.

3.2.1 Future Land Use

The site is currently zoned residential (see subsection 3.3, below). The minimum lot size for single-family residential construction is 7,500 square feet. The 93B Maple Avenue parcel itself is approximately 5,100 square feet in area. Therefore, residential use is not possible under current conditions. However, future acquisition of the site by a neighboring property owner is conceivable. Therefore, the site could become part of a residential setting.

3.3 Local Zoning

The 93B Maple Avenue site is zoned for residential use. It is bounded on the north, east, and west by other privately owned residential properties. A commercial property (construction business and storage) is present to the south. In general, the surrounding area is residential.

3.4 Local Groundwater Use

Public water in the area is supplied by United Water of New York of West Nyack, New York (UWNY). The Rockland County Health Department (RCHD [Spring Valley, New York]) and UWNY were contacted to investigate the potential presence of groundwater wells in the site vicinity.

RCHD reported the approximate locations of seven potential wells within 1 mile of the site, all either crossgradient or upgradient of the site. One well belongs to UWNY. RCHD was not confident about the actual presence and location of the other wells. UWNY reported that they no longer used their supply well, and they believed that all other possible wells had been condemned by RCHD.

3.5 Surface Water Hydrology

The site is generally flat but is surrounded by land of slightly higher elevation. The site is unpaved, with no catch basins. As such, surface water at the site does not flow to other locations. It infiltrates the soil, evaporates, and/or pools at the site.

3.5.1 Local Surface Water Use

There are no surface water bodies located on the former MGP site. A detailed discussion of the area surface water bodies, their intended uses, and their water quality designations is found in the *Fish and Wildlife Impact Assessment - Former Manufactured Gas Plants Haverstraw, New York,* prepared by NEA and submitted to NYSDEC in February 2000.

In the NEA report, three water bodies are located within 0.5 mile of the site: the Hudson River (Class SB), which is 800 feet to the east; an unnamed tidal creek (not classified), which lies 2,300 feet to the southeast; and an unnamed settling pond (not classified), which lies 2,700 feet to the southeast.

3.6 Regional Geology and Site Stratigraphy

The village of Haverstraw is located in the Hudson River Valley of the Hudson Highlands Physiographic province of New York State. The valley is in a north-to-south trending trough which, in the vicinity of the site, is bounded by the palisade diabase, approximately 0.5 mile to the west. The trough of the river has been extensively filled (up to 500 feet) with glacial outwash deposits. Bedrock, not encountered during the PSA or RI investigations, is buried beneath the thick sequence of the glacial and fluvial sediments. Bedrock beneath the site has been mapped as the Brunswick Formation, which is comprised of an arkose and mudstone.

The site is located on a flat area that extends a short distance from the base of South Mountain to the Hudson River. The site is flat, with no obvious surface water flow direction for stormwater. The Hudson River is approximately 800 feet to the east.

The underlying bedrock in the vicinity of the site is primarily Triassic sedimentary and igneous rock of the Newark Group. Soils found within 0.5 mile of the site include Udorthents (smoothed and wet substratum); Urban Land; Hinckely Gravelly Loamy Sand; Hinckley-Urban Land Complex; Wethersfield-Urban Land Complex; Wethersfield Gravelly Silt Loam; Ipswich Mucky Peat; and Holyoke-Rock Outcrop Complex.

In general regarding site stratigraphy, three units were identified during the drilling program. The uppermost unit consists of fill, brown sand with varying amounts of black cinders, ash, brick fragments, and coal fragments. The thickness of the fill unit varied across the site, with the thickest zone (approximately 15 feet) in the footprint of the former gas holder foundation.

Underlying the fill material is a heterogeneous mixture of alluvial deposits that are comprised of discontinuous beds of sands, gravels and clayey silts. Beneath the alluvium deposits there is a dense red sand and clay till unit. Published geological reports for Rockland County (Pearlmutter, 1959) show clay to be prominent at shallow depths (<20 feet) in the Haverstraw area.

3.7 Site-Specific Surficial Geology

Site geology, as determined through direct logging of split-spoon samples and GeoProbe™ cores, is provided in this subsection. Data collected during subsurface sampling were used to

generate two geologic cross sections. The cross-section locations are shown in Plate 1. The cross sections are shown in Figures 4 and 5. Complete details are presented in the boring logs in Appendix A.

3.7.1 Fill

A layer of fill material consisting of miscellaneous soil and demolition debris forms the uppermost stratigraphic unit at the site. The fill at this site is primarily made up of gravel, loamy soil with some cobbles, brick fragments, cinders, coal, and glass shards. Thickness of the fill unit is irregular and ranges from approximately 15 feet at the former gas holder foundation (in SB-25) to approximately 8 feet at GP3.

3.7.2 Alluvium

Alluvium underlies the fill at all boring locations. It is a heterogeneous mixture of alluvial deposits comprised of discontinuous beds of coarse-grained sands, gravel, fine-grained sands, silts, and various clays. Thickness and composition of the alluvial deposits vary widely throughout the site and can be generalized into four distinct subunits described below.

The first subunit is a coarse-grained sand and gravel with some fine-grained material and cobbles. In general, it is poorly sorted, although coarser sediments predominate. This subunit is present in discontinuous layers ranging in thickness and often stratified with other alluvial deposits. In PZ-01, this subunit is approximately 4 feet thick and is overlain by fill and underlain by clay and fine sand/silt mixtures. In SB/MW-01, this subunit is present in 1- to 2-foot thick layers separated by clay material. This subunit appears to grade into fine-grained sand, silt, and clay. The coarse-grained sand and gravel unit is also found in GP-14/14A, GP-16, GP-23, MW-27 and SG-09, where it ranges in thickness from 1 foot to 5 feet.

The second subunit is comprised of gray and brown clay and is designated as clay material on the cross sections. It can be massive or can contain thin lenses of fine-grained sand. The clay on the site was found in several borings including SB/MW-01, GP-1, GP-11, and MW-27, with thickness varying from 1 to 5 feet. Where clay is present, it is underlain by coarse-grained sand and gravel or interbedded sandy or silty clay.

Clay and fine sand/silt mixtures make up the third alluvial subunit, which is more widespread than the previous two units. This unit is comprised of interbedded sandy or silty clay and is present in most borings in an almost continuous layer across the site. The thickness of this subunit is approximately 5 to 16 feet. In SB-25, the silty/sandy clay is underlain by till. This layer appears to act a semi-confining layer for tar, as most visual impacts and MGP residuals are

limited to the first 1 to 2 feet of this unit. This subunit appears to be present beneath the Apartment Complex where it also appears to limit the downward migration of tar.

Fine-grained sands and silts comprise the fourth alluvial subunit. These soils are from 2 to 5 feet thick and are found in only a few borings. In most borings the thickness of this unit ranges from 1 to 2 feet; however, SB-25, located within the holder foundation, contained a 4- to 5-foot thick layer below the holder foundation which is likely an installed sand bed rather than an alluvial deposit. Where present it is underlain by clay, sand and gravel, or sandy clay mixtures.

3.7.3 Till

Prior to the commencement of the RI, no information existed on the till unit underlying the site. The till was encountered in only one boring, SB-25, at a depth of 34.5 feet below grade surface. Based on this boring, the till consists of a very dense, cohesive red-brown silt and clay. Only two additional borings were completed to this interval, GTB-1 and GTB-2, and neither boring encountered the till surface. Other borings on the site were completed to 20 feet bgs or less and did not encounter the till unit. The remainder of the borings were terminated at 20 feet or shallower because the extent of impacts from the former MGP were vertically limited by the presence of silty/clayey strata.

3.8 Regional Hydrogeology

Hydrogeology in the region is dominated by the Hudson River. Groundwater is expected to discharge to surface water bodies such as ponds, streams, and rivers in the Hudson River watershed. These watershed bodies are then expected to discharge to the Hudson River.

3.9 Site-Specific Hydrogeology

Groundwater at the site is present within the alluvium. The alluvium aquifer is a shallow, unconfined to semi-confined aquifer system. The aquifer beneath the 93B Maple Avenue parcel that is monitored by wells MW-1, MW-2, and MW-3 is unconfined. To the southeast, on the Apartment Complex parcel, unconfined groundwater (the water table) is present at a depth of between 6 and 8 feet bgs; however, no monitoring wells were installed to screen this portion of the aquifer. Monitoring wells MW-20, 21, 28, and 29 on the Apartment Complex parcel were installed with their screen intervals beneath the sand lens-containing clayey subunit and above the glacial till. These wells exhibit artesian hydraulic heads, thereby demonstrating that the clay unit is behaving as a semi-confining layer.

Two rounds of low- and high-tide water level measurements were collected on March 26, 1999 and December 17-18, 2001 to determine if groundwater is influenced by tidal fluctuations. No

significant changes in water levels were observed between the low-tide and high-tide measurement rounds.

A potentiometric surface map for December 17, 2001 is presented in Figure 6. The data used to develop the contours are presented in Table 5. Water levels were not measured in PZ-01, which was located under a roll-off bin in December 2001. As shown on Figure 6, groundwater flow for the unconfined portion of the aquifer is roughly to the southeast, indicating that groundwater is discharging toward the culverted former stream along the alley. The hydraulic gradient is steeper as groundwater approaches MW-03, ranging from 0.017 foot/foot across a majority of the site to 0.075 foot per foot between MW-01 and MW-03.

In-situ hydraulic conductivity tests (slug testing) were performed in MW-01 and MW-03. The hydraulic conductivity (k) values were 3.98×10^{-4} centimeter/second (cm/sec) (0.53 feet/day [ft/d]) at MW-01 and 1.87×10^{-4} cm/sec (1.13 ft/d) at MW-03 (Appendix C). Estimates of the average horizontal linear flow velocity of groundwater within the coarse alluvium were calculated using the slug test data and the derived gradient information from the RI. The equation $V = ki/n$ was used, where k is the hydraulic conductivity of the formation, i is the hydraulic gradient, and n is the effective porosity of the deposits. Using an average gradient of 0.04 foot/foot (average of two gradients identified), assuming a value of 0.25 for effective porosity, and the range of measured conductivities, the average horizontal groundwater flow velocity ranges from 31.0 feet/year (ft/yr) to 65.9 ft/yr in the northeastern direction.

3.10 Fish and Wildlife Impact Assessment

The Preliminary FWIA was submitted to the NYSDEC under separate cover on February 4, 2000. Following submittal of the FWIA report, NYSDEC provided comments in a letter dated March 22, 2000, which O&R addressed in a letter transmitted by GEI, dated May 3, 2000. Following review of the May 3rd response letter, NYSDEC provided additional comments regarding the FWIA, including a request to conduct a Step 2 assessment. The Step IIA and IIB FWIA was conducted by NEA and the findings are reported in NEA's March 2002 *Fish and Wildlife Impact Analysis: Step IIA and Step IIB, Former Manufactured Gas Plant Clove and Maple and 93B Maple Sites, Haverstraw, New York* (NEA, 2002). This report has been submitted to NYSDEC and NYSDOH under separate cover. The findings of the Step IIA and IIB analysis are summarized below.

Findings of the preliminary FWIA indicate that little potential exists for risk to fish or wildlife from the site. A state-listed endangered species, the eastern woodrat, has had a historical occurrence at South Mountain, southwest of the site. However, this location is well upgradient of the site. The federally listed endangered short-nosed sturgeon is reported to use an

embayment to the Hudson River , east of the site. Health advisories have already been issued for the bay (limiting fish consumption to 0.5 lb/week) for reasons unrelated to the site.

The Step IIA and IIB FWIA concluded:

- On-site [Clove and Maple Avenues parcel] surface soils have the potential to present an ecological risk due to the presence of numerous PAHs and metals above ecological benchmarks. Detected concentrations of several compounds were significantly above benchmarks, and constituents were those typical of MGP sites.

- The sediments of an embayment to the Hudson River have the potential to present an ecological risk because of the presence of PAHs and metals above background concentrations. However, many sources for these constituents exist around the embayment, so detected concentrations cannot be solely attributed to the site. The distribution of constituents in the embayment suggests that other sources play a predominant role.

The use of benchmarks as a screening tool is an inherently conservative approach designed primarily to identify compounds that are not likely to present an ecological risk. Whether or not compounds that exceed benchmark values present a risk under actual site conditions must be determined by additional site-specific studies.

4. Nature and Extent of Contamination

This section of the report presents the physical observations made during the field investigation, the analytical results, and an interpretation of the extent of contamination at the site. The sample locations from the PSA, RI, SRI, and Pre-IRM Characterization are shown on Plate 1. The various media and the potential MGP impacts to each media are discussed separately in the following subsections. BTEX, PAHs, cyanide, and some metals are contaminants commonly associated with MGP residuals; therefore, this section discusses the analytical results by these constituent groupings.

4.1 Surface Soils

4.1.1 Off-Site Background Samples

Six background surface-soil samples were collected as part of the RI (Table 6). The samples were collected from locations within the village of Haverstraw as far away as Bowline Point Park, 4,000 feet northeast of the site, and analyzed for BTEX, PAHs, and total cyanide. The locations of these samples were approved by the NYSDEC following a site meeting to select sampling locations for the SRI. Six additional background surface-soil samples were collected during the PSA from locations along Clove and Maple Avenues, Hudson Street, and Bowline Point Park, and analyzed for TAL metals.

No VOCs were detected in the background samples. Numerous PAHs were detected in the background samples with concentrations ranging from 10.9 ppm total PAHs (HA-BSS01-6, Bowline Point Park) to 31.6 ppm total PAHs (HA-BSS01-5, 70 Hudson Street). Concentrations of benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, and dibenz[a,h]anthracene were detected in four samples at levels that exceed the NYSDEC cleanup objectives. The concentrations of benz[a]anthracene, benzo[a]pyrene, chrysene, and dibenz[a,h]anthracene exceeded the NYSDEC cleanup objectives in the remaining two samples.

Metals were detected at concentrations that exceed the RSCOs for beryllium, chromium, copper, iron, mercury, nickel, and zinc in several background samples. In addition, elevated levels of aluminum, calcium, magnesium, and manganese were detected in the background samples. Total cyanide was not detected in any of the background samples for which it was analyzed.

4.1.2 On-Site Samples

Six surface-soil samples and one duplicate sample were collected during the RI and analyzed for BTEX, PAHs, and total cyanide. Two surface-soil samples were collected during the earlier PSA study (RETEC, 1997) (samples SS1 and SS2), and analyzed for BTEX, PAHs, TAL metals, and total cyanide. The results are presented in Table 6. The detailed results are presented in Appendix B.

Total xylene was detected in one sample (HA-SS-87A) collected from the 87 Maple Avenue Parcel at a concentration of 1 ppb, which is well below the NYSDEC cleanup objective. BTEX was not detected in any of the other samples. However, several PAH compounds exceeded NYSDEC RSCOs. Total PAHs ranged from a low of 3.7 mg/kg in sample HA-SS-87B to a high of 117 mg/kg in sample HA-SS-6TB. The total PAH concentrations for the samples collected from the 87 Maple Avenue parcel were similar to the background sample total PAH ranges, while the total PAH concentrations for samples collected from 6 Tor Avenue and 91 Maple Avenue appeared elevated relative to the background surface-soil concentrations.

In samples collected from the 93B Maple Avenue parcel (SS1 and SS2), benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, chrysene, and dibenz[a,h]anthracene exceeded the RSCOs in both samples. In sample SS1, benzo[k]fluoranthene and indeno[1,2,3-cd]pyrene also exceeded the RSCOs.

In samples collected from the 91 Maple Avenue parcel (HA-SS-91B and HA-SS-91F), benz[a]anthracene, benzo[a]pyrene, chrysene, and dibenz[a,h]anthracene exceeded the RSCOs in both samples. In sample HA-SS-91F, benzo[b]fluoranthene, benzo[k]fluoranthene, and indeno[1,2,3-cd]pyrene also exceeded the RSCOs.

In samples collected from the 87 Maple Avenue parcel (HA-SS-87A and HA-SS-87B), benz[a]anthracene, benzo[a]pyrene, and dibenz[a,h]anthracene exceeded the RSCOs in both samples. In sample HA-SS-87A, benzo[b]fluoranthene, benzo[k]fluoranthene, and chrysene also exceeded the RSCOs.

In samples collected from the 6 Tor Avenue parcel (HA-SS-6TA and HA-SS-6TB), benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene exceeded the RSCOs in both samples.

Numerous inorganic compounds were detected in the samples collected from the 93B Maple Avenue parcel. Beryllium, cadmium, chromium, copper, iron, mercury, nickel, and zinc exceeded RSCOs in both samples. In sample SS2, selenium and lead also exceeded the RSCOs.

The levels of these inorganic compounds are within the ranges of concentrations for background samples with the exception of cadmium, copper, iron, selenium, and zinc. However, samples SS1 and SS2 were collected from an area of known fill material and may not be comparable to background concentrations. Total cyanide was detected in samples SS1 and SS2 at concentrations less than 1 ppm.

These findings are probably the result of mixed impacts from previous gas production activities at the site and more recent activities at, and near, the site. Numerous vehicles in various states of repair were present at the site during the RI. In 1997, the site was covered with refuse piles, abandoned vehicles and stored construction materials. These vehicles and associated activities may have contributed contaminants to the ground surface as a result of leaks and spills. Gasoline odors were noted in the shallow subsurface soil, as described below.

4.2 Subsurface Soils

This subsection describes and discusses the findings of subsurface-soil investigations at the site. Subsurface soils at the site were evaluated through observations made during the excavation of test pits and the installation of soil borings, and through the chemical analysis of subsurface-soil samples. Test pit, soil boring and Geoprobe™ logs from the RI and the PSA are provided in Appendix A.

4.2.1 Physical Observations

Subsurface-soil impacts were observed at the site during the PSA and the RI. These impacts included tar, sheens, and odors. Impacts were observed in and near former MGP structures. The areal extent of these impacts is illustrated on Plate 2 and the vertical extent of observed impacts is illustrated on the geologic cross-sections presented in Figures 4 and 5. For purposes of this report, the term residual tar is considered synonymous with the following descriptions of discrete nonaqueous phase liquid (NAPL) tar impacts: blebs, lenses, nodules, and sheen. Observations of odors and soil staining alone are not considered to be evidence of the presence of NAPL tar.

Evidence of tar was found at the site at boring locations GP-5, GP-8, GP-16, GP-20, GP-26, GP-27, and SB-25, and test pits TP-04 and TP-05 as shown on Plate 2. The tar was predominantly noted as residual tar and tar nodules in sand lenses within clayey soils and in the sand and gravel layers found at the site.

Significant tar (flowable DNAPL or a thick layer of low viscosity tar in soil) was observed at six locations: borings GP-20, GP-26, GP-27 (91 Maple Avenue), and SB-25, and test pits TP-04 and TP-05 (93B Maple Avenue). During drilling of GP-20, GP-26, and GP-27, a 0.2-foot to 0.5-foot thick lens of NAPL-coated gravels and coarse sand was observed overlaying the clay layer.

During the drilling of SB-25, which was completed within the holder foundation, sheens and tar odors were encountered from 8 to 10 feet bgs. "Runny tar streaks" were observed below the holder floor from 13 to 14 feet below grade. Trace tar nodules and streaks were observed from 15 to 17 feet bgs.

A small amount of free tar was observed seeping from the exposed walls of the former holder foundation within test pits TP-04 and TP-05 during the RI. However, five Geoprobe™ borings (SG3, SG7, GP-6, GP-10, and GP-12), which were installed within the former holder foundation, revealed the presence of hydrocarbon odor and sheen and no free tar was observed. The borings penetrated to approximately 10.5 feet, where refusal was encountered. This depth was assumed to represent the floor of the holder foundation.

One test pit (TP1) was excavated during the PSA. "Tar-like material" was observed and a slight hydrocarbon odor was noted.

While installing boring GP-1, a visible orange/greenish NAPL was detected in a 0.3-foot lens of fine sand on top of the underlying clay layer at 9 feet bgs. A visible hydrocarbon product was observed at SB/MW-01 at depth of 6 to 7 feet bgs.

A 0.4-foot layer of "dense, weathered tarry material" was observed within the fill at a depth of 3 feet bgs while installing GP-8. The material had a strong tar odor and a PID reading of 64 ppm was recorded from the material. The boring is located west of the former holder on the 93B Maple Avenue parcel.

Evidence of tar impacts was also noted as sheens in several of the borings (GP-1, GP-6, GP-16, SB-25, SB/MW-02 and GTB-2), as shown on Plate 2. As with residual tar, these impacts were predominantly found in sand lenses within clayey soils and within sand and gravel layers at the site. Where present, tar impacts at the site appear to be limited to the sand and gravels above the sandy/silty clay unit at depths not deeper than 20 feet bgs.

Naphthalene or tar-like odors were noted in GP-4, GP-6, GP-5, GP-7A, GP-8, GP-12, GP-16, GP-20, GP-26, GP-27, SB-25, SB/MW-01, SB/MW-02, GTB-2, SG1, SG3, TP-1 and TP-4 where tar blebs or tar lenses are present, with the exception of GP-4, which is located west of the former gas holder, where the tar-like odors are originating from stained timber at a depth of 4 to 8 feet bgs.

Petroleum or hydrocarbon odors were noted in SG-1, SG-6, SB/MW-02, GP-4, GP-5, GP-7, GP-7A, GP-9, GP-10, GP-13, GP-14/14A, GP-15, GP-16, SB-25, GTB-01 GTB-02, SG4, SG6, SG7, in 0.5-foot to 12-foot bands not deeper than 16 feet bgs and at SB/MW-03 within 1 foot of the

surface. While installing boring GP-7A, a very faint petroleum-like odor was noted from 8 feet to the end of the boring at 20 feet bgs. The boring was completed through a clay layer and into a sand and silt layer.

At borings PZ-01, SG-8, SG-9, GP-2, GP-3, GP-11, GP-17, GP-18, GP-19, GP-21, GP-22, GP-23, GP-24, GP-25, GP-28, GP-29, and monitoring well MW-27, no physical evidence of MGP residuals was apparent.

Tar blebs were also observed in sand lenses within the clay unit (at approximately 8 feet deep) during the drilling of SB/MW-20 and SB/MW-28. However, these tar blebs do not appear to be related to the 93B Maple Avenue site. The clay unit containing the tar blebs slopes downward from the Clove and Maple Avenues former MGP site toward the location of these two wells; therefore, the tar blebs are attributed to the Clove and Maple Avenues site (refer to GEI's *Draft Remedial Investigation Report Clove and Maple Avenues Former MGP Site*, dated March 29, 2002).

4.2.2 Chemical Analysis

Subsurface analytical samples were collected during the RI in 1998 and the SRI in 2001. The locations of the samples are presented in Plate 2 and a summary of the analytical data is presented in Table 7. Detailed results are presented in Appendix B.

The 93B Maple Avenue parcel is characterized by subsurface-soil analytical samples (SB/MW-01, SB/MW-02, SB/MW-03, TP-4 and TP-5) collected in 1998 and subsurface-soil analytical samples (GP-1 through GP-15, SB-25 and SB/MW-27) collected in 2001. BTEX concentrations were either not detected or were detected below RSCO in samples along the southwestern portion of the parcel (GP-1 through GP-4, SB/MW-02, SB/MW-27), from locations within the former gas holder (TP-5, GP-6 and GP-12) and north-northeast of the former gas holder (GP-15, SB/MW-01 and SB/MW-03). BTEX concentrations exceeded the RSCO at depths ranging from 0 to 20 feet bgs (GP-5, GP-7 through GP-11, GP-13, GP-14/14A, SB-25, and TP-4). PAH concentrations were detected in all samples except those from SB/MW-02 and SB/MW-03; however, the detection limits were elevated in these samples. The highest PAH concentrations (exceeding 500 mg/kg) are detected within the former gas holder area at depths ranging from 0 to 11 feet bgs (GP-9, GP-10, and TP-4) and in the areas west and east of the former gas holder at depths ranging from 0 to 7 feet bgs (GP-4, GP-8, GP-13 and GP-14/14A). Cyanide was detected at depths ranging from 0 to 16 feet bgs (GP-3 through GP-6, GP-8 through GP-11, GP-13 through GP-15). The highest concentration (13.5 mg/kg) of cyanide was detected at GP-14 at a depth of 0 to 4 feet bgs.

One sample collected from the most heavily impacted interval in test pit TP5 was analyzed by the Toxicity Characteristic Leaching Procedure (TCLP, see Table 8) to determine whether subsurface soils might exhibit hazardous characteristics. The TCLP criteria for hazardous waste characteristics were not exceeded. Therefore, impacted subsurface soil at the site is expected to be nonhazardous.

The 93A Maple Avenue parcel was characterized by GP-16, GP-17, GP-20, and GP-21. BTEX concentrations exceeded the RSCO at depths ranging from 8 to 12 feet bgs in GP-16 and GP-20; the highest BTEX concentration was detected at 38 mg/kg in GP-16 and GP-20. These samples were collected in the sand/gravel lens above the clay layer. PAH concentrations exceeded the RSCO in all samples at depths ranging from 0 to 16 feet bgs. The highest PAH exceedance was detected at a concentration of 1,482 mg/kg in GP-20 at a depth of 8 to 11 feet bgs. Cyanide was not detected at any location.

The 91 Maple Avenue parcel was characterized by GP-18, GP-19 and GP-26 through GP-29. BTEX concentrations exceeded the RSCO at depths ranging from 8 to 12 feet bgs in GP-26 and GP-27; the highest BTEX concentration was detected at 552 mg/kg in GP-26. These samples were collected in the sand/gravel lens above the clay layer. PAH concentrations exceeded the RSCO in all samples at depths ranging from 0 to 12 feet bgs. The highest PAH exceedance was detected at a concentration of 2931 mg/kg in GP-26 at a depth of 8 to 11 feet bgs. Cyanide was detected at three locations at depths ranging from 0 to 8 feet bgs (GP-18, GP-19 and GP-28). The highest concentration (1.74 mg/kg) of cyanide was detected at GP-18 at a depth of 4 to 8 feet bgs.

The 87 Maple Avenue parcel was characterized by GP-22 and GP-23. No BTEX concentrations were detected at depths ranging from 0 to 12 feet bgs. PAH concentrations exceeded the RSCO in both samples at depths ranging from 0 to 8 feet bgs. The highest PAH exceedance was detected at a concentration of 23.1 mg/kg in GP-23 at a depth of 4 to 8 feet bgs. Cyanide was not detected at either location.

The 6 Tor Avenue parcel was characterized by GP-24 and GP-25. No BTEX concentrations were detected at depths ranging from 0 to 12 feet bgs. PAH concentrations exceeded the RSCO in both samples at depths ranging from 0 to 8 feet bgs. The highest PAH exceedance was detected at a concentration of 52 mg/kg in GP-25 at a depth of 4 to 8 feet bgs. Cyanide was detected only at one location at a depth of 4 to 8 feet bgs (GP-25, 1.61 mg/kg). Cyanide was not detected at any other location.

4.2.3 Summary of Findings

The subsurface soils at the site and the parcels located southwest of the site have been impacted by MGP residuals. BTEX and PAH compounds exceed the RSCO on the site and on surrounding parcels. Cyanide has been detected on the site and on surrounding parcels. The most significant impacts appear to be in the former gas holder area and on the parcels southwest of the site, where trace tar has been observed. The extent of the observed MGP residual tar appears to be limited based on the boring data that have been collected.

4.3 Groundwater

Three monitoring wells (MW-01 through MW-03) were sampled during the RI in February 1999. Samples were analyzed for VOCs, PAHs, TAL metals, total and WAD cyanide, and various geochemical analyses. Two monitoring wells (MW-01 and MW-02) were sampled in November of 2001 and analyzed for amenable cyanide and PCBs in addition to the analysis performed in 1999. Four monitoring wells (MW-01, MW-02, MW-03, and MW-27) were sampled in December 2001 and analyzed for VOCs, PAHs, and total, digestion, and WAD cyanide. Prior to sampling, all wells were checked for the presence of measurable light nonaqueous phase liquid (LNAPL) and/or DNAPL. No LNAPL or DNAPL was detected in any of the wells on the site. The results are summarized in Figure 7 and presented in Table 9. The NYSWQS are included in a column in Table 9. Laboratory data are included in Appendix B.

Groundwater flow direction at the site is generally to the southeast (Figure 6), consistent with the site topography.

BTEX was not detected in wells MW-02, MW-03, or MW-27. In November 2001, 1,2-Dichloroethane was detected in MW-02 at a concentration of 3 parts per billion (ppb), which exceeds the NYSWQS; however, it was not detected in the well in December 2001. Benzene was detected in MW-01 during several sampling events at concentrations ranging from 51 ppb to 880 ppb. Total xylenes and benzene concentrations exceeded the NYSWQS in MW-01. Acetone and methylene chloride, common laboratory contaminants, were also detected MW-01 at 5 ppb (February 1999) and 30 ppb (November 2001), respectively.

The highest concentration of total PAH sampled during the RI was collected in November 2001 in the sample from MW-01, which is adjacent to the former gas holder foundation. The total PAH concentration in this well ranged from 4 ppb in December 2001 to 68.7 ppb in November 2001. Acenaphthene was detected and/or exceeded the NYSWQS in each sample from MW-01. Naphthalene (generally more soluble and mobile than the other PAHs) was detected at concentrations in excess of the NYSWQS in groundwater samples from MW-01 (February 1999)

and MW-02 (December 2001) wells. Other PAHs were also detected in excess of the NYSWQS in monitoring wells MW-01 and MW-02.

Several inorganic compounds were detected in groundwater samples collected at the site. Aluminum, iron, chromium, copper, lead, magnesium, manganese, sodium, and vanadium exceeded NYSWQS. High concentrations of several of these compounds (aluminum, iron, chromium, copper, and magnesium) were detected in background surface-soil samples located throughout the village of Haverstraw and are discussed in subsection 4.1. Others are common in groundwater and are not necessarily related to former MGP operations. Cyanide was detected only in well MW-01 at concentrations approximately twice the NYSWQS. WAD and amenable cyanide were also detected in well MW-01.

4.4 Stormwater

Four stormwater samples and a blind duplicate sample (SW013102-1, SW013102-5, SW013102-6, SWOUT013002-1, and SW-013102-8) were collected in January 2002 from the storm drainage system near the site to evaluate the site's potential impact on stormwater. Plate 1 depicts the sampling locations. Detailed sample results are presented in Table 10. Stormwater sample results were compared to the New York State Ambient Groundwater Criteria for regulatory compliance, which are more inclusive than the New York State Groundwater Effluent Limitations. Laboratory data are included in Appendix B. The sampling event was performed immediately following a rain event. Previous attempts to collect samples 48 hours after a rain event (as originally described in the RI Work Plan) were unsuccessful because of insufficient flow.

One sample (SW013102-1) was collected from a manhole on Tor Avenue upstream of the site (Plate 1). At the time of sampling, the manhole was clear of debris and no surface flow was present along Tor Avenue.

Two downstream samples (SW013102-5, SW013102-6) were collected at catch basins located in the rear parking lot of the Apartment Complex buildings, located southeast of the site (Plate 1). One sample (SW013102-6) was collected at the downstream confluence of the drainage systems for Maple Avenue and the apartment complex. At the time of sampling, both catch basins contained decaying organic matter (leaves, etc.). Automobiles were parked in this area throughout the investigation, including two abandoned severely damaged vehicles proximate to the SW013102-5 sample location.

One downstream sample (SWOUT013002-1) was collected at the outfall location at the embayment of the Hudson River.

Various VOCs and PAHs were detected in the upstream stormwater sample, SW013102-1, including toluene (2 ppb), perchloroethylene (PCE) (0.6 ppb) and 7 ppb total PAHs (5 ppb non-carcinogenic, 2 ppb carcinogenic).

Total BTEX concentrations in downstream samples ranged from 2 ppb (SW013102-5) to 10 ppb (SW013102-6). Benzene, ethylbenzene, and xylene were detected in the downstream samples and at the outfall. The concentrations of benzene, ethylbenzene, and xylenes were lowest at the sample location SW013102-5, closest to the 93B Maple Avenue site, and no BTEX constituents exceeded the NYSWQS criteria. The concentrations increased further downstream of the site at the locations of SW013102-6 and SWOUT013102-1 with benzene exceeding its NYSWQS at both locations (5 ppb and 4 ppb, respectively).

Carcinogenic PAHs were not detected in any sample downstream of the 93B Maple Avenue site; however, chrysene and indeno[1,2,3-cd]pyrene were both detected at 1 ppb in the upstream sample SW013102-1 in excess of the NYSWQS for these compounds. Non-carcinogenic PAHs were detected in the upstream sample as well as in each of the three downstream samples. Non-carcinogenic PAHs were not detected at levels exceeding the NYSWQS in any sample. The downstream total PAH concentrations ranged from 11 ppb at SW013102-5 (nearest the site) to a maximum of 26 ppb at SW013102-6 (further downstream of the site).

WAD cyanide was not detected in the upstream or downstream stormwater samples. Total cyanide was not detected in any of the downstream samples; however, 29.4 ppb total cyanide was detected in the upstream sample SW013102-1.

The lower BTEX and PAH concentrations in SW013102-5 (nearest the 93B Maple Avenue site) and the increase in BTEX and PAH concentrations in the stormwater samples further downstream of the 93B Maple Avenue site indicates that the 93B Maple Avenue site is not the source of impacts to the storm sewer system, and that these impacts are coming from another location. Geologic evidence and contaminant extent data gathered from the Apartment Complex parcel and information gathered during the investigation of the Clove and Maple Avenues former MGP site indicate that the Clove and Maple Avenues former MGP site is contributing to the BTEX and PAH concentrations detected in the stormwater samples collected downstream of the 93B Maple Avenue site (refer to GEI's *Draft Remedial Investigation Report, Clove and Maple Avenues Former MGP Site*, dated March 29, 2002).

In addition, the extent of subsurface-soil and groundwater impacts related to the 93B Maple Avenue former MGP site is limited to the 93B, 93A, and 91 Maple Avenue parcels, as evidenced by the samples collected at the site boundaries.

It should also be noted that the stormwater system is receiving runoff from streets and other properties in the area. Urban runoff may include petroleum products and residuals from automobile leaks and maintenance activities. The presence of toluene, other non-MGP related VOCs, and PAHs in the upstream sample confirms that urban runoff is impacting the storm sewer system independent of any impacts related to either of the former MGP sites.

4.5 Storm Sewer Sediments

One sediment sample was collected from a catch basin downstream of the site. The location is provided in Plate 1 and detailed sample results are provided in Table 11.

The sample, SD013102-6, was collected at the catch basin connecting the Maple Avenue drainage system to the drainage from the northeast of the Apartment Complex. The sample collected from this location contained detectable concentrations of VOCs at 80 ppb BTEX. This sample contained detections of numerous PAHs totaling 72 ppm total PAHs (72 ppm non-carcinogenic, 1 ppm carcinogenic).

The sediments in the drainage system are impacted by VOCs and PAHs; however, the impacts do not appear to be related to the site. As with the stormwater samples, the drainage system receives runoff from streets and other properties in the area. Urban runoff may include petroleum products and residuals from automobile leaks and maintenance activities. It is likely that hydrocarbon compounds in runoff from Maple Avenue and the rear of the Apartment Complex contributed to the concentrations detected in the storm sewer system. In addition, the extent of impacts related to the Clove and Maple Avenues former MGP site suggests that the storm sewer culvert is likely intercepting groundwater impacted with BTEX and PAH constituents originating from the Clove and Maple Avenues site (see GEI's *Draft Remedial Investigation Report, Clove and Maple Avenues Former MGP Site*, dated March 29, 2002).

4.6 Hudson River Embayment Sediments

An additional line of evidence indicating that impacts to the storm sewer water and sediments is related to the Clove and Maple Avenues former MGP site and not to the 93B Maple Avenue site comes from a fingerprint analysis performed on a sediment sample collected immediately adjacent to the outfall for the storm sewer culvert. The sample was analyzed by Meta Environmental, Inc. and the PAH results were compared to the PAH distributions from Meta's library of MGP samples. The fingerprint analysis determined that the sediment sample from below the storm sewer outfall was of carbureted water gas origin and that the PAH ratios in the sediment sample matched those in a sample of tar obtained from the Clove and Maple Avenues site. Based on the known history of the two MGPs, it is not thought that carbureted water gas

was a production method used at the 93B Maple Avenue site. Therefore, it is believed that tar impacts from the Clove and Maple Avenues site have extended to the location of the storm sewer culvert beneath the alleyway and the culvert has transported impacted media to the location immediately beneath the outfall location on the embayment. The analytical results and Meta's report are included in GEI's *Draft Remedial Investigation Report, Clove and Maple Avenues Former MGP Site*, dated March 29, 2002.

5. Contaminant Fate and Transport

This section provides an analysis and discussion of the data presented in previous sections to provide an interpretation of the interaction between physical and chemical processes which characterize areas of contamination at the 93B Maple Avenue former MGP site. Through an understanding of sources, migration pathways, and potential receptors, the need for remedial actions to protect human health and the environment can be evaluated.

The following analysis takes into account the physical characteristics and surroundings of the site and study area, the groundwater hydrology, the site geology, the site history, the nature of the chemical compounds encountered during the sampling and analysis program, and any apparent trends in the distribution of these materials on or adjacent to the site. This section provides a discussion of the physical, chemical, and biological characteristics of contaminants of concern (COCs), and a discussion of the sources, migration pathways, and receptors for those COCs associated with the site. COCs are defined as those contaminants that are present within each media at concentrations exceeding the applicable standards.

The environmental media that may serve as pathways for contaminant migration are DNAPL, surface soil, subsurface soil, groundwater, Hudson River sediments, and stormwater runoff.

5.1 DNAPL

For the purpose of this discussion, DNAPL is defined as the visual observation of tar-saturated material or soil containing tar blebs or tar lenses. DNAPL was observed in several borings and one monitoring well on site. Plate 2 illustrates the locations at which DNAPL was encountered. The DNAPL at the site does not appear to be present in a continuous phase; rather it is present in intermittent lenses of pervious material. Except at the location of test pits TP-04 and TP-05 where DNAPL seeped into the test pits from the exposed holder wall, the remaining DNAPL at the site appears to be in a residual state and is likely to be in a stable state. With the exception of TP-04 and TP-05, the DNAPL observed at the site is limited in quantity, which is characteristic of residual conditions. Since large volumes of DNAPL were not generally encountered and evidence of DNAPL flowing along the clay surface was not encountered, it does not appear that DNAPL continues to migrate from the site. Therefore, it is assumed that DNAPL migration has reached steady-state conditions.

The DNAPL at the site appears to be confined to the former holder foundation, the underlying sand bed, and in discontinuous adjacent areas within sand and gravel lenses. The primary contaminants in the DNAPL are BTEX and PAHs.

It appears that releases of DNAPL from the MGP area generally migrated downward through the permeable fill and sand unit. Downward migration continued until the less permeable clay unit or until a more permeable sand lens was encountered. Upon reaching the top of the clay unit or a permeable lens, DNAPL migrated laterally along the top of the clay or through the lens following a gravity gradient. The top of the clay unit is irregular, and the DNAPL appears to pool in low points on the clay surface, as shown in cross section A-A' in Figure 4.

The clay unit appears to be confining and prevents DNAPL movement into deeper soil zones. No evidence of DNAPL or odors was detected beyond the surface of the clay at any of the locations in which it was encountered.

DNAPL present within the subsurface will continue to be a source of groundwater contamination. As groundwater passes through subsurface material containing DNAPL, BTEX and lighter-end PAHs will solubilize into groundwater. The heavier-end PAHs generally remain sorbed to the soil and typically do not dissolve into groundwater.

5.2 Surface Soil

PAHs, cyanide, and metals were identified as COCs in surface soil. These contaminants were detected throughout the site with higher concentrations in the vicinity of some of the former MGP structures. The surface of the site is primarily gravel/crushed stone covered with some sparsely vegetated areas and some areas with grass cover.

These COCs could potentially migrate via volatilization, fugitive dust emissions, and dissolution of contaminants into surface water. Each of these pathways and its potential to occur at the site are described as follows.

- **Volatilization.** Describes the movement of a chemical from the surface of a liquid or solid matrix to a gas or vapor phase. PAHs and inorganics do not readily volatilize; therefore, volatilization is not a likely pathway for migration.

- **Fugitive Dust.** Contaminants sorbed to soil particulates could be transported as fugitive dust if exposed to wind erosion. PAHs exhibit varying degrees of binding affinity to organic matter and soil particles; this affinity is partly dependent upon their individual molecular structures. In general, the higher molecular weight PAHs (e.g.,

benzo(a)pyrene) are strongly sorbed, whereas the lighter-weight PAHs (e.g., naphthalene) are less strongly sorbed (EPA, 1979; EPA, 1986). Therefore, the higher molecular weight PAHs are expected to remain sorbed to soils, while the lighter-end PAHs may be desorbed and transported by other mechanisms. Inorganics also generally exhibit an affinity to particulates. The poorly vegetated areas of the site may be prone to transport of surface soils via fugitive dust emissions.

- **Solubility.** This is the measure of a chemical's ability to dissolve in water. COCs sorbed to soil may dissolve in water as surface water, which then infiltrates into the ground or runs off the site. PAHs have a varying degree of solubility. The lighter-end PAHs are more soluble while the heavier-end PAHs are less soluble and typically do not dissolve into water. Cyanide typically present at MGP sites is in the form of ferric ferrocyanide, or Prussian Blue. Ferric ferrocyanide is relatively insoluble in normal to low pH conditions. Given the nature of the compounds in the surface soil, dissolution of compounds in surface water is likely not a major migration pathway.

Migration of contaminants from the surface soil is possible at the site, but primarily through the transport of particulates. The nature of the COCs is such that they are relatively persistent in soils and would likely remain attached to soil particulates.

5.3 Subsurface Soil

BTEX, PAHs, and metals were identified as COCs in subsurface soil. Plate 2 presents a summary of the soil analytical results for BTEX and PAHs. In general, the distribution of BTEX and PAHs in soil coincides with the presence of DNAPL. Section 4 discusses the extent of contaminants (BTEX and PAHs) associated with the presence of DNAPL.

The COCs could potentially migrate through the subsurface soil by volatilization, sorption, and solubility. Each migration pathway, as it relates to the COCs identified in subsurface soil at the site, is discussed below.

- **Volatilization**. BTEX constituents are highly volatile and are therefore readily transported into the atmosphere from surficial soil and groundwater. PAHs and metals do not readily volatilize. BTEX constituents present within subsurface soil would have to volatilize into the soil gas and then into the ambient air into confined subsurface voids or into indoor air (through basements). BTEX impacts at the site in close proximity to the buildings are minimal; therefore, volatilization of BTEX at the site into the indoor air in buildings is not a significant pathway for BTEX migration.

- **Sorption**. This is usually defined as the reversible binding of a chemical to a solid matrix. However, there is evidence in the published literature that there is a partially irreversible component related to the time that the compound has been sorbed. Sorption of these compounds limits the fraction available for other fate processes such as volatilization and/or solubility. In general, BTEX compounds have low sorption potential, coupled with high water solubility and high volatility, which make sorption a relatively minor environmental fate process for BTEX compared to other mechanisms. PAHs exhibit varying degrees of binding affinity to organic matter and soil particles; this affinity is dependent upon their individual molecular structures. In general, the higher molecular weight PAHs (e.g., benzo(a)pyrene) are strongly sorbed, whereas the lighter weight PAHs (e.g., naphthalene) are less strongly sorbed (EPA, 1979; EPA, 1986). Therefore, the higher molecular weight PAHs are expected to remain sorbed to soils, while the lighter-end PAHs may be desorbed and transported by other mechanisms. Metals may remain sorbed to the subsurface soils depending on subsurface oxidation-reduction conditions and the availability of anions that the metals could bind with. Metals that do not remain sorbed to subsurface soils could be available for transport through the groundwater system in solution (see below).

- **Solubility**. BTEX has a high solubility. PAHs have varying degrees of solubility. The lighter-end PAHs are more soluble while the heavier-end PAHs are less soluble and typically do not dissolve into groundwater. Since DNAPL was encountered below the water table and BTEX and lighter-end PAHs are COCs in subsurface soil, dissolution of these contaminants from soil to groundwater is expected to be a principal migration pathway. Metals in the subsurface soils could dissolve and continue to leach to the groundwater system. However, the solubility of metals is highly dependent upon the oxidation-reduction conditions of the aquifer, the valance state of the specific metal, and the availability of anions that the metals could bind with to become immobile. Dissolution of metals in the subsurface soils and transport in the dissolved state through the groundwater system is not considered to be a major transport mechanism.

In summary, although certain site-specific conditions such as the presence of DNAPL can prolong their persistence, the VOCs associated with the site tend to be mobile and not particularly persistent in the surrounding environment due to their high volatility, low adsorption to soils, and high water solubility. With few exceptions, the PAHs associated with the site will be relatively persistent in on-site soil matrices. This is primarily due to their generally low water solubility and high sorption to soils. Metals in soil are also anticipated to be relatively persistent.

5.4 Groundwater

BTEX, PAHs, and cyanide have been identified as COCs in groundwater. It should be noted that inorganics were also detected in groundwater at levels exceeding the NYSWQS. However, many of these inorganics are naturally occurring compounds and may be representative of background conditions.

Groundwater impacts are present within the immediate areas where residual DNAPL was observed (e.g., MW-01 and MW-02 proximate to the former holder). In addition, dissolved phase groundwater contaminants (BTEX and light-end PAHs) appear to be migrating from areas where residual DNAPL is present.

From the likely release points within the former MGP footprint, DNAPL likely migrated along the clay surface to low points in the areas of GP-16 and SB-25. This migration appears to have resulted in a discontinuous band of DNAPL that may act as a continuing source of groundwater contamination. Groundwater flows to the southeast, across the former holder foundation and the extent of observed residual DNAPL. As the groundwater flows through this area of residual DNAPL, it will continue to desorb BTEX and light-end PAH compounds, creating a groundwater plume that appears to extend to the area between SB/MW-01 and SB/MW-03 in the direction of groundwater flow. The lack of dissolved-phase BTEX components or PAHs in MW-27 northwest of the former holder suggests that the continuing source of the groundwater plume is the former holder foundation and its contents.

As previously discussed, tar blebs observed at the locations of SB/MW-20 and SB/MW-28 on the Apartment Complex parcel are related to the Clove and Maple Avenues site, and therefore the fate and transport for this area is not addressed in this report.

The contaminant concentrations within the area of DNAPL impacts are likely in a steady-state condition, where the rate of dilution from inflowing clean water equals the rate of dissolution of contaminants from the DNAPL. The likely age of the release (on the order of 100 years) would have allowed the groundwater system on the site to reach steady state. The leading edge of the dissolved phase plume in the southeasterly direction has been identified. If MGP-impacted groundwater from the 93B Maple Avenue site continued to migrate southeasterly, it would be intercepted by the storm sewer culvert. However, as discussed in subsection 4.4, BTEX and PAH concentrations in stormwater at the sample point SW013102-5 (closest to the site) are lower than those concentrations further downstream in the storm sewer culvert. These findings support the assumption that the leading edge of the groundwater plume beneath the 93B Maple Avenue site is likely in steady state and does not continue to flow toward the storm sewer

culvert. The stormwater impacts observed further downstream in the culvert are attributed to the Clove and Maple Avenues site.

One pathway of potential concern is the volatilization of contaminants in groundwater into indoor air in the building on the 93B Maple Avenue parcel and on the parcels to the southwest and northwest. VOCs, including BTEX, were detected in groundwater from MW-01; however, no BTEX was detected in soil samples from borings GP-22, GP-23, GP-28, or GP-29. These soil samples were collected at the water table interface or in the saturated zone. Based on this analysis, it does not appear that BTEX has migrated beneath the buildings to the southwest and northwest. BTEX was detected at concentrations of less than 5 ppm in soil samples from borings GP-5 and GP-9. The adjacent concrete block structure does not have a basement, which significantly reduces possible buildup and exposure to VOCs, and the BTEX is at low concentrations at depths exceeding 6 feet below grade. Therefore, volatilization of BTEX compounds to the indoor air does not appear to be a significant pathway of concern.

Based on the decreasing concentrations of the COCs in the wells progressing from northwest to southeast. It appears that BTEX compounds have attenuated between SB/MW-01 and SB/MW-03. It is not likely that the dissolved phase plume will reach the nearest surface water body; however, if it did, volatilization and dilution would minimize or eliminate any impacts.

5.5 Stormwater Runoff

Stormwater may be a transport mechanism at the site because runoff from the site could carry particulates into the storm drainage system or infiltrating precipitation could leach chemicals from the soils and transport them to the groundwater. Stormwater samples were collected from the storm drainage system near the site. Although the downstream stormwater appears to be impacted, the impacts do not appear to be site related. The sediment samples collected from the storm drainage system did not indicate site-related impacts. The sediment in the catch basin is periodically cleaned out by city workers, so any accumulations of contaminants would be removed, thus minimizing migration of contaminants clinging to particulates. Additionally, the majority of the site is gravel/stone covered, which minimizes soil erosion and particulate transport. Based on the data and the site conditions, stormwater transport does not appear to be a transport mechanism of concern at the site.

6. Conceptual Site Model

This section discusses the conceptual site model as it pertains to the nature of the MGP sources, contaminated media, migration pathways, and receptors. From all the investigations that have taken place on the site it has become apparent that the area of concern is that surrounding the former subsurface gas holder foundation.

The gas holder foundation, located in the center of the open lot on 93B Maple Avenue, exists as a relic subsurface MGP structure. At its decommissioning, fill material was used to backfill the brick-lined holder tank. Some tar or tarry material remained in the tank and was mixed with the fill. This tar represents the source of tar or DNAPL-impacted soils on the site. Figure 4 presents a vertical depiction of where the source materials were found.

The silty, fine- to coarse-grained sand under the holder floor may have been impacted by tar seepage through the brick floor of the holder. Its vertical movement downward has been confined by the nature of the soils under the sands, namely the clay and clay/silt/sand unit. DNAPL located horizontally away from the holder may have been the result of lateral seepage that migrated from the holder through coarse materials.

The source material is mostly in the form of discontinuous lenses found mostly in sand or gravel layers. Only one location, the north and northeast side of the holder foundation wall, had flowing tar. All other tar or DNAPL-impacted areas were areas where the tar has remained stable and migration has ceased. There is no continuing source of tar and what the field observations indicate is that the tar is in a steady-state condition.

The physical nature of the soils on the site and the limited nature of the source resulted in a contaminant distribution that is confined and very limited. Beyond the immediate area of the holder foundation, the only other discontinuous layer of source is within a sand and gravel lens, less than 0.5-foot thick, at depth impacting the rear portions of the properties at 91 and 93A Maple Avenue.

Zones that are contaminated but do not contain source or residual NAPL surround the source areas. These areas are distinguished as having sheens and odors. Concentrations of BTEX and PAHs are significantly reduced between source and fringe areas.

Groundwater is impacted in areas associated with DNAPL residuals and the gas holder foundation. Dissolved MGP waste constituents, namely BTEX and PAHs, are also limited in

extent. Groundwater flows across the site from northwest to southeast, in the general direction of the Hudson River. MW-03 is located in the furthest downgradient location and it has not been impacted by the site. Therefore, groundwater impacts are limited to the immediate area around the former gas holder.

Subsurface infrastructure (i.e., storm sewer culvert) beneath the alleyway adjacent to the site is located outside of the DNAPL-impacted areas. Groundwater near the storm sewer is not impacted from the site, as seen in the results obtained from monitoring well MW-03. Stormwater flowing through the culvert under the alleyway appears to be impacted to some degree by hydrocarbon sources associated with runoff upgradient of the site. The storm sewer culvert is likely intercepting impacts extending from the Clove and Maple Avenues site, and not from the 93B Maple Avenue site. Tar blebs originating from the Clove and Maple Avenues site are present near the water table at the location of SB/MW-28 adjacent to the storm sewer culvert. The culvert crosses the water table. In addition, stormwater concentrations of BTEX and PAH constituents at the nearest downstream catch basin to the 93B Maple Avenue site are lower than those further downstream, further indicating sources other than the 93B Maple Avenue site.

7. Qualitative Risk Assessment

This section addresses the qualitative risks posed to human receptors by contaminants of concern that are present in media in excess of the NYSDEC standards, criteria, and guidance (SCG) values. The qualitative risk assessment identifies the COCs at the study area, the media in which COCs are present (potential exposure points), the potential exposure routes to the COCs, and the assumed potential receptors. Sections 4, 5, and 6 of this report document the source of the COCs, the nature of the contaminants, and the transport mechanisms that account for the distribution of COCs. This information is then used to present a summary of complete exposure pathways. It is important to note that this qualitative risk assessment assumes that contaminant conditions have not or will not be mitigated. In this sense, a "baseline" of potential exposures is presented.

The potential risks posed to fish and wildlife are addressed in the Step IIA and IIB FWIA summarized in subsection 3.10.

7.1 Contaminants of Concern

Contaminants of concern are identified as PAHs, VOCs, and cyanide exceeding soils TAGM values and/or NYSWQS or background concentrations. Where NYSDEC SCGs were not present (i.e., cyanide criteria for soil), EPA criteria were used for the screening comparison.

7.2 Potential Exposure Points and Screening Criteria

The following media potentially contain COCs within the study area. The analytical results presented in Section 4 of this report were compared against the screening criteria presented below. If, for a specific parcel and a specific media, one or more constituent COC(s) exceeded the screening criteria, then for that parcel or media, there exists a potential exposure point. Tables 12 through 16 identify the COCs for a media at each parcel and identify whether the screening criteria are exceeded, thus creating a potential exposure point.

- **Surface Soil** results were compared against RSCOs as presented in TAGM 4046 and/or background concentrations
- **Subsurface Soil** results were compared against RSCOs
- **Groundwater** results were compared against NYS Ambient Groundwater Quality Standards per PART 703

As discussed in Sections 4, 5, and 6, stormwater, storm sewer sediment, and Hudson River embayment sediment impacts are not attributed to the 93B Maple Avenue former MGP site, therefore, those media are not included as potential exposure points.

7.3 Potential Receptors and Routes of Exposure

The potential receptors for each COC in each media were determined based on current land use for each parcel or area of the site and based on foreseeable potential future land uses.

The following potential human receptors were identified and evaluated as part of the qualitative risk assessment.

93B Maple Avenue MGP Parcel

The former MGP parcel is owned by O'Kane Associates and is primarily used as a contractor's yard for storage of equipment and for loading of vehicles. The parcel includes a 6-foot high chain-link fence and has a closed-circuit video monitoring system. While the site is not controlled by O&R, the presence of the chain-link fence limits potential trespassers and passersby from accessing the site. The yard is also gravel covered and therefore limits the potential for incidental dermal contact with surface soils, as well as limiting the potential for inhalation of fugitive dust. The potential receptors for this parcel also include potential users of the parcel should it be redeveloped for an unrestricted (residential) use sometime in the future.

- **O'Kane Associates Employee** – includes employees who traverse the site during their workday. An employee potentially could undertake shallow soil excavations while working in the yard (e.g., to install a sign post or other improvement). An O'Kane Associates employee may be exposed to surface soils or shallow subsurface soils through incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

- **Utility Worker** – individuals who would perform short duration repairs to underground utilities. These individuals may be exposed to shallow soils (typically 6 feet bgs or less) during excavation activities through incidental ingestion, dermal contact, inhalation of volatilized compounds and fugitive dust, and contact with shallow groundwater.

- **Trespasser** – includes local residents who may access the site periodically even though the site is fenced. Trespassers may be exposed to surface soils through

incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

- **Construction Worker** – a construction worker may contact surface soils, deep and shallow subsurface soils, and groundwater. The construction worker may be exposed to contaminants through incidental ingestion, dermal contact, inhalation of volatilized compounds and fugitive dust, and contact with shallow groundwater.

- **Future Resident** – The site is currently owned and controlled by O'Kane Associates. The site is in a residential area and, therefore, potentially could be redeveloped for an unrestricted residential land use. Under such an unrestricted land use scenario, if contaminant conditions were unchanged, a future resident may contact contaminants in surface soils, subsurface soils, and groundwater. The potential future resident could be exposed to contaminants through incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

93A Maple Avenue Parcel

This parcel is also owned by O'Kane Associates. It includes one structure and a bituminous pavement driveway. A small area of unpaved ground is present behind the structure. The following potential receptors were identified for the 93A Maple Avenue parcel.

- **O'Kane Associates Employee** – includes employees who traverse the site during their workday. An employee potentially could undertake shallow soil excavations while working in the yard (e.g., to install a signpost or other improvement). An O'Kane Associates employee may be exposed to surface soils or shallow subsurface soils through incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

- **Passerby/Trespasser** – Passersby include visitors who infrequently traverse the property. Trespassers may also access the 93A Maple Avenue parcel since it is not fenced. Although most of the parcel is covered by the structure or by the paved driveway, passersby and trespassers may be exposed to surface-soil contaminants through incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

- **Utility Worker** – individuals who would perform short duration repairs to underground utilities. These individuals may be exposed to shallow soils (typically 6 feet bgs or less) during excavation activities through incidental ingestion, dermal

contact, inhalation of volatilized compounds and fugitive dust, and contact with shallow groundwater.

- **Construction Worker** – a construction worker may contact surface soils, deep and shallow subsurface soils, and groundwater. The construction worker may be exposed to contaminants through incidental ingestion, dermal contact, inhalation of volatilized compounds and fugitive dust, and contact with shallow groundwater.

- **Future Resident** – The site is currently owned and controlled by O'Kane Associates. The site is in a residential area and, therefore, potentially could be redeveloped for an unrestricted residential land use. Under such an unrestricted land use scenario, if contaminant conditions were unchanged, a future resident may contact contaminants in surface soils, subsurface soils, and groundwater. The potential future resident could be exposed to contaminants through incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

6 Tor Avenue Parcel

This parcel is currently a residential parcel, including a residential structure and grass front and back yards. It is assumed that future use will be the same as the current use. The following potential receptors were identified for this parcel.

- **Resident** - Under such an unrestricted land use scenario, if contaminant conditions were unchanged, a resident may contact contaminants in surface soils, subsurface soils, and groundwater. The resident could be exposed to contaminants through incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

- **Passerby** – Passersby include visitors who infrequently visit the residential property. Passersby may be exposed to surface-soil contaminants through incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

- **Utility Worker** – individuals who would perform short duration repairs to underground utilities. These individuals may be exposed to shallow soils (typically 6 feet bgs or less) during excavation activities through incidental ingestion, dermal contact, inhalation of volatilized compounds and fugitive dust, and contact with shallow groundwater.

- **Construction Worker** - a construction worker may contact surface soils, deep and shallow subsurface soils, and groundwater. The construction worker may be exposed

to contaminants through incidental ingestion, dermal contact, inhalation of volatilized compounds and fugitive dust, and contact with shallow groundwater.

87 Maple Avenue Parcel

This parcel is currently a residential parcel, including a residential structure and grass front and back yards. It is assumed that future use will be the same as the current use. The following potential receptors were identified for this parcel.

- **Resident** - Under such an unrestricted land use scenario, if contaminant conditions were unchanged, a resident may contact contaminants in surface soils, subsurface soils, and groundwater. The resident could be exposed to contaminants through incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

- **Passerby** – Passersby include visitors who infrequently visit the residential property. Passersby may be exposed to surface soil contaminants through incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

- **Utility Worker** – individuals who would perform short duration repairs to underground utilities. These individuals may be exposed to shallow soils (typically 6 feet bgs or less) during excavation activities through incidental ingestion, dermal contact, inhalation of volatilized compounds and fugitive dust, and contact with shallow groundwater.

- **Construction Worker** - a construction worker may contact surface soils, deep and shallow subsurface soils, and groundwater. The construction worker may be exposed to contaminants through incidental ingestion, dermal contact, inhalation of volatilized compounds and fugitive dust, and contact with shallow groundwater.

91 Maple Avenue Parcel

This parcel is currently a residential parcel, including a residential structure and bare soil in the front and back yards. It is assumed that future use will be the same as the current use. The following potential receptors were identified for this parcel.

- **Resident** - Under such an unrestricted land use scenario, if contaminant conditions were unchanged, a resident may contact contaminants in surface soils, subsurface soils, and groundwater. The resident could be exposed to contaminants through

incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

- **Passerby** – Passersby include visitors who infrequently visit the residential property. Passersby may be exposed to surface-soil contaminants through incidental ingestion, dermal contact, and inhalation of volatilized compounds and fugitive dust.

- **Utility Worker** – individuals who would perform short duration repairs to underground utilities. These individuals may be exposed to shallow soils (typically 6 feet bgs or less) during excavation activities through incidental ingestion, dermal contact, inhalation of volatilized compounds and fugitive dust, and contact with shallow groundwater.

- **Construction Worker** - a construction worker may contact surface soils, deep and shallow subsurface soils, and groundwater. The construction worker may be exposed to contaminants through incidental ingestion, dermal contact, inhalation of volatilized compounds and fugitive dust, and contact with shallow groundwater.

7.4 Assessment of Exposure Pathways

Using the data collected during the PSA and RI sampling programs, each potential exposure pathway identified above is assessed in the following section. A complete exposure pathway exists when a COC is present in a media above the screening criteria (potential exposure point) and a potential receptor can be exposed to that COC through one or more of the exposure routes identified in subsection 7.3. For purposes of this qualitative risk assessment, for each media at each portion of the site, a potential exposure point was identified if the analytical results for at least one constituent COC exceeded the screening criteria identified in subsection 7.2. An exposure pathway therefore exists if there is a potential for a receptor to be exposed through one or more exposure routes to the specific exposure point based on the specific land use and impacted media.

An example of a complete exposure pathway would be a utility worker excavating a 3-foot-deep pit to perform utility repairs on gas lines. If the soils contain COCs (BTEX, PAHs, or cyanide) at concentrations greater than the RSCOs (exposure point), then a complete exposure pathway exists for the utility worker potentially contacting those soils, or potentially inhaling volatilized compounds or particulates from the excavation (route of exposure).

Tables 12, 13, 14, 15, and 16 present a matrix for each parcel or part of the study area where COCs are known to exist. The matrices identify the COCs, compare them against identified

screening criteria, and then determine if a complete exposure pathway exists for the potential receptors at each of the parcels. A discussion of the potential exposure at each parcel based on specific site conditions follows.

93B Maple Avenue MGP Parcel

Surface Soil

A complete exposure pathway to PAHs contained in surface soils exists for O'Kane Associates employees, trespassers, utility and construction workers and potential future residents at this parcel. However, the potential for incidental contact or ingestion by the employees or trespassers is limited because the parcel is gravel covered. In addition, the gravel cover limits the potential for airborne particulates to be inhaled by the potential receptors. Exposure to PAHs in the surface soils would only occur if one of the potential receptors were to disturb the gravel cover and/or excavate shallow soils on the parcel.

Subsurface Soil

A complete exposure pathway to BTEX and PAH compounds in subsurface soils exists for O'Kane Associates employees, utility and construction workers and potential future residents at this parcel. This exposure would only occur if one of the potential receptors were to conduct excavation activities on the parcel.

Groundwater

A complete exposure pathway to BTEX, PAHs, and cyanide in groundwater exists for O'Kane Associates employees, utility and construction workers, and potential future residents at this parcel. BTEX compounds were only present in one well (MW-1). The only building on this parcel is a slab-on-grade constructed concrete block structure. The lack of a basement limits the potential for VOC accumulation, and therefore limits the potential for inhalation of BTEX compounds by the potential receptors. In addition, the BTEX is at low concentrations at depths greater than 6 feet. PAHs and cyanide do not pose a potential inhalation pathway because they will not volatilize from the groundwater. Direct contact or incidental ingestion with BTEX-, PAH-, and cyanide-impacted groundwater would only occur if a receptor were to excavate to below the water table (approximately 6 feet bgs).

93A Maple Avenue MGP Parcel

Surface Soil

Surface-soil samples have not been collected on this parcel and therefore the presence of a complete exposure pathway cannot be determined. However, the majority of the site is

paved with the exception of a small grass-covered area located between the wood-framed house on the 93A parcel and the 93B parcel. The pavement on this parcel would limit any potential exposure to surface soils.

Subsurface Soil

A complete exposure pathway to BTEX and PAH compounds in subsurface soils exists for O'Kane Associates employees, utility and construction workers, and potential future residents at this parcel. This exposure would only occur if one of the potential receptors were to conduct excavation activities on the parcel.

Groundwater

Groundwater samples were not collected from this parcel and therefore the presence of a complete exposure pathway cannot be determined. However, there are BTEX- and PAH-impacted subsurface soils present at and below the water table on this parcel, which presumably would result in unacceptable groundwater concentrations to the potential receptors. The area of subsurface impacts does not appear to extend to the location of the wood-framed house on the parcel and, therefore, there is little potential for BTEX volatiles to accumulate. As a result, inhalation is likely not a significant pathway of exposure to the potential receptors which include O'Kane Associates employees, utility and construction workers, and future residents. PAHs and cyanide do not pose a potential inhalation pathway because they will not volatilize from the groundwater. Direct contact or incidental ingestion with BTEX-, PAH-, and cyanide-impacted groundwater would only occur if a receptor were to excavate to below the water table (approximately 6 feet bgs).

Residential Parcels (6 Tor Ave., 87 Maple Ave., 91 Maple Ave.)

Surface Soil

A complete exposure pathway to PAHs contained in surface soils exists for passersby, residents, and utility and construction workers at the 6 Tor Avenue and 91 Maple Avenue parcels. The 6 Tor Avenue parcel is grass-covered and therefore the potential for inhalation of PAHs through airborne particulates is minimized. However, the 91 Maple Avenue parcel is mostly bare soil and inhalation of PAHs through airborne particulates represents an exposure route. Potential direct contact and incidental ingestion of PAHs represent exposure routes for both parcels.

Subsurface Soil

A complete exposure pathway to PAH compounds in subsurface soils exists for residents and utility and construction workers at all three of the residential parcels. In addition, a complete

exposure pathway to BTEX compounds exists for subsurface soils at the 91 Maple Avenue parcel. These exposures would only occur if one of the potential receptors were to conduct excavation activities on the parcel.

Groundwater

Groundwater samples were not collected from these parcels and therefore the presence of complete exposure pathways cannot be determined. However, where BTEX- and PAH-impacted subsurface soils are present at or below the water table, it is expected that groundwater impacts would also be present which could pose a potential exposure pathway to the residents or utility and construction workers. BTEX concentrations in soils below the water table were only found on the 91 Maple Avenue parcel. The groundwater flow direction is to the northeast, away from the residential home, and the area of subsurface BTEX impacts does not appear to extend to the location of the house. Therefore, there is little potential for BTEX volatiles to accumulate. As a result, inhalation is likely not a significant pathway of exposure to the potential receptors. PAHs and cyanide do not pose a potential inhalation pathway because they will not volatilize from the groundwater. Direct contact or incidental ingestion with BTEX- and PAH-impacted groundwater would only occur if a receptor were to excavate to below the water table (approximately 6 feet bgs).

The complete exposure pathways identified at the 91, 93A, and 93B Maple Avenue parcels will likely be eliminated during implementation of an IRM planned for those parcels. It should also be noted that while TAGM 4046 RSCOs were used as the screening criteria, the introduction to TAGM 4046 states:

> "Project Managers should use these cleanup objectives in selecting alternatives in the Feasibility Study (FS). Based on the proposed selected remedial technology (outcome of FS), final site specific cleanup levels are established in the Record of Decision (ROD) for these sites. It should be noted that even after soil cleanup levels are established in the ROD, these levels may prove to be unattainable when remedial construction begins."

This statement recognizes that site-specific values will ultimately be used as the cleanup criteria for a site. The derivation of the site-specific cleanup values may include such items as calculating the quantitative risk posed to potential receptors to determine if a risk is indeed present, and may also include the use of institutional controls (i.e., deed notices or restrictions), or possibly even engineering controls such as barriers to mitigate potential exposure. Therefore, it is important to recognize that determination of a complete or potentially complete pathway, as determined through the qualitative risk assessment process, does not necessarily mean that there is an actual risk posed to a potential receptor.

8. Conclusions

This section of the report presents conclusions generated through observations taken during the field investigation and the evaluation of data collected at the site and produced from laboratory analysis of soil and groundwater samples.

8.1 Conclusions

8.1.1 Surface Soil

A number of background surface-soil samples were collected as part of the RI. The locations were selected within the greater part of the village of Haverstraw. Locations were reviewed and approved by the NYSDEC. No VOCs were detected in any of the samples; however, PAHs were detected. Total PAHs in background surface soils ranged from 10.9 to 31.6 ppm, with most of the samples having at least one compound exceeding the NYSDEC RSCO. No cyanides were detected in the background samples. Metals were also detected and some of them exceeded the RSCO.

There were no VOC exceedances for surface-soil samples collected on site or on adjacent properties. PAHs exceeded the RSCOs on 87, 91 and 93B Maple Avenue and on 6 Tor Avenue. Inorganics were also found to exceed the RSCOs on 93B. Cyanide was also detected on 93B, but at very low concentrations.

8.1.2 Subsurface Soils

Subsurface soils were sampled on the 6 Tor Avenue, 93B, 93A, 91 and 87 Maple Avenue parcels. Most of the impacts from the former MGP appear to be limited to the area surrounding the gas holder foundation and the area to the southwest.

On 93B, impacts were noted by the presence of odors, sheens and DNAPL. There were only two locations where tar was observed flowing and that was from the walls of the holder foundation in test pits –04 and –05. The southeastern side of the holder had indications of petroleum impacts. BTEX and PAH concentrations exceeded the RSCOs to depths approaching 20 feet below the surface. Below 20 feet the impacts were insignificant and below the state criteria. Cyanide was detected in subsurface soils down to 16 feet, but the highest impacts appear to be limited to the top 4 feet of soil.

On 93A there appears to be a 0.2- to 0.5-foot lens of DNAPL-impacted soil found within a coarse sand and gravel lens at a depth of 8 feet. BTEX concentrations exceeded the RSCOs between 8 and 12 feet, while PAHs exceeded the criteria between 1 and 16 feet. Cyanide was not detected in samples collected from 93A.

On 91 Maple Avenue the depth of contamination was similar to what was found on 93A. The greatest impact was from a sand and gravel layer 8 to 12 feet below grade. BTEX exceeded the RSCOs between 8 and 12 feet while PAHs exceeded them between 0 and 12 feet. Cyanide was detected in subsurface soils on this lot to 8 feet below grade.

Two borings each were sampled on 87 Maple Avenue and 6 Tor Avenue. The results are similar. No BTEX or cyanide were found in any of the samples. PAHs were detected to levels that exceed the RSCOs to 8 feet below grade.

8.1.3 Groundwater

Four monitoring wells exist on the site; all are located on the 93B parcel. Various sampling rounds have taken place on the site between 1997 and 2001. Neither LNAPL nor DNAPL were observed or detected in any of the wells during the sampling events.

Groundwater flows across the site from northwest to southeast toward the river. The most contaminated well was MW-01, located within 10 feet of the eastern side of the gas holder. Total BTEX ranged between 51 and 880 ppb and total PAH ranged between 4 and 69 ppb in this well. The only other impacted well was MW-02, which had a total PAH concentration of 12.9 ppb in December 2001. Cyanide was detected in both MW-01 and MW-02. Monitoring well MW-03 is the furthest downgradient well and it did not contain any MGP impacts.

8.1.4 Stormwater

Stormwater sampled after one rain event in the culvert located under the alleyway behind 93B Maple Avenue is impacted with VOCs and PAHs. Even though the data indicate higher concentrations of VOCs and PAHs downstream of the site, there are no site-related soil or groundwater impacts adjacent to the storm culvert at the site. However, there are tar blebs adjacent to the storm sewer on the Apartment Complex parcel that are related to the Clove and Maple Avenues site. Therefore, there appear to be no contributions to the VOCs and PAHs in stormwater from the site.

8.2 Nature and Extent of Contamination

There are organic and inorganic impacts at the site that can be attributed to former site operations (gas holder). The impacts are generally limited to the top 20 feet of material at the site. Soil borings and groundwater monitoring have characterized the extent of impacts. There is no evidence of off-site migration of MGP residuals in soil or groundwater.

8.3 Qualitative Risk Assessment

A qualitative human health risk assessment was conducted to identify potential exposure pathways to contaminated media for each portion of the site. Based on the known distribution of contaminants and the land uses of each parcel, the following conclusions are drawn.

- There are exposure pathways posed to O'Kane Associates employees, utility workers, construction workers, trespassers, and potential future residents at the 93B Maple Avenue former MGP parcel. The presence of gravel cover on this parcel limits exposure to surface soils, and exposure to subsurface soils and groundwater are only a concern if excavation activities are undertaken.

- There are exposure pathways posed to O'Kane Associates employees, passersby, utility workers, construction workers, trespassers, and possible future residents at the 93A Maple Avenue parcel. The presence of paving over the majority of this parcel limits the potential for exposure. Subsurface exposures would only be of concern if excavation activities were undertaken.

- There are exposure pathways posed to passersby, residents, utility workers, and construction workers at the residential parcels located at 6 Tor Avenue and 91 Maple Avenue. Grass on the 6 Tor Avenue parcel will limit the potential for exposure to surface soils through inhalation of airborne particulates. Subsurface exposures would only be of concern if excavation activities were undertaken.

- There are exposure pathways posed to residents, utility workers, and construction workers at the residential parcel located at 87 Maple Avenue. Surface soils on this parcel do not pose an exposure pathway concern. Subsurface exposures would only be of concern if excavation activities were undertaken.

It is important to note that, as determined through a qualitative risk assessment, the existence of complete or potentially complete pathways does not necessarily constitute the presence of actual risk to a potential receptor.

8.4 Step IIA and IIB Fish and Wildlife Assessment

The Step IIA and IIB FWIA conducted by NEA concluded the following.

- Surface soils have the potential to present an ecological risk due to the presence of numerous PAHs and metals above ecological benchmarks. Detected concentrations of several compounds were significantly above benchmarks, and constituents were those typical of MGP sites.

- The sediments of an embayment to the Hudson River have the potential to present an ecological risk because of the presence of PAHs and metals above background concentrations. However, many sources for these constituents exist around the embayment, so detected concentrations cannot be solely attributed to the site. The distribution of constituents in the embayment suggests that other sources play a predominant role.

The use of benchmarks as a screening tool is an inherently conservative approach designed primarily to identify compounds that are not likely to present an ecological risk. Whether or not compounds that exceed benchmark values present a risk under actual site conditions must be determined by additional site-specific studies.

8.5 Recommendations

An IRM has been proposed for this site. The IRM work plan, which was submitted to the NYSDEC in January 2002, outlines the removal of the subsurface holder foundation, its contents, and impacted soils at the site. The objective of the IRM activities is to remove any source materials and residual impacts on the site. As such, implementation of a NYSDEC/NYSDOH-approved IRM is expected to provide complete remediation for the site and no further remedial activity is anticipated.

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Tables

Table 1
Site Ownership Information
93B Maple Avenue Former MGP Site
Haverstraw, New York

Property Owner	Years	Comments
Edward Pye	[1]-1859	Deed recorded March 13, 1860.
E.V. Haughwout	1859-1860	Warren Gas Light Company incorporates on November 9, 1859.
Warren Gas Light Company	1860-1871	Deed recorded April 5, 1860, in Liber 37 at page 267.
Nyack and Warren Gas Light Company	1871-1893	Nyack and Warren Gas Light Company incorporates on July 4, 1871. Adjacent property of Clarence R. Conger added on June 10, 1886.
Andrew Murray and wife	1893-1895	The Haverstraw Light and Fuel Gas Company filed a Certificate of Incorporation on May 4, 1894.
John H. Seeds	1895-1905	Transaction to satisfy a mortgage held by the National Bank of Haverstraw.
Charles M. Jesup	1905- 1906	West Shore Gas Company filed a Certificate of Incorporation on December 19, 1905.
Henry J. White	1906-1909	Deed recorded Jan. 21, 1909.
Hallmuth Moerchen	1909-[1]	End of gas company ownership of property; various individual owners follow.
Michael Friscoe	1929-1996	Scrap processing business operated on the property.
County of Rockland	1996-1997	Property taken for back taxes.
William Confrey	1997 - 2000	Property sold at tax sale.
5 Acres Realty c/o Daniel O'Kane	2000 - present	Property acquired for storage and parking for construction business.

Notes:
[1] - transaction date not available.
This site ownership history is based on a combination of sources and is for general information purposes only. It should not be used for legal purposes without further verification.

Table 2
Gas Production Record
93B Maple Avenue Former MGP Site
Haverstraw, New York

Site	Year	Process	Gas Output (cf)	Gas Holder Capacity (1,000 cf)
Haverstraw Gas Works	1887	Oil	None reported	
Haverstraw Gas Works	1888	No Record		
Haverstraw Gas Works	1889	Oil	None reported	
Haverstraw Gas Works	1890	No Record		
Haverstraw Gas Works	1891	No Record		
Haverstraw Gas Works	1892	No Record		
Haverstraw Gas Works	1893	Hanlon	1.25 mm	
Haverstraw Gas Works	1894	No Record		
Haverstraw Gas Works	1895	No Record		
Haverstraw Gas Works	1896	No Record		
Haverstraw Gas Works	1897	No Record		
Haverstraw Gas Works	1898	No Record		
Haverstraw Gas Works	1899	No Record		

Table 3
Sample Location Rationale
93B Maple Avenue Former MGP Site
Haverstraw, New York

Sample Type and Designation	Sample Analysis	Sample Depth	Rationale
Soil Borings			
SG1	Field Characterization	0 to 16 feet bgs	Former holder location [Retec, 1997]
SG2	Field Characterization	0 to 16 feet bgs	Former holder location [Retec, 1997]
SG3	Field Characterization	0 to 10 feet bgs	Former holder location [Retec, 1997]
SG4	Field Characterization	0 to 11.2 feet bgs	Former MGP building [Retec, 1997]
SG5	Field Characterization	0 to 11 feet bgs	Downgradient of former holder [Retec, 1997]
SG6	Field Characterization	0 to 12 feet bgs	Downgradient of former holder [Retec, 1997]
SG7	Field Characterization	0 to 12 feet bgs	Former holder location [Retec, 1997]
SB1	MGP Indicators	6 to 8 feet bgs	Downgradient of former holder [Retec, 1997]
SG8	Field Characterization	0 to 12 feet bgs	To further delineate hydrocarbon-impacted soil to the east of MW1
SG9	Field Characterization	0 to 12 feet bgs	To further delineate hydrocarbon-impacted soil to the north of MW1
SB2/MW2	MGP Indicators	10 to 12 feet bgs 12 to 14 feet bgs	Shallow soil boring for monitoring well installation upgradient of holder for groundwater flow direction and groundwater quality
SB3/MW3	MGP Indicators	12 to 13.5 feet bgs	Shallow soil boring for monitoring well installation downgradient of site
SB25	MGP Indicators	13 feet bgs 21 feet bgs	To evaluate potential MGP residuals beneath holder and to advance to till surface.
MW27	MGP Indicators	18 feet bgs	To evaluate potential MGP residuals upgradient of the holder and to advance to till surface.
Monitoring Wells			
MW1	MGP Indicators, Biodegradation Parameters	Water Table	Resample existing well
MW2	MGP Indicators, Biodegradation Parameters	Water Table	To establish site groundwater flow direction and to test groundwater quality
MW3	MGP Indicators, Biodegradation Parameters	Water Table	To establish site groundwater flow direction and to test groundwater quality
MW27	MGP Indicators	Water Table	To evaluate upgradient migration from holder, data collected for potential use in natural attenuation evaluation
Piezometer			
PZ1	Field Characterization	Water Table	To establish direction of groundwater flow
Test Pits			
TP2	Field Characterization	0 to 12 feet bgs	To further investigate impacts found at SG1 and to investigate subsurface conditions adjacent to the holder foundation
TP3	Field Characterization	0 to 12 feet bgs	To further investigate the holder subsurface structure
TP4	Field Characterization	4 to 4.5 feet bgs	To further investigate the subsurface conditions in the area of MW1
TP5	MGP Indicators	5 to 6.5 feet bgs	To further investigate the subsurface conditions in the area between the two MGP structures
	TCLP Parameters	10.5 feet bgs	To evaluate potential soil hazardous characteristics at the site
Geoprobe™ Borings, 93B Maple Avenue			
GP02	MGP Indicators	4 to 8 feet bgs 8 to 12 feet bgs 12 to 16 feet bgs 16 to 20 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure

Table 3
Sample Location Rationale
93B Maple Avenue Former MGP Site
Haverstraw, New York

Sample Type and Designation	Sample Analysis	Sample Depth	Rationale
GP03	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 12 to 16 feet bgs 16 to 18 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP04	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 10 feet bgs 12 to 16 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP05	MGP Indicators	4 to 8 feet bgs 10 feet bgs 12 to 16 feet bgs 19 to 20 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
	TCLP Parameters	16 to 16.5 feet bgs	To evaluate potential soil hazardous characteristics at the site in preparation for a proposed interim remedial measure
GP06	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP07	MGP Indicators	4 to 8 feet bgs 8 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP07A	MGP Indicators	13 feet bgs 16 to 20 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP08	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs 12 to 14 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP09	MGP Indicators	0 to 4 feet bgs 8 feet bgs 8 to 12 feet bgs 12 to 16 feet bgs 18 to 19 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP10	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 11 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP11	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP12	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
	TCLP Parameters	8 to 11 feet bgs	To evaluate potential soil hazardous characteristics at the site in preparation for a proposed interim remedial measure
GP13	MGP Indicators	0 to 4 feet bgs 7 feet bgs 8 to 12 feet bgs 12 to 14.2 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP14	MGP Indicators	0 to 4 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP14A	MGP Indicators	7 feet bgs 8 to 12 feet bgs 12 to 12.5 feet bgs 12 to 15 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP15	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs 12 to 14 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
Geoprobe™ Borings, 93A Maple Avenue			
GP01	MGP Indicators	4 to 8 feet bgs 9.3 feet bgs 12 to 16 feet bgs 16 to 20 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure

Table 3
Sample Location Rationale
93B Maple Avenue Former MGP Site
Haverstraw, New York

Sample Type and Designation	Sample Analysis	Sample Depth	Rationale
GP16	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs 12 to 16 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP17	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP20	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 11 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP21	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 10.5 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
Geoprobe™ Borings, 91 Maple Avenue			
GP18	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP19	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP26	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 11 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP27	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 10 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP28	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP29	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
Geoprobe™ Borings, 87 Maple Avenue			
GP22	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 9 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP23	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
Geoprobe™ Borings, 6 Tor Avenue			
GP24	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
GP25	MGP Indicators	0 to 4 feet bgs 4 to 8 feet bgs 8 to 12 feet bgs	To evaluate and characterize subsurface-soil conditions in preparation for a proposed interim remedial measure
Surface-Soil Samples			
BSS1 BSS2 BSS3 BSS4 BSS5 BSS6 HA-BSS01-1 HA-BSS01-2 HA-BSS01-3 HA-BSS01-4 HA-BSS01-5 HA-BSS01-6	MGP Indicators	0 to 2 inches bgs	To evaluate and characterize background surface-soil conditions for the region
SS1 SS2	MGP Indicators	0 to 2 inches bgs	To evaluate and characterize surface-soil conditions on the 93B Maple Avenue parcel

Table 3
Sample Location Rationale
93B Maple Avenue Former MGP Site
Haverstraw, New York

Sample Type and Designation	Sample Analysis	Sample Depth	Rationale
HA-SS-91B HA-SS-91F	MGP Indicators	0 to 2 inches bgs	To evaluate and characterize surface-soil conditions on the 91 Maple Avenue parcel
HA-SS-87A HA-SS-87B	MGP Indicators	0 to 2 inches bgs	To evaluate and characterize surface-soil conditions on the 87 Maple Avenue parcel
HA-SS-6TA HA-SS-6TB	MGP Indicators	0 to 2 inches bgs	To evaluate and characterize surface-soil conditions on the 6 Tor Avenue parcel
Stormwater/Sediment Samples			
SW013103-1	MGP Indicators	NA	Surface water samples collected upgradient of the site within storm sewer system
SW013102-5 SD013102-6 SW013102-6 SWOUT01300-1	MGP Indicators	NA	Sediment and stormwater samples and duplicates collected downgradient of the site within storm sewer system

Notes:

- MGP Indicators include: VOC by 95-1, PAH by 95-2, total cyanide by CLP-M, TAL metals by CLP-M and weak acid dissociable cyanide by 4500 CNI. Geoprobe™ borings and 2001 surface-soil samples were not analyzed for metals.
- Biodegradation Parameters include electron receptors ([nitrate, iron (total and Fe^{2+}], manganese, sulfate, sulfide] and dissolved gases (carbon dioxide, oxygen, nitrogen, methane).
- Field Characterization includes: visual characterization—Unified Soil Classification System, visual and olfactory observations regarding the presence of MGP impacts, and jar headspace screening with a PID.
- Toxicity Characteristic Leaching Procedure (TCLP) parameters include: TCLP RCRA 8 Metals, TCLP Volatile Organic Compounds, and TCLP Semivolatile Organic Compounds.

Table 4
Climatological Data Collected at West Point, New York
93B Maple Avenue Former MGP Site
Haverstraw, New York

Temperature	
Average daily temperature, winter	29 degrees F
Minimum daily temperature, winter	21 degrees F
Lowest recorded temperature	-11 degrees F, 2/8/1963
Average daily temperature, summer	73 degrees F
Maximum daily temperature, summer	84 degrees F
Highest recorded temperature	105 degrees F, 9/2/1953
Precipitation	
Total annual precipitation	48 inches
Average presently falling between April and September	50%; 24 inches
Heaviest 1-day rainfall	4.76 inches, 9/12/1960
Mean annual lake evaporation	31 inches
Mean net precipitation	17 inches
One year 24-hour rainfall	2.9 inches

Source: *Soil Survey of Orange County, New York*, US Department of Agriculture, Soil Conservation Service, in cooperation with Cornell University Agricultural Experiment Station, 1981

Table 5
Groundwater Elevation Data
93B Maple Avenue Former MGP Site
Haverstraw, New York

Well ID	Depth of Well	Screened Interval	Top of Casing Elevation (MSL)	Depth to Water[1]	Groundwater Elevation
January 4, 1999					
MW1	14	4 to 14	20.82	7.15	13.67
MW2	18	5 to 15	20.15	6.65	13.5
MW3	14	8.5 to 13.5	20.32	9.6	10.72
PZ1	10.5	5 to 10	20.5	6.35	14.15
February 4, 1999					
MW1	14	4 to 14	20.82	6.15	14.67
MW2	18	5 to 15	20.15	6.45	13.7
MW3	14	8.5 to 13.5	20.32	8.7	11.62
PZ1	10.5	5 to 10	20.5	6.15	14.35
March 26, 1999 - 10:45					
MW1	14	4 to 14	20.82	6.25	14.57
MW2	18	5 to 15	20.15	6.55	13.6
MW3	14	8.5 to 13.5	20.32	7.8	12.52
PZ1	10.5	5 to 10	20.5	6.35	14.15
March 26, 1999 - 15:45					
MW1	14	4 to 14	20.82	6.05	14.77
MW2	18	5 to 15	20.15	6.35	13.8
MW3	14	8.5 to 13.5	20.32	7.15	13.17
PZ1	10.5	5 to 10	20.5	6.25	14.25
December 17, 2001 – High Tide – 13:45					
MW1	14	4 to 14	20.82	7.97	12.88
MW2	18	5 to 15	20.15	7.38	12.77
MW3	14	8.5 to 13.5	20.32	9.35	10.97
PZ1	10.5	5 to 10	20.5	NM[2]	NM[2]
MW27	20	5 to 15	20.96	7.97	12.99
December 18, 2001 – Low Tide – 08:40					
MW1	14	4 to 14	20.82	7.82	13
MW2	18	5 to 15	20.15	7.24	12.91
MW3	14	8.5 to 13.5	20.32	9.25	11.07
PZ1	10.5	5 to 10	20.5	NM[2]	NM[2]
MW27	20	5 to 15	20.96	7.9	13.06

[1]Below top of casing.
[2]Not measured on 12/17/01 or 12/18/01. Located under roll-off bins.

Table 6
Surface-Soil Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Sample ID/Date Collected *Background Surface Soils* BSS1 07/15/97	BSS2 07/15/97	BSS30 7/15/97	BSS4 07/15/97	BSS5 07/15/97	BSS6 07/15/97
BTEX by NYSASP Method 95-1 (mg/kg)							
Benzene	0.06	NA	NA	NA	NA	NA	NA
Toluene	1.5	NA	NA	NA	NA	NA	NA
Xylene, Total	1.2	NA	NA	NA	NA	NA	NA
Total BTEX		NA	NA	NA	NA	NA	NA
Other VOCs by NYSASP Method 95-1 (mg/kg)							
Acetone	0.2	NA	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2 (mg/kg)+A16							
Acenaphthene	50.0	NA	NA	NA	NA	NA	NA
Acenaphthylene	41.0	NA	NA	NA	NA	NA	NA
Anthracene	50.0	NA	NA	NA	NA	NA	NA
Benzo[g,h,i]perylene	50.0	NA	NA	NA	NA	NA	NA
Fluoranthene	50.0	NA	NA	NA	NA	NA	NA
Fluorene	50.0	NA	NA	NA	NA	NA	NA
Methylnaphthalene,2-	36.4	NA	NA	NA	NA	NA	NA
Naphthalene	13.0	NA	NA	NA	NA	NA	NA
Phenanthrene	50.0	NA	NA	NA	NA	NA	NA
Pyrene	50.0	NA	NA	NA	NA	NA	NA
Total PAHs (Non-carc.)		NA	NA	NA	NA	NA	NA
PAHS (Carcinogenic) by NYSASP Method 95-2 (mg/kg)							
Benz[a]anthracene	0.224	NA	NA	NA	NA	NA	NA
Benzo[a]pyrene	0.061	NA	NA	NA	NA	NA	NA
Benzo[b]fluoranthene	1.1	NA	NA	NA	NA	NA	NA
Benzo[k]fluoranthene	1.1	NA	NA	NA	NA	NA	NA
Chrysene	0.4	NA	NA	NA	NA	NA	NA
Dibenz[a,h]anthracene	0.014	NA	NA	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	3.2	NA	NA	NA	NA	NA	NA
Total PAHs (Carcinogenic)		NA	NA	NA	NA	NA	NA
Other SVOCs by NYSASP Method 95-2 (mg/kg)							
Biphenyl,1,1-	NS	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	NS	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	50.0	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	50.0	NA	NA	NA	NA	NA	NA
Carbazole	NS	NA	NA	NA	NA	NA	NA
Dibenzofuran	6.2	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	8.1	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	50.0	NA	NA	NA	NA	NA	NA

Table 6 (continued)
Surface-Soil Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Sample ID/Date Collected *Background Surface Soils* BSS1 07/15/97	BSS2 07/15/97	BSS30 7/15/97	BSS4 07/15/97	BSS5 07/15/97	BSS6 07/15/97
PCBs by NYSASP Method PCBs							
	NS	NA	NA	NA	NA	NA	NA
Pesticides by NYSASP Method Pesticides							
DDT,4,4'-	NS	NA	NA	NA	NA	NA	NA
Metals Analysis by NYSASP Methods 6010/7471/7740 (mg/kg)							
Aluminum	NS	8430	7810	8060	7110	9950	7640
Antimony	NS	1.7 R	1.7 R	1.8 R	1.7 R	1.8 R	1.8 R
Arsenic	7.5	4	5.5	5.4	2.9	4.2	2.3
Barium	300	84.2	73.4	81.6	50	61.9	38.9 B
Beryllium	0.16	**0.42 B**	**0.43 B**	**0.49 B**	**0.38 B**	**0.47 B**	**0.38 B**
Cadmium	1	0.55 B	0.96 B	0.79 B	0.72 B	0.47 B	0.33 B
Calcium	NS	1490	10900	2800	2500	2990	14600
Chromium	10	**12**	8.9	8.8	**12.2**	**12.1**	6.8
Cobalt	30	5.4 B	6.4 B	6 B	6.3 B	8 B	6.1 B
Copper	25	18.9	**47.3**	**48**	**32.9**	**27.6**	**25.2**
Iron	2000	**15700**	**15900**	**16000**	**15900**	**18700**	**15700**
Lead	500	145	163	187	219	38.2	11.8
Magnesium	NS	2410	6360	1970	2650	3400	9340
Manganese	NS	443	376	310	322	400	440
Mercury	0.1	**0.11**	**0.16**	**0.14**	**0.19**	0.07 B	0.05 U
Nickel	13	10.6	**14**	12.2	**14**	12.6	9.2
Potassium	NS	699 B	698 B	673 B	1210	758 B	708 B
Selenium	2	0.65 U	0.65 U	0.87 B	0.62 U	0.67 U	0.66 U
Silver	NS	0.43 U	0.44 U	0.46 U	0.41 U	0.45 U	0.44 U
Sodium	NS	109 U	110 U	725 B	336 B	401 B	116 B
Thallium	NS	1.3 U	1.3 U	1.4 U	1.2 U	1.3 U	1.3 U
Vanadium	150	18.6	26.2	24.2	22.8	20.2	13
Zinc	20	**94.6 E**	**135 E**	**123 E**	**101 E**	**67.3 E**	**41 E**
Cyanides by CLP Methods (mg/kg)							
Cyanide, Total	NS	NA	NA	NA	NA	NA	NA
Geochemical Analyses by Various Methods (mg/kg)							
Residue, Total	NS	NA	NA	NA	NA	NA	NA

Table 6 (continued)
Surface-Soil Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Sample ID/Date Collected *Background Surface Soils* HA-BSS01-1 12/03/01	HA-BSS01-2 12/03/01	HA-BSS01-3 12/03/01	HA-BSS01-4 12/03/01	HA-BSS01-5 12/03/01	HA-BSS01-6 12/03/01
BTEX by NYSASP Method 95-1 (mg/kg)							
Benzene	0.06	0.005 U	0.005 U	0.005 U	0.005 U	0.006 U	0.006 U
Toluene	1.5	0.005 U	0.005 U	0.005 U	0.005 U	0.006 U	0.006 U
Xylene, Total	1.2	0.005 U	0.005 U	0.005 U	0.005 U	0.006 U	0.006 U
Total BTEX		ND	ND	ND	ND	ND	ND
Other VOCs by NYSASP Method 95-1 (mg/kg)							
Acetone	0.2	NA	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2 (mg/kg)							
Acenaphthene	50.0	0.077 J	0.17 J	0.17 J	0.4 J	0.44 J	0.035 J
Acenaphthylene	41.0	0.19 J	0.19 J	0.07 J	0.075 J	0.11 J	0.17 J
Anthracene	50.0	0.4 J	0.58 J	0.46 J	0.5 J	1	0.34 J
Benzo[g,h,i]perylene	50.0	1.6	1.8	0.94	0.93	1.8	0.87
Fluoranthene	50.0	2.5	3.7	3.7	4.2	4.6	1.8
Fluorene	50.0	0.11 J	0.24 J	0.18 J	0.32 J	0.44 J	0.077 J
Methylnaphthalene,2-	36.4	0.048 J	0.059 J	0.043 J	0.32 J	0.11 J	0.089 J
Naphthalene	13.0	0.062 J	0.07 J	0.058 J	0.38 J	0.13 J	0.038 J
Phenanthrene	50.0	1.4	2.4	2.4	2.9	4.1	0.96
Pyrene	50.0	2.6	3.6 J	3.6	4.2	5	1.5
Total PAHs (Non-carc.)		9.0	12.8	11.6	14.2	18	5.9
PAHS (Carcinogenic) by NYSASP Method 95-2 (mg/kg)							
Benz[a]anthracene	0.224	**1.4**	**2.2**	**1.9**	**2.2**	**2.6**	**0.82**
Benzo[a]pyrene	0.061	**1.3**	**1.8**	**1.7**	**1.8**	**2.1**	**0.86**
Benzo[b]fluoranthene	1.1	1.1	**1.4**	**1.7**	**1.6**	**1.8**	0.7
Benzo[k]fluoranthene	1.1	1	**1.7**	**1.6 J**	**2.2 J**	**2.1 J**	0.72
Chrysene	0.4	**1.6**	**2.3**	**2.1**	**2.3**	**2.7**	**0.96**
Dibenz[a,h]anthracene	0.014	**0.44 J**	**0.64 J**	**0.35 J**	**0.4 J**	**0.57 J**	**0.28 J**
Indeno[1,2,3-cd]pyrene	3.2	1.4	2	1.2	1.3	1.7	1
Total PAHs (Carcinogenic)		8	12	10.6	11.8	13.6	5
Other SVOCs by NYSASP Method 95-2 (mg/kg)							
Biphenyl,1,1-	NS	0.72 U	0.73 U	0.71 U	0.039 J	0.04 J	0.026 J
Bis(2-chloroethoxy)methane	NS	0.72 UJ	0.73 UJ	0.71 UJ	0.71 UJ	0.71 UJ	0.39 UJ
Bis(2-ethylhexyl)phthalate	50.0	0.72 U	0.73 U	0.71 U	1.1 U	0.71 U	0.59 U
Butyl benzyl phthalate	50.0	0.72 U	0.73 U	0.71 U	0.1 J	0.71 U	0.052 J
Carbazole	NS	0.11 J	0.23 J	0.23 J	0.28 J	0.54 J	0.11 J
Dibenzofuran	6.2	0.037 J	0.073 J	0.088 J	0.1 J	0.31 J	0.022 J
Di-n-butyl phthalate	8.1	0.72 U	0.73 U	0.018 J	0.018 J	0.02 J	0.02 J
Di-n-octyl phthalate	50.0	0.72 U	0.73 U	0.71 U	0.71 U	0.71 U	0.03 J

Table 6 (continued)
Surface-Soil Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Sample ID/Date Collected *Background Surface Soils* HA-BSS01-1 12/03/01	HA-BSS01-2 12/03/01	HA-BSS01-3 12/03/01	HA-BSS01-4 12/03/01	HA-BSS01-5 12/03/01	HA-BSS01-6 12/03/01
PCBs by NYSASP Method PCBs							
	NS	NA	NA	NA	NA	NA	NA
Pesticides by NYSASP Method Pesticides							
DDT,4,4'-	NS	NA	NA	NA	NA	NA	NA
Metals Analysis by NYSASP Methods 6010/7471/7740 (mg/kg)							
Aluminum	NS	NA	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA	NA
Cyanides by CLP Methods (mg/kg)							
Cyanide, Total	NS	0.52 U	0.53 U	0.53 U	0.52 U	0.62 U	0.59 U
Geochemical Analyses by Various Methods (mg/kg)							
Residue, Total	NS	NA	NA	NA	NA	NA	NA

Table 6 (continued)
Surface-Soil Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Sample ID/Date Collected			
		93 Maple Avenue		*91 Maple Avenue*	
		SS1 05/08/97	SS2 05/08/97	HA-SS-91B 11/05/01	HA-SS-91F 11/05/01
BTEX by NYSASP Method 95-1 (mg/kg)					
Benzene	0.06	0.012 U	0.012 U	0.011 U	0.011 U
Toluene	1.5	0.012 U	0.012 U	0.011 U	0.011 U
Xylene, Total	1.2	0.012 U	0.012 U	0.011 U	0.011 U
Total BTEX		ND	ND	ND	ND
Other VOCs by NYSASP Method 95-1 (mg/kg)					
Acetone	0.2	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2 (mg/kg)					
Acenaphthene	50.0	0.36 J	0.39 U	0.056 J	0.2 J
Acenaphthylene	41.0	0.82 J	0.29 J	0.11 J	0.56 J
Anthracene	50.0	1.9 J	0.24 J	0.17 J	0.8 J
Benzo[g,h,i]perylene	50.0	2.4	1	0.89 J	4.3 J
Fluoranthene	50.0	8.2	1.8	1.6	6.9
Fluorene	50.0	0.63 J	0.07 J	0.064 J	0.19 J
Methylnaphthalene,2-	36.4	NA	NA	0.014 J	0.074 J
Naphthalene	13.0	0.6 J	0.067 J	0.011 J	0.093 J
Phenanthrene	50.0	5	1	1.1	3.2
Pyrene	50.0	10	2.1	1.9	9.9
Total PAHs (Non-carc.)		30	7	5.9	26.2
PAHS (Carcinogenic) by NYSASP Method 95-2 (mg/kg)					
Benz[a]anthracene	0.224	**7.6**	**1.2**	**0.78**	**4**
Benzo[a]pyrene	0.061	**8.7**	**1.4**	**0.72**	**4.1**
Benzo[b]fluoranthene	1.1	**11**	**1.9**	0.63	**3.6**
Benzo[k]fluoranthene	1.1	**4.5**	0.82	0.57	**2.8**
Chrysene	0.4	**7.6**	**1.5**	**0.95**	**4.5**
Dibenz[a,h]anthracene	0.014	**1.5 J**	**0.28 J**	**0.28 J**	**1.3 J**
Indeno[1,2,3-cd]pyrene	3.2	**4.2**	1	0.8 J	**4.2 J**
Total PAHs (Carcinogenic)		45	8	4.7	25
Other SVOCs by NYSASP Method 95-2 (mg/kg)					
Biphenyl,1,1-	NS	NA	NA	0.36 U	1.4 U
Bis(2-chloroethoxy)methane	NS	NA	NA	0.36 U	1.4 U
Bis(2-ethylhexyl)phthalate	50.0	NA	NA	0.37	1.4 U
Butyl benzyl phthalate	50.0	NA	NA	0.18 J	0.21 J
Carbazole	NS	NA	NA	0.093 J	0.32 J
Dibenzofuran	6.2	NA	NA	0.021 J	0.047 J
Di-n-butyl phthalate	8.1	NA	NA	0.36 U	1.4 U
Di-n-octyl phthalate	50.0	NA	NA	0.36 U	1.4 U

Table 6 (continued)
Surface-Soil Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Sample ID/Date Collected: 93 Maple Avenue SS1 05/08/97	93 Maple Avenue SS2 05/08/97	91 Maple Avenue HA-SS-91B 11/05/01	91 Maple Avenue HA-SS-91F 11/05/01
PCBs by NYSASP Method PCBs					
	NS	NA	NA	NA	NA
Pesticides by NYSASP Method Pesticides					
DDT,4,4'-	NS	NA	NA	NA	NA
Metals Analysis by NYSASP Methods 6010/7471/7740 (mg/kg)					
Aluminum	NS	9000	7030	NA	NA
Antimony	NS	2.9 B	11.1 B	NA	NA
Arsenic	7.5	4.4	7.3	NA	NA
Barium	300	154	192	NA	NA
Beryllium	0.16	**0.36 B**	**0.31 B**	NA	NA
Cadmium	1	**36.4**	**3.3**	NA	NA
Calcium	NS	3800	6580	NA	NA
Chromium	10	**19.7 ***	**23.2 ***	NA	NA
Cobalt	30	8.9 B	11.4 B	NA	NA
Copper	25	**104**	**332**	NA	NA
Iron	2000	**30900**	**46800**	NA	NA
Lead	500	289	**667**	NA	NA
Magnesium	NS	3840	3720	NA	NA
Manganese	NS	346	357	NA	NA
Mercury	0.1	**0.45**	**1.7**	NA	NA
Nickel	13	**21.2**	**30**	NA	NA
Potassium	NS	1120 B	1010 B	NA	NA
Selenium	2	1.7	**3.4**	NA	NA
Silver	NS	1.4 B	3.9	NA	NA
Sodium	NS	175 B	411 B	NA	NA
Thallium	NS	2.1 U	2.1 U	NA	NA
Vanadium	150	27.8	60.3	NA	NA
Zinc	20	**519**	**1070**	NA	NA
Cyanides by CLP Methods (mg/kg)					
Cyanide, Total	NS	0.75	0.39	0.53 U	0.54 U
Geochemical Analyses by Various Methods (mg/kg)					
Residue, Total	NS	NA	NA	NA	NA

Table 6 (continued)
Surface-Soil Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Sample ID/Date Collected: 87 Maple Avenue HA-SS-87A 11/15/2001	87 Maple Avenue HA-SS-87B 11/15/2001	6 Tor HA-SS-6TA 11/5/2001	6 Tor HA-SS-6TB 11/5/2001	6 Tor HA-SS-6TC (Dup) 11/5/2001
BTEX by NYSASP Method 95-1 (mg/kg)						
Benzene	0.06	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Toluene	1.5	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Xylene, Total	1.2	0.001 J	0.012 U	0.011 U	0.012 U	0.012 U
Total BTEX		0.001	ND	ND	ND	ND
Other VOCs by NYSASP Method 95-1 (mg/kg)						
Acetone	0.2	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2 (mg/kg)						
Acenaphthene	50.0	0.18 J	0.01 J	0.29 J	0.62 J	0.72 J
Acenaphthylene	41.0	0.33 J	0.039 J	0.71 J	1 J	0.68 J
Anthracene	50.0	0.61 J	0.043 J	1.3 J	2.8 J	3 J
Benzo[g,h,i]perylene	50.0	1.8 J	0.66 J	3.5 J	9.9 J	9.8 J
Fluoranthene	50.0	3.5	0.45	9.6	19	15
Fluorene	50.0	0.14 J	0.01 J	0.41 J	0.85 J	0.86 J
Methylnaphthalene,2-	36.4	0.18 J	0.36 U	1.9 U	3.7 U	0.11 J
Naphthalene	13.0	0.25 J	0.36 U	0.051 J	0.11 J	0.12 J
Phenanthrene	50.0	2.3	0.2 J	5.9	11	11
Pyrene	50.0	4.2	0.55	13	19	17
Total PAHs (Non-carc.)		13.5	2.0	35	64	58
PAHS (Carcinogenic) by NYSASP Method 95-2 (mg/kg)						
Benz[a]anthracene	0.224	**2.2**	**0.23 J**	**5**	**9.4**	**10**
Benzo[a]pyrene	0.061	**2.3**	**0.25 J**	**5.1**	**8.4**	**9**
Benzo[b]fluoranthene	1.1	**1.9**	0.27 J	**3.6**	**6.9**	**6.4**
Benzo[k]fluoranthene	1.1	**1.6**	0.19 J	**4.4**	**7**	**7.6**
Chrysene	0.4	**2.8**	0.3 J	**5.9**	**9.6**	**10**
Dibenz[a,h]anthracene	0.014	**0.68 J**	**0.1 J**	**1.4 J**	**3.1 J**	**3.4 J**
Indeno[1,2,3-cd]pyrene	3.2	2 J	0.32 J	**4.1 J**	**8.8 J**	**9.7 J**
Total PAHs (Carcinogenic)		13	1.7	30	53	56
Other SVOCs by NYSASP Method 95-2 (mg/kg)						
Biphenyl,1,1-	NS	0.047 J	0.36 U	1.9 U	3.7 U	3.8 U
Bis(2-chloroethoxy)methane	NS	0.73 U	0.36 U	1.9 U	3.7 U	3.8 U
Bis(2-ethylhexyl)phthalate	50.0	0.73 U	0.36 U	1.9 U	3.7 U	3.8 U
Butyl benzyl phthalate	50.0	0.1 J	0.015 J	0.15 J	3.7 U	3.8 U
Carbazole	NS	0.21 J	0.36 U	0.6 J	0.86 J	0.78 J
Dibenzofuran	6.2	0.034 J	0.36 U	0.13 J	0.28 J	0.26 J
Di-n-butyl phthalate	8.1	0.73 U	0.36 U	1.9 U	3.7 U	3.8 U
Di-n-octyl phthalate	50.0	0.73 U	0.36 U	1.9 U	3.7 U	3.8 U

Table 6 (continued)
Surface-Soil Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Sample ID/Date Collected: 87 Maple Avenue HA-SS-87A 11/15/2001	HA-SS-87B 11/15/2001	6 Tor HA-SS-6TA 11/5/2001	HA-SS-6TB 11/5/2001	HA-SS-6TC (Dup) 11/5/2001
PCBs by NYSASP Method PCBs						
	NS	NA	NA	NA	NA	NA
Pesticides by NYSASP Method Pesticides						
DDT,4,4'-	NS	NA	NA	NA	NA	NA
Metals Analysis by NYSASP Methods 6010/7471/7740 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Cyanides by CLP Methods (mg/kg)						
Cyanide, Total	NS	0.57 U	0.57 U	0.55 U	0.58 U	0.59 U
Geochemical Analyses by Various Methods (mg/kg)						
Residue, Total	NS	NA	NA	NA	NA	NA

Notes:
U - Analyte not detected
J - Estimated value
B - Analyte detected in associated blank
E - Exceeds calibration range
R - Historic unknown qualifier
NS - No standard
NA - Not analyzed
ND - Not detected

Table 7
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP02 GP02-4-8 6/28/2001 (4-8)	GP02 GP02-8-12 8/28/2001 (8-12)	GP02 GP02-12-16 6/28/2001 (12-16)	GP02 GP02-16-20 6/28/2001 (16-20)	GP03 GP03-0-4 6/28/2001 (0-4)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Toluene	1.5	0.012 U	0.014 U	0.011 J	0.013 U	0.041
Ethylbenzene	5.5	0.012 U	0.014 U	0.011 J	0.013 U	0.056
Xylene, Total	1.2	0.012 U	0.014 U	0.011 J	0.013 U	0.26
Total BTEX	NS	ND	ND	0.044	ND	0.357
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	0.012 U	0.018	0.016 J	0.025 B	0.011 U
Bromodichloromethane	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Bromoform	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Bromomethane	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Butanone,2- (MEK)	0.3	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Carbon disulfide	2.7	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Carbon tetrachloride	0.6	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Chlorobenzene	1.7	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Chloroethane	1.9	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Chloroform	0.3	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Chloromethane	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Cyclohexane	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dibromo-3-chloropropane,1,2-	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dibromochloromethane	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dibromoethane,1,2-	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichlorobenzene,1,2-	7.9	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichlorobenzene,1,3-	1.6	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichlorobenzene,1,4-	8.5	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichlorodifluoromethane	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichloroethane,1,1-	0.2	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichloroethane,1,2-	0.1	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichloroethene, cis-1,2-	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichloroethene,1,1-	0.4	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichloropropane,1,2-	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichloropropene, cis-1,3	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Dichloropropene, trans-1,3	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Freon 113	6.0	0.003 J	0.004 J	0.002 J	0.001 J	0.011 U
Hexanone,2-	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Isopropyl benzene	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.001 J
Methyl Acetate	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Methyl tert-butyl ether	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Methyl-2-pentanone,4-	1.0	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Methylcyclohexane	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Methylene chloride	0.1	0.012 B	0.01 J B	0.008 J	0.013 B	0.013 B
Styrene	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Tetrachloroethane,1,1,2,2-	0.6	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Tetrachloroethene	1.4	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Trans-1,2-Dichloroethene	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Trichlorobenzene,1,2,4-	3.4	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Trichloroethane,1,1,1-	0.8	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Trichloroethane,1,1,2-	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Trichloroethene	0.7	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Trichlorofluoromethane	NS	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
Vinyl chloride	0.2	0.012 U	0.014 U	0.011 J	0.013 U	0.011 U
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	2 U	0.041 J	0.39 U	0.44 U	0.14 J
Acenaphthylene	41.0	0.88 J	0.039 J	0.011 J	0.44 U	1.2 J
Anthracene	50.0	0.25 J	0.012 J	0.39 U	0.44 U	2 J
Benzo[g,h,i]perylene	50	11	0.11 J	0.058 J	0.44 U	13
Fluoranthene	50.0	0.65 J	0.007 J	0.39 U	0.44 U	7.9
Fluorene	50.0	0.14 J	0.46 U	0.39 U	0.44 U	0.12 J
Methylnaphthalene,2-	36.4	0.25 J B	0.029 J B	0.39 U	0.44 U	0.12 J B
Naphthalene	13.0	2 B	0.15 J B	0.39 U	0.44 U	0.2 J B
Phenanthrene	50.0	0.16 J	0.019 J	0.39 U	0.44 U	2.9
Pyrene	50.0	4.1	0.015 J	0.39 U	0.44 U	16
Total PAHs (Non-carcinogenic)	NS	19.43	0.422	0.069	ND	39.8

Table 7
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP02 GP02-4-8 6/28/2001 (4-8)	GP02 GP02-8-12 6/28/2001 (8-12)	GP02 GP02-12-16 6/28/2001 (12-16)	GP02 GP02-16-20 6/28/2001 (16-20)	GP03 GP03-0-4 6/28/2001 (0-4)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	1.2 J	0.011 J	0.39 U	0.44 U	5.9
Benzo[a]pyrene	0.061	4.9	0.029 J	0.02 J	0.44 U	7.2
Benzo[b]fluoranthene	1.1	1.8 J	0.018 J	0.01 J	0.44 U	4.6
Benzo[k]fluoranthene	1.1	1.6 J	0.013 J	0.008 J	0.44 U	5.1
Chrysene	0.4	1.7 J	0.012 J	0.39 U	0.44 U	6.4
Dibenz[a,h]anthracene	0.014	1.9 J	0.018 J	0.39 U	0.44 U	2.8
Indeno[1,2,3-cd]pyrene	3.2	4.6	0.036 J	0.018 J	0.44 U	8.7
Total PAHs (Carcinogenic)	NS	17.7	0.137	0.056	ND	40.7
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Benzaldehyde	NS	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Biphenyl,1,1-	NS	2 U	0.058 J	0.39 U	0.44 U	2.8 U
Bis(2-ethylhexyl)phthalate	50.0	0.063 J	0.077 J	0.063 J	0.02 J	0.12 J
Butyl benzyl phthalate	50.0	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Carbazole	NS	2 U	0.46 U	0.39 U	0.44 U	0.2 J
Chloro-3-methylphenol,4-	0.240	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Chloronaphthalene,2-	NS	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA
Dibenzofuran	6.2	2 U	0.46 U	0.39 U	0.44 U	0.093 J
Dimethyl phthalate	2.0	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Dimethylphenol, 2,4-	NS	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Di-n-butyl phthalate	8.1	2 U	0.006 J	0.39 U	0.44 U	0.061 J
Di-n-octyl phthalate	50.0	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Hexachlorobenzene	0.41	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Isophorone	4.40	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Methylphenol, 4-	0.9	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Methylphenol,2-	0.100	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Nitrophenol,4-	0.100	4.8 U	1.1 U	0.94 U	1.1 U	6.7 U
N-Nitrosodi-n-propylamine	NS	2 U	0.46 J	0.39 U	0.44 U	2.8 U
N-Nitrosodiphenylamine	NS	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Phenol	0.03	2 U	0.46 U	0.39 U	0.44 U	2.8 U
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	0.00049 U	0.00068 U	0.00053 U	0.00053 U	0.0021
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)				
		93B Maple Avenue				
		GP03 GP03-4-8 6/28/2001 (4-8)	GP03 GP03-12-16 6/26/2001 (12-16)	GP03 GP03-16-18 6/26/2001 (16-18)	GP04 GP04-0-4 6/28/2001 (0-4)	GP04 GP04-4-8 6/28/2001 (4-8)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	0.012 U	0.005 J	0.0008 J	0.012 U	0.04
Toluene	1.5	0.001 J	0.0009 J	0.0006 J	0.012 U	0.082
Ethylbenzene	5.5	0.001 J	0.014	0.004 J	0.012 U	0.017
Xylene, Total	1.2	0.007 J	0.007 J	0.003 J	0.012 U	0.34
Total BTEX	NS	0.009	0.0269	0.0084	ND	0.479
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	0.012 U	0.016	0.017	0.012 U	0.008 J B
Bromodichloromethane	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Bromoform	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Bromomethane	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Butanone,2- (MEK)	0.3	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Carbon disulfide	2.7	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Carbon tetrachloride	0.6	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Chlorobenzene	1.7	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Chloroethane	1.9	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Chloroform	0.3	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Chloromethane	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Cyclohexane	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dibromo-3-chloropropane,1,2-	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dibromochloromethane	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dibromoethane,1,2-	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichlorobenzene,1,2-	7.9	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichlorobenzene,1,3-	1.6	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichlorobenzene,1,4-	8.5	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichlorodifluoromethane	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichloroethane,1,1-	0.2	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichloroethane,1,2-	0.1	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichloroethene, cis-1,2-	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichloroethene,1,1-	0.4	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichloropropane,1,2-	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichloropropene, cis-1,3	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Dichloropropene, trans-1,3	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Freon 113	6.0	0.012 U	0.004 J	0.003 J	0.012 U	0.011 U
Hexanone,2-	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Isopropyl benzene	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.002 J
Methyl Acetate	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Methyl tert-butyl ether	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Methyl-2-pentanone,4-	1.0	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Methylcyclohexane	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.001 J
Methylene chloride	0.1	0.014 B	0.013 B	0.009 J B	0.015 B	0.015 B
Styrene	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.058
Tetrachloroethane,1,1,2,2-	0.6	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Tetrachloroethene	1.4	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Trans-1,2-Dichloroethene	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Trichlorobenzene,1,2,4-	3.4	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Trichloroethane,1,1,1-	0.8	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Trichloroethane,1,1,2-	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Trichloroethene	0.7	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Trichlorofluoromethane	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
Vinyl chloride	0.2	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	0.18 J	0.4 U	0.018 J	0.018 J	15 J
Acenaphthylene	41.0	1.6 J	0.031 J	0.048 J	0.052 J	**63 J**
Anthracene	50.0	3.2	0.4 U	0.004 J	0.065 J	**160**
Benzo[g,h,i]perylene	50	13	0.4 U	0.39 U	0.38 J	**68 J**
Fluoranthene	50.0	9.3	0.4 U	0.39 U	0.61	**330**
Fluorene	50.0	0.26 J	0.044 J	0.064 J	0.018 J	**84**
Methylnaphthalene,2-	36.4	0.36 J B	0.4 B	0.024 J B	0.39 U	**53 J B**
Naphthalene	13.0	0.18 J B	0.075 J B	0.082 J B	0.39 U	**72 J**
Phenanthrene	50.0	4.3	0.014 J	0.022 J	0.3 J	**430**
Pyrene	50.0	16	0.4 U	0.008 J	0.64	**340**
Total PAHs (Non-carcinogenic)	NS	48.38	0.564	0.27	2.083	1615

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP03 GP03-4-8 6/28/2001 (4-8)	GP03 GP03-12-16 6/28/2001 (12-16)	GP03 GP03-16-18 6/26/2001 (16-18)	GP04 GP04-0-4 6/28/2001 (0-4)	GP04 GP04-4-8 6/28/2001 (4-8)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	6.7	0.4 U	0.39 U	0.32 J	170
Benzo[a]pyrene	0.061	7.9	0.4 U	0.39 U	0.33 J	110
Benzo[b]fluoranthene	1.1	5.9	0.4 U	0.39 U	0.36 J	84
Benzo[k]fluoranthene	1.1	4.9	0.4 U	0.39 U	0.27 J	110
Chrysene	0.4	7.7	0.4 U	0.39 U	0.36 J	140
Dibenz[a,h]anthracene	0.014	2.8 J	0.4 U	0.39 U	0.097 J	25 J
Indeno[1,2,3-cd]pyrene	3.2	8.3	0.4 U	0.39 U	0.28 J	68 J
Total PAHs (Carcinogenic)	NS	35.9	ND	ND	2.017	707
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Benzaldehyde	NS	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Biphenyl,1,1-	NS	3.2 U	0.02 J	0.055 J	0.39 U	14 J
Bis(2-ethylhexyl)phthalate	50.0	0.16 J	0.043 J	0.25 J	0.064 J	74 U
Butyl benzyl phthalate	50.0	3.2 U	0.4 U	0.39 U	0.016 J	74 U
Carbazole	NS	0.44 J	0.25 J	0.15 J	0.034 J	33 J
Chloro-3-methylphenol,4-	0.240	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Chloronaphthalene,2-	NS	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA
Dibenzofuran	6.2	0.14 J	0.016 J	0.037 J	0.39 U	58 J
Dimethyl phthalate	2.0	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Dimethylphenol, 2,4-	NS	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Di-n-butyl phthalate	8.1	3.2 U	0.4 U	0.39 U	0.032 J	74 U
Di-n-octyl phthalate	50.0	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Hexachlorobenzene	0.41	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Isophorone	4.40	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Methylphenol, 4-	0.9	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Methylphenol,2-	0.100	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Nitrophenol,4-	0.100	7.6 U	0.96 U	0.95 U	0.94 U	180 U
N-Nitrosodi-n-propylamine	NS	3.2 U	0.4 U	0.39 U	0.39 U	74 U
N-Nitrosodiphenylamine	NS	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Phenol	0.03	3.2 U	0.4 U	0.39 U	0.39 U	74 U
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	0.0016	0.00058 U	0.00052 U	0.00053 U	0.0051
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP04 GP04-8-10 6/28/2001 (8-10)	GP04 GP04-12-16 6/28/2001 (12-16)	GP04 GP04-12-16 6/28/2001 (12-16)	GP05 GP05-4-8 6/28/2001 (4-8)	GP05 GP05-10 8/28/2001 (10)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	0.0008 J	0.019	0.002 J	0.003 J	0.058
Toluene	1.5	0.002 J	0.001 J	0.0007 J	0.003 J	0.003 J
Ethylbenzene	5.5	0.012 U	0.008 J	0.002 J	0.002 J	0.084
Xylene, Total	1.2	0.01 J	0.028	0.005 J	0.012	0.036
Total BTEX	NS	0.0128	0.056	0.0097	0.02	0.181
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	0.011 J	0.025	0.032	0.036 B	0.15
Bromodichloromethane	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Bromoform	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Bromomethane	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Butanone,2- (MEK)	0.3	0.012 U	0.012 U	0.011 U	0.011 U	0.006 J
Carbon disulfide	2.7	0.012 U	0.012 U	0.011 U	0.011 U	0.002 J
Carbon tetrachloride	0.6	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Chlorobenzene	1.7	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Chloroethane	1.9	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Chloroform	0.3	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Chloromethane	NS	0.002 J	0.012 U	0.011 U	0.011 U	0.012 U
Cyclohexane	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dibromo-3-chloropropane,1,2-	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dibromochloromethane	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dibromoethane,1,2-	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichlorobenzene,1,2-	7.9	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichlorobenzene,1,3-	1.6	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichlorobenzene,1,4-	8.5	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichlorodifluoromethane	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichloroethane,1,1-	0.2	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichloroethane,1,2-	0.1	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichloroethene, cis-1,2-	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichloroethene,1,1-	0.4	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichloropropane,1,2-	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichloropropene, cis-1,3	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Dichloropropene, trans-1,3	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Freon 113	6.0	0.004 J	0.004 J	0.006 J	0.002 J B	0.002 J B
Hexanone,2-	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Isopropyl benzene	NS	0.012 U	0.002 J	0.0008 J	0.011 U	0.012
Methyl Acetate	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Methyl tert-butyl ether	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Methyl-2-pentanone,4-	1.0	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Methylcyclohexane	NS	0.012 U	0.012 U	0.011 U	0.001 J	0.005 J
Methylene chloride	0.1	0.013 B	0.014 B	0.016 B	0.024 B	0.015 B
Styrene	NS	0.001 J	0.012 U	0.011 U	0.001 J	0.012 U
Tetrachloroethane,1,1,2,2-	0.6	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Tetrachloroethene	1.4	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Trans-1,2-Dichloroethene	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Trichlorobenzene,1,2,4-	3.4	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Trichloroethane,1,1,1-	0.8	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Trichloroethane,1,1,2-	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Trichloroethene	0.7	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Trichlorofluoromethane	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
Vinyl chloride	0.2	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	0.037 J	0.041 J	0.034 J	5.7 J	0.93
Acenaphthylene	41.0	0.15 J	0.073 J	0.1 J	17 J	0.26 J
Anthracene	50.0	0.27 J	0.42 U	0.013 J	32	3.3
Benzo[g,h,i]perylene	50	0.085 J	0.42 U	0.39 U	5.7 J	0.26 J
Fluoranthene	50.0	0.51	0.42 U	0.02 J	50	1.3
Fluorene	50.0	0.12 J	0.42 U	0.047 J	34	3.5
Methylnaphthalene,2-	36.4	0.11 J B	0.42 B	0.041 J B	40	0.78 U
Naphthalene	13.0	0.16 J B	0.028 J B	0.38 J	24	0.12 J B
Phenanthrene	50.0	0.78	0.42 U	0.05 J	93	1.5
Pyrene	50.0	0.42	0.42 U	0.023 J	47	2.9
Total PAHs (Non-carcinogenic)	NS	2.642	0.562	0.708	348.4	14.07

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP04 GP04-8-10 6/26/2001 (8-10)	GP04 GP04-12-16 6/26/2001 (12-16)	GP04 GP64-12-16 6/26/2001 (12-16)	GP05 GP05-4-8 6/26/2001 (4-8)	GP05 GP05-10 6/26/2001 (10)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	0.19 J	0.42 U	0.011 J	28	0.44 J
Benzo[a]pyrene	0.061	0.13 J	0.42 U	0.39 U	14 J	0.36 J
Benzo[b]fluoranthene	1.1	0.12 J	0.42 U	0.39 U	11 J	0.19 J
Benzo[k]fluoranthene	1.1	0.11 J	0.42 U	0.39 U	17 J	0.28 J
Chrysene	0.4	0.17 J	0.42 U	0.009 J	24	0.41 J
Dibenz[a,h]anthracene	0.014	0.027 J	0.42 U	0.39 U	2.9 J	0.087 J
Indeno[1,2,3-cd]pyrene	3.2	0.072 J	0.42 U	0.39 U	5.7 J	0.19 J
Total PAHs (Carcinogenic)	NS	0.819	ND	0.02	102.6	1.957
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	0.4 U	0.42 U	0.39 U	18 U	0.065 J
Benzaldehyde	NS	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Biphenyl,1,1-	NS	0.043 J	0.03 J	0.09 J	6.5 J	0.3 J
Bis(2-ethylhexyl)phthalate	50.0	0.029 J	0.047 J	0.024 J	18 U	0.021 J B
Butyl benzyl phthalate	50.0	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Carbazole	NS	0.13 J	0.12 J	0.24 J	11 J	1.1
Chloro-3-methylphenol,4-	0.240	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Chloronaphthalene,2-	NS	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	2.5	NA
Dibenzofuran	6.2	0.16 J	0.02 J	0.15 J	28	0.7 J
Dimethyl phthalate	2.0	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Dimethylphenol, 2,4-	NS	0.025 J	0.42 U	0.39 U	18 U	0.78 U
Di-n-butyl phthalate	8.1	0.006 J	0.42 U	0.39 U	18 U	0.12 J
Di-n-octyl phthalate	50.0	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Hexachlorobenzene	0.41	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Isophorone	4.40	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Methylphenol, 4-	0.9	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Methylphenol,2-	0.100	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Nitrophenol,4-	0.100	0.96 U	1 U	0.95 U	45 J	1.9 J
N-Nitrosodi-n-propylamine	NS	0.4 U	0.42 U	0.39 U	18 U	0.78 U
N-Nitrosodiphenylamine	NS	0.017 J	0.42 U	0.39 U	18 U	0.78 U
Phenol	0.03	0.4 U	0.42 U	0.39 U	18 U	0.78 U
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	0.00048 U	NA	NA	0.52 U	0.75
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP05 GP05-12-16 6/28/2001 (12-16)	GP05 GP05-19-20 8/28/2001 (19-20)	GP06 GP06-0-4 6/28/2001 (0-4)	GP06 GP56-0-4 6/28/2001 (0-4)	GP06 GP56-0-4RE 6/28/2001 (0-4)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	3.4	1.4	0.0006 J	0.001 J	0.009 J
Toluene	1.5	0.84 J	0.25	0.002 J	0.002 J	0.011
Ethylbenzene	5.5	1.6 U	0.53	0.01 U	0.011 U	0.011 U
Xylene, Total	1.2	1.6 U	0.59	0.01 U	0.011 U	0.011 U
Total BTEX	NS	4.24	2.77	0.0026	0.025	0.02
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	**2.8 B**	0.19	0.01 U	0.073	0.2
Bromodichloromethane	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Bromoform	NS	1.6 U	0.051 J	0.01 U	0.011 U	0.011 U
Bromomethane	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Butanone,2- (MEK)	0.3	1.6 U	0.12 U	0.01 U	0.036	0.078
Carbon disulfide	2.7	1.6 U	0.12 U	0.01 U	0.0007 J	0.002 J
Carbon tetrachloride	0.6	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Chlorobenzene	1.7	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Chloroethane	1.9	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Chloroform	0.3	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Chloromethane	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Cyclohexane	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dibromo-3-chloropropane,1,2-	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dibromochloromethane	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dibromoethane,1,2-	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichlorobenzene,1,2-	7.9	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichlorobenzene,1,3-	1.6	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichlorobenzene,1,4-	8.5	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichlorodifluoromethane	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichloroethane,1,1-	0.2	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichloroethane,1,2-	0.1	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichloroethene, cis-1,2-	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichloroethene,1,1-	0.4	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichloropropane,1,2-	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichloropropene, cis-1,3	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Dichloropropene, trans-1,3	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Freon 113	6.0	1.6 U	0.12 U	0.01 U	0.002 J B	0.002 J
Hexanone,2-	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Isopropyl benzene	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Methyl Acetate	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Methyl tert-butyl ether	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.002 J
Methyl-2-pentanone,4-	1.0	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Methylcyclohexane	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Methylene chloride	0.1	**0.44 JB**	**0.11 J**	0.028 B	0.016 B	**0.18**
Styrene	NS	1.6 U	0.098 J	0.01 U	0.011 U	0.011 U
Tetrachloroethane,1,1,2,2-	0.6	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Tetrachloroethene	1.4	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Trans-1,2-Dichloroethene	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Trichlorobenzene,1,2,4-	3.4	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Trichloroethane,1,1,1-	0.8	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Trichloroethane,1,1,2-	NS	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
Trichloroethene	0.7	1.6 U	0.12 U	0.003 J	0.001 J	0.013
Trichlorofluoromethane	NS	1.6 U	0.12 U	0.01 U	0.0009 J	0.004 J
Vinyl chloride	0.2	1.6 U	0.12 U	0.01 U	0.011 U	0.011 U
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	0.44 U	0.45 U	7.4 U	0.023 J	NA
Acenaphthylene	41.0	0.44 U	0.02 J	2.1 J	0.28 J	NA
Anthracene	50.0	0.44 U	0.029 J	2.3 J	0.19 J	NA
Benzo[g,h,i]perylene	50	0.44 U	0.021 J	8	0.96	NA
Fluoranthene	50.0	0.008 J	0.079 J	15	0.92	NA
Fluorene	50.0	0.44 U	0.02 J	0.86 J	0.034 J	NA
Methylnaphthalene,2-	36.4	0.44 U	0.45 U	7.4 U	0.077 J	NA
Naphthalene	13.0	0.44 U	0.18 J B	0.34 J	0.069 J B	NA
Phenanthrene	50.0	0.44 U	0.074 J	7.9	0.52	NA
Pyrene	50.0	0.01 J	0.1 J	21	1.7	NA
Total PAHs (Non-carcinogenic)	NS	0.018	0.523	57.5	4.773	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP05 GP05-12-16 6/28/2001 (12-16)	GP05 GP05-19-20 6/28/2001 (19-20)	GP06 GP06-0-4 8/28/2001 (0-4)	GP06 GP56-0-4 6/28/2001 (0-4)	GP06 GP56-0-4RE 8/28/2001 (0-4)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	0.44 U	0.049 J	13	0.78	NA
Benzo[a]pyrene	0.061	0.44 U	0.045 J	13	0.68	NA
Benzo[b]fluoranthene	1.1	0.44 U	0.032 J	10	0.64	NA
Benzo[k]fluoranthene	1.1	0.44 U	0.037 J	12	0.58	NA
Chrysene	0.4	0.44 U	0.046 J	12	0.93	NA
Dibenz[a,h]anthracene	0.014	0.44 U	0.45 U	3.5 J	0.28 J	NA
Indeno[1,2,3-cd]pyrene	3.2	0.44 U	0.019 J	9.3	0.86	NA
Total PAHs (Carcinogenic)	NS	ND	0.228	63.5	3.89	NA
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	0.44 U	0.45 U	7.4 U	0.026 J	NA
Benzaldehyde	NS	0.44 U	0.45 U	7.4 U	0.37 U	NA
Biphenyl,1,1-	NS	0.44 U	0.45 U	7.4 U	0.017 J	NA
Bis(2-ethylhexyl)phthalate	50.0	0.052 J B	0.14 J B	53	0.086 J B	NA
Butyl benzyl phthalate	50.0	0.44 U	0.45 U	1.4 J	0.19 J	NA
Carbazole	NS	0.44 U	0.45 U	0.36 J	0.034 J	NA
Chloro-3-methylphenol,4-	0.240	0.44 U	0.45 U	7.4 U	0.37 U	NA
Chloronaphthalene,2-	NS	0.44 U	0.45 U	7.4 U	0.37 U	NA
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA
Dibenzofuran	6.2	0.44 U	0.45 U	0.44 J	0.028 J	NA
Dimethyl phthalate	2.0	0.44 U	0.45 U	7.4 U	0.37 U	NA
Dimethylphenol, 2,4-	NS	0.44 U	0.16 J	7.4 U	0.37 U	NA
Di-n-butyl phthalate	8.1	0.006 J B	0.45 U	0.25 J	0.079 J	NA
Di-n-octyl phthalate	50.0	0.44 U	0.45 U	7.4 U	0.37 U	NA
Hexachlorobenzene	0.41	0.44 U	0.45 U	7.4 U	0.37 U	NA
Isophorone	4.40	0.44 U	0.45 U	7.4 U	0.37 U	NA
Methylphenol, 4-	0.9	0.3 J	0.45 U	7.4 U	0.37 U	NA
Methylphenol,2-	0.100	0.14 J	0.45 U	7.4 U	0.37 U	NA
Nitrophenol,4-	0.100	1 J	1.1 J	18 J	0.89 UJ	NA
N-Nitrosodi-n-propylamine	NS	0.44 U	0.45 U	7.4 U	0.37 U	NA
N-Nitrosodiphenylamine	NS	0.44 U	0.45 U	7.4 U	0.37 U	NA
Phenol	0.03	1.1	0.071 J	7.4 U	0.37 U	NA
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	0.64 U	.66 U	1.5	NA	NA
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP06 GP06-4-8 6/28/2001 (4-8)	GP07 GP07-4-8 6/28/2001 (4-8)	GP07 GP07-8-12 8/28/2001 (8-12)	GP07A GP07A-13 6/28/2001 (13)	GP07A GP07A-16-20 8/28/2001 (16-20)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	0.005 J	0.002 J	**0.82 J**	**0.31**	0.036
Toluene	1.5	0.002 J	0.002 J	0.27 J	0.31	0.05
Ethylbenzene	5.5	0.013 U	0.0009 J	0.23 J	0.013 J	0.017 J
Xylene, Total	1.2	0.013 U	0.007 J	**1.8**	0.12	0.053
Total BTEX	NS	0.007	0.0119	3.12	0.753	0.156
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	0.057	0.053 B	**3.3 B**	0.068	0.12
Bromodichloromethane	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Bromoform	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Bromomethane	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Butanone,2- (MEK)	0.3	0.006 J	0.011 U	1.5 U	0.041 U	0.025 U
Carbon disulfide	2.7	0.013 U	0.011 U	1.5 U	0.041 U	0.005 J
Carbon tetrachloride	0.6	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Chlorobenzene	1.7	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Chloroethane	1.9	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Chloroform	0.3	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Chloromethane	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Cyclohexane	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dibromo-3-chloropropane,1,2-	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dibromochloromethane	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dibromoethane,1,2-	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichlorobenzene,1,2-	7.9	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichlorobenzene,1,3-	1.6	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichlorobenzene,1,4-	8.5	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichlorodifluoromethane	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichloroethane,1,1-	0.2	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichloroethane,1,2-	0.1	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichloroethene, cis-1,2-	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichloroethene,1,1-	0.4	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichloropropane,1,2-	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichloropropene, cis-1,3	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Dichloropropene, trans-1,3	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Freon 113	6.0	0.003 J B	0.001 J	1.5 U	0.004 J	0.004 J
Hexanone,2-	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Isopropyl benzene	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Methyl Acetate	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Methyl tert-butyl ether	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Methyl-2-pentanone,4-	1.0	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Methylcyclohexane	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Methylene chloride	0.1	0.045 B	0.033 B	**0.46 JB**	0.051	0.032 B
Styrene	NS	0.013 U	0.011 U	0.21 J	0.076	0.011 J
Tetrachloroethane,1,1,2,2-	0.6	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Tetrachloroethene	1.4	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Trans-1,2-Dichloroethene	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Trichlorobenzene,1,2,4-	3.4	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Trichloroethane,1,1,1-	0.8	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Trichloroethane,1,1,2-	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Trichloroethene	0.7	0.004 J	0.002 J	1.5 U	0.041 U	0.001 J
Trichlorofluoromethane	NS	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
Vinyl chloride	0.2	0.013 U	0.011 U	1.5 U	0.041 U	0.025 U
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	0.42 U	0.36 U	0.43 U	0.39 J	0.018 J
Acenaphthylene	41.0	0.089 J	0.024 J	0.43 U	0.052 J	0.072 J
Anthracene	50.0	0.07 J	0.021 J	0.43 U	0.04 J	0.019 J
Benzo[g,h,i]perylene	50	0.62	0.06 J	0.43 U	0.39 U	0.38 U
Fluoranthene	50.0	0.47	0.13 J	0.009 J	0.035 J	0.026 J
Fluorene	50.0	0.027 J	0.36 U	0.43 U	0.042 J	0.11 J
Methylnaphthalene,2-	36.4	0.032 J	0.36 U	0.43 U	0.12 J	0.14 J
Naphthalene	13.0	0.036 J B	0.022 J B	0.22 J	0.38 J	0.5
Phenanthrene	50.0	0.34 J	0.06 J	0.43 U	0.11 J	0.14 J
Pyrene	50.0	0.8	0.16 J	0.013 J	0.044 J	0.03 J
Total PAHs (Non-carcinogenic)	NS	2.484	0.477	0.242	1.213	1.055

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP06 GP06-4-8 6/28/2001 (4-8)	GP07 GP07-4-8 6/28/2001 (4-8)	GP07 GP07-8-12 6/28/2001 (8-12)	GP07A GP07A-13 6/28/2001 (13)	GP07A GP07A-16-20 6/26/2001 (16-20)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	0.38 J	0.089 J	0.43 U	0.011 J	0.018 J
Benzo[a]pyrene	0.061	0.4 J	0.08 J	0.43 U	0.39 U	0.019 J
Benzo[b]fluoranthene	1.1	0.3 J	0.077 J	0.43 U	0.39 U	0.011 J
Benzo[k]fluoranthene	1.1	0.42	0.072 J	0.43 U	0.39 U	0.015 J
Chrysene	0.4	0.48	0.088 J	0.43 U	0.007 J	0.014 J
Dibenz[a,h]anthracene	0.014	0.15 J	0.027 J	0.43 U	0.39 U	0.38 U
Indeno[1,2,3-cd]pyrene	3.2	0.42	0.053 J	0.43 U	0.39 U	0.38 U
Total PAHs (Carcinogenic)	NS	2.55	0.486	ND	0.018	0.077
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	0.02 J	0.36 U	0.43 U	0.39 U	0.38 U
Benzaldehyde	NS	0.42 U	0.36 U	0.13 J B	0.082 J B	0.38 U
Biphenyl,1,1-	NS	0.42 U	0.36 U	0.43 U	0.027 J	0.052 J
Bis(2-ethylhexyl)phthalate	50.0	0.071 J B	0.074 J B	0.031 J B	0.074 J B	0.022 J B
Butyl benzyl phthalate	50.0	0.21 J	0.36 U	0.43 U	0.39 U	0.38 U
Carbazole	NS	0.028 J	0.36 U	0.43 U	0.054 J	0.2 J
Chloro-3-methylphenol,4-	0.240	0.42 U	0.36 U	0.43 U	0.39 U	0.38 U
Chloronaphthalene,2-	NS	0.42 U	0.36 U	0.43 U	0.39 U	0.38 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA
Dibenzofuran	6.2	0.019 J	0.36 U	0.43 U	0.032 J	0.066 J
Dimethyl phthalate	2.0	0.42 U	0.36 U	0.43 U	0.39 U	0.38 U
Dimethylphenol, 2,4-	NS	0.42 U	0.36 U	0.2 J	0.39 U	0.38 U
Di-n-butyl phthalate	8.1	0.011 J B	0.36 U	0.007 J B	0.006 J B	0.006 J B
Di-n-octyl phthalate	50.0	0.42 U	0.36 U	0.43 U	0.39 U	0.38 U
Hexachlorobenzene	0.41	0.42 U	0.36 U	0.43 U	0.39 U	0.38 U
Isophorone	4.40	0.42 U	0.36 U	0.43 U	0.39 U	0.38 U
Methylphenol, 4-	0.9	0.42 U	0.36 U	0.43 U	0.39 U	0.38 U
Methylphenol,2-	0.100	0.42 U	0.36 U	0.062 J	0.39 U	0.38 U
Nitrophenol,4-	0.100	1 J	0.88 J	1 J	0.95 J	0.93 J
N-Nitrosodi-n-propylamine	NS	0.42 U	0.36 U	0.43 U	0.39 U	0.38 U
N-Nitrosodiphenylamine	NS	0.42 U	0.36 U	0.43 U	0.39 U	0.38 U
Phenol	0.03	0.42 U	0.36 U	0.45	0.035 J	0.38 U
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	0.91	0.52 U	0.54 U	0.57 U	0.46 U
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		93B Maple Avenue					
		GP08	GP08	GP08	GP08	GP08	GP09
		GP08-0-4	GP08-4-8	GP08-8-12	GP48-8-12	GP08-12-14	GP09-0-4
		6/29/2001	6/29/2001	6/29/2001	6/29/2001	6/29/2001	6/29/2001
		(0-4)	(4-8)	(8-12)	(8-12)	(12-14)	(0-4)
BTEX by Methods 91-1 and 95-1 (mg/kg)							
Benzene	0.06	0.41	0.01 U	0.99	0.42	0.0005 J	0.001 J
Toluene	1.5	0.91	0.0005 J	0.012 J	0.017 J	0.002 J	0.002 J
Ethylbenzene	5.5	0.13	0.01 U	0.062 U	0.005 J	0.011 U	0.012 U
Xylene, Total	1.2	3	0.01 U	0.062 U	0.039	0.011 U	0.001 J
Total BTEX	NS	4.45	0.0005	1.002	0.481	0.0025	0.004
Other VOCs by Methods 91-1 and 95-1 (mg/kg)							
Acetone	0.2	0.13 U	0.01 U	0.038 J B	0.014 J B	0.12	0.012 U
Bromodichloromethane	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Bromoform	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Bromomethane	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Butanone,2- (MEK)	0.3	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Carbon disulfide	2.7	0.054 J	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Carbon tetrachloride	0.6	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Chlorobenzene	1.7	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Chloroethane	1.9	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Chloroform	0.3	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Chloromethane	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Cyclohexane	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dibromo-3-chloropropane,1,2-	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dibromochloromethane	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dibromoethane,1,2-	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichlorobenzene,1,2-	7.9	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichlorobenzene,1,3-	1.6	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichlorobenzene,1,4-	8.5	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichlorodifluoromethane	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichloroethane,1,1-	0.2	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichloroethane,1,2-	0.1	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichloroethene, cis-1,2-	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichloroethene,1,1-	0.4	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichloropropane,1,2-	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichloropropene, cis-1,3	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Dichloropropene, trans-1,3	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Freon 113	6.0	0.13 U	0.01 U	0.007 J	0.025 U	0.011 U	0.001 J
Hexanone,2-	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Isopropyl benzene	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Methyl Acetate	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Methyl tert-butyl ether	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Methyl-2-pentanone,4-	1.0	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Methylcyclohexane	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Methylene chloride	0.1	0.1 J	0.007 J B	0.053 J B	0.026 B	0.036 B	0.013 B
Styrene	NS	0.59	0.01 U	0.062 U	0.002 J	0.011 U	0.012 U
Tetrachloroethane,1,1,2,2-	0.6	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Tetrachloroethene	1.4	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Trans-1,2-Dichloroethene	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Trichlorobenzene,1,2,4-	3.4	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Trichloroethane,1,1,1-	0.8	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Trichloroethane,1,1,2-	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Trichloroethene	0.7	0.13 U	0.01 U	0.062 U	0.025 U	0.006 J	0.012 U
Trichlorofluoromethane	NS	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
Vinyl chloride	0.2	0.13 U	0.01 U	0.062 U	0.025 U	0.011 U	0.012 U
VOCs by TCLP (mg/L)							
Benzene	0.06	NA	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acenaphthene	50.0	26 J	0.46 J	0.41 U	0.42 U	0.35 U	3.7 U
Acenaphthylene	41.0	140	2.2	0.41 U	0.047 J	0.35 U	0.43 J
Anthracene	50.0	180	3	0.016 J	0.12 J	0.35 U	0.42 J
Benzo[g,h,i]perylene	50	52 J	1.5	0.41 U	0.035 J	0.35 U	5.6
Fluoranthene	50.0	260	6.3	0.038 J	0.21 J	0.35 U	2.9 J
Fluorene	50.0	150	2.7	0.41 U	0.067 J	0.35 U	0.19 J
Methylnaphthalene,2-	36.4	160	2.1	0.41 U	0.053 J	0.35 U	0.24 J
Naphthalene	13.0	390	3.6	0.057 J B	0.12 J B	0.35 U	0.32 J
Phenanthrene	50.0	460	9.8	0.046 J	0.29 J	0.35 U	2.2 J
Pyrene	50.0	250	6.3	0.045 J	0.22 J	0.35 U	4.4
Total PAHs (Non-carcinogenic)	NS	2068	37.96	0.202	1.162	ND	16.7

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP08 GP08-0-4 6/29/2001 (0-4)	GP08 GP08-4-8 6/29/2001 (4-8)	GP08 GP08-8-12 6/29/2001 (8-12)	GP08 GP48-8-12 6/29/2001 (8-12)	GP08 GP08-12-14 6/29/2001 (12-14)	GP09 GP09-0-4 6/29/2001 (0-4)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Benz[a]anthracene	0.224	140	3.4	0.41 U	0.11 J	0.35 U	2.6 J
Benzo[a]pyrene	0.061	94	2.4	0.41 U	0.085 J	0.35 U	3.6 J
Benzo[b]fluoranthene	1.1	62 J	1.7	0.41 U	0.056 J	0.35 U	2.3 J
Benzo[k]fluoranthene	1.1	85	1.9	0.41 U	0.075 J	0.35 U	2.9 J
Chrysene	0.4	120	2.9	0.41 U	0.1 J	0.35 U	3.3 J
Dibenz[a,h]anthracene	0.014	21 J	0.6 J	0.41 U	0.42 U	0.35 U	1.6 J
Indeno[1,2,3-cd]pyrene	3.2	61 J	1.7	0.41 U	0.032 J	0.35 U	3.9
Total PAHs (Carcinogenic)	NS	583	12.9	ND	0.458	ND	20.2
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acetophenone	NS	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Benzaldehyde	NS	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Biphenyl,1,1-	NS	32 J	0.5 J	0.41 U	0.42 U	0.35 U	3.7 U
Bis(2-ethylhexyl)phthalate	50.0	76 U	1.4 U	0.067 J B	0.2 J B	0.064 J B	30
Butyl benzyl phthalate	50.0	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Carbazole	NS	67 J	1.3 J	0.41 U	0.039 J	0.35 U	3.7 U
Chloro-3-methylphenol,4-	0.240	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Chloronaphthalene,2-	NS	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA	NA
Dibenzofuran	6.2	130	2.4	0.41 U	0.053 J	0.35 U	3.7 U
Dimethyl phthalate	2.0	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Dimethylphenol, 2,4-	NS	9.5 J	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Di-n-butyl phthalate	8.1	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Di-n-octyl phthalate	50.0	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Hexachlorobenzene	0.41	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Isophorone	4.40	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Methylphenol, 4-	0.9	13 J	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Methylphenol,2-	0.100	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Nitrophenol,4-	0.100	180 J	3.4 J	1 J	1 J	0.86 J	9 J
N-Nitrosodi-n-propylamine	NS	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
N-Nitrosodiphenylamine	NS	76 U	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Phenol	0.03	5.5 J	1.4 U	0.41 U	0.42 U	0.35 U	3.7 U
Metals by Methods 6010 and ILM04.1 (mg/kg)							
Aluminum	NS	NA	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)							
Barium	300	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)							
Cyanide, Total	NS	4.5	NA	NA	NA	0.48 U	0.57 U
Geochemical Analyses by Various Methods							
pH (pH units)	NS	NA	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP09 GP09-8 6/29/2001 (8)	GP09 GP09-8-12 6/29/2001 (8-12)	GP09 GP09-12-16 6/29/2001 (12-16)	GP09 GP09-18-19 2/29/2001 (18-19)	GP10 GP10-0-4 6/29/2001 (0-4)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	0.078 J	1.7	4.2	0.004 J	0.002 J
Toluene	1.5	0.016 J	0.46	0.51 J	0.001 J	0.002 J
Ethylbenzene	5.5	0.065 J	1.4	1.6 U	0.003 J	0.012 U
Xylene, Total	1.2	0.14	1.8	1.6 U	0.005 J	0.012 U
Total BTEX	NS	0.299	5.36	4.71	0.013	0.004
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	0.062 J	0.18	1.2 JB	0.051 B	0.1
Bromodichloromethane	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Bromoform	NS	0.086 U	0.049 J	1.6 U	0.012 U	0.012 U
Bromomethane	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Butanone,2- (MEK)	0.3	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Carbon disulfide	2.7	0.086 U	0.12 U	1.6 U	0.001 J	0.012 U
Carbon tetrachloride	0.6	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Chlorobenzene	1.7	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Chloroethane	1.9	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Chloroform	0.3	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Chloromethane	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Cyclohexane	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dibromo-3-chloropropane,1,2-	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dibromochloromethane	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dibromoethane,1,2-	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichlorobenzene,1,2-	7.9	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichlorobenzene,1,3-	1.6	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichlorobenzene,1,4-	8.5	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichlorodifluoromethane	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichloroethane,1,1-	0.2	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichloroethane,1,2-	0.1	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichloroethene, cis-1,2-	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichloroethene,1,1-	0.4	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichloropropane,1,2-	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichloropropene, cis-1,3	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Dichloropropene, trans-1,3	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Freon 113	6.0	0.016 J	0.12 U	1.6 U	0.012 U	0.012 U
Hexanone,2-	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Isopropyl benzene	NS	0.088	0.015 J	1.6 U	0.012 U	0.012 U
Methyl Acetate	NS	0.086 U	0.12 U	0.34 J	0.012 U	0.012 U
Methyl tert-butyl ether	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Methyl-2-pentanone,4-	1.0	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Methylcyclohexane	NS	0.01 J	0.12 U	1.6 U	0.012 U	0.012 U
Methylene chloride	0.1	0.067 J	0.075 J	0.3 JB	0.018 B	0.05
Styrene	NS	0.019 J	0.049 J	1.6 U	0.012 U	0.012 U
Tetrachloroethane,1,1,2,2-	0.6	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Tetrachloroethene	1.4	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Trans-1,2-Dichloroethene	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Trichlorobenzene,1,2,4-	3.4	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Trichloroethane,1,1,1-	0.8	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Trichloroethane,1,1,2-	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Trichloroethene	0.7	0.086 U	0.12 U	1.6 U	0.012 U	0.01 J
Trichlorofluoromethane	NS	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
Vinyl chloride	0.2	0.086 U	0.12 U	1.6 U	0.012 U	0.012 U
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	200	0.44 U	0.44 U	0.028 J	0.35 J
Acenaphthylene	41.0	31 J	0.44 U	0.44 U	0.096 J	2.3
Anthracene	50.0	200	0.016 J	0.027 J	0.011 J	3
Benzo[g,h,i]perylene	50	82 J	0.44 U	0.44 U	0.39 U	0.4 J
Fluoranthene	50.0	300	0.024 J	0.049 J	0.012 J	8.9
Fluorene	50.0	170	0.44 U	0.022 J	0.1 J	1.6 J
Methylnaphthalene,2-	36.4	150 U	0.44 U	0.44 U	0.084 J	1.4 J
Naphthalene	13.0	150 U	1.8	0.44 U	0.52	2.8
Phenanthrene	50.0	540	0.039 J	0.077 J	0.2 J	8.4
Pyrene	50.0	350	0.03 J	0.055 J	0.016 J	8.6
Total PAHs (Non-carcinogenic)	NS	1873	1.909	0.23	1.067	37.75

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP09 GP09-8 6/29/2001 (8)	GP09 GP09-8-12 6/29/2001 (8-12)	GP09 GP09-12-16 6/29/2001 (12-16)	GP09 GP09-18-19 2/29/2001 (18-19)	GP10 GP10-0-4 6/29/2001 (0-4)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	170	0.015 J	0.029 J	0.39 U	7.1
Benzo[a]pyrene	0.061	130 J	0.44 U	0.02 J	0.39 U	6.4
Benzo[b]fluoranthene	1.1	90 J	0.44 U	0.016 J	0.39 U	4.6
Benzo[k]fluoranthene	1.1	99 J	0.44 U	0.014 J	0.39 U	5.3
Chrysene	0.4	140 J	0.011 J	0.023 J	0.39 U	6.7
Dibenz[a,h]anthracene	0.014	27 J	0.44 U	0.44 U	0.39 U	0.31 J
Indeno[1,2,3-cd]pyrene	3.2	64 J	0.44 U	0.44 U	0.39 U	0.71 J
Total PAHs (Carcinogenic)	NS	720	0.026	0.102	NA	31.12
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	150 U	0.024 J	0.44 U	0.39 U	1.9 U
Benzaldehyde	NS	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Biphenyl,1,1-	NS	34 J	0.44 U	0.44 U	0.069 J	0.33 J
Bis(2-ethylhexyl)phthalate	50.0	150 U	0.021 J B	0.016 J B	0.023 J B	1.9 U
Butyl benzyl phthalate	50.0	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Carbazole	NS	20 J	0.44 U	0.44 U	0.15 J	0.78 J
Chloro-3-methylphenol,4-	0.240	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Chloronaphthalene,2-	NS	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA
Dibenzofuran	6.2	110 J	0.44 U	0.44 U	0.066 J	1.3 J
Dimethyl phthalate	2.0	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Dimethylphenol, 2,4-	NS	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Di-n-butyl phthalate	8.1	150 U	0.44 U	0.44 U	0.007 J B	0.18 J
Di-n-octyl phthalate	50.0	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Hexachlorobenzene	0.41	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Isophorone	4.40	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Methylphenol, 4-	0.9	150 U	0.44 U	0.44 U	0.39 U	0.17 J
Methylphenol,2-	0.100	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Nitrophenol,4-	0.100	360 J	1.1 J	1.1 J	0.95 J	4.7 J
N-Nitrosodi-n-propylamine	NS	150 U	0.44 U	0.44 U	0.39 U	1.9 U
N-Nitrosodiphenylamine	NS	150 U	0.44 U	0.44 U	0.39 U	1.9 U
Phenol	0.03	150 U	0.15 J	0.33 J	0.39 U	1.9 U
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	3.2	0.54 U	0.56 U	0.55 U	1.2
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		93B Maple Avenue					
		GP10	GP10	GP11	GP11	GP11	GP12
		GP10-4-8	GP10-8-11	GP11-0-4	GP11-4-8	GP11-8-12	GP12-0-4
		6/29/2001	6/29/2001	6/29/2001	6/29/2001	6/29/2001	6/29/2001
		(4-8)	(8-11)	(0-4)	(4-8)	(8-12)	(0-4)
BTEX by Methods 91-1 and 95-1 (mg/kg)							
Benzene	0.06	0.017	0.86	0.001 J	0.002 J	0.55	0.009 J
Toluene	1.5	0.004 J	0.56	0.002 J	0.005 J	1.5	0.007 J
Ethylbenzene	5.5	0.011 U	0.5	0.01 U	0.011 U	1	0.012 U
Xylene, Total	1.2	0.004 J	0.79	0.01 U	0.011 U	2.3	0.003 J
Total BTEX	NS	0.025	2.71	0.003	0.007	5.35	0.019
Other VOCs by Methods 91-1 and 95-1 (mg/kg)							
Acetone	0.2	0.11	0.33	0.018	0.054	0.084 U	0.14
Bromodichloromethane	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Bromoform	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Bromomethane	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Butanone,2- (MEK)	0.3	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Carbon disulfide	2.7	0.011 U	0.024 J	0.01 U	0.011 U	0.011 J	0.012 U
Carbon tetrachloride	0.6	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Chlorobenzene	1.7	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Chloroethane	1.9	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Chloroform	0.3	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Chloromethane	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Cyclohexane	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dibromo-3-chloropropane,1,2-	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dibromochloromethane	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dibromoethane,1,2-	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dichlorobenzene,1,2-	7.9	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dichlorobenzene,1,3-	1.6	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dichlorobenzene,1,4-	8.5	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dichlorodifluoromethane	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dichloroethane,1,1-	0.2	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dichloroethane,1,2-	0.1	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dichloroethene, cis-1,2-	NS	0.011 U	0.086 U	0.01 U	0.002 J	0.084 U	0.012 U
Dichloroethene,1,1-	0.4	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dichloropropane,1,2-	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dichloropropene, cis-1,3	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Dichloropropene, trans-1,3	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Freon 113	6.0	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.002 J
Hexanone,2-	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Isopropyl benzene	NS	0.003 J	0.12	0.01 U	0.011 U	0.02 J	0.012 U
Methyl Acetate	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Methyl tert-butyl ether	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.005 J
Methyl-2-pentanone,4-	1.0	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Methylcyclohexane	NS	0.011 U	0.023 J	0.01 U	0.011 U	0.084 U	0.012 U
Methylene chloride	0.1	0.025 B	0.056 J	0.031 B	0.12	0.079 J	0.057
Styrene	NS	0.011 U	0.11	0.01 U	0.011 U	0.18	0.012 U
Tetrachloroethane,1,1,2,2-	0.6	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Tetrachloroethene	1.4	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Trans-1,2-Dichloroethene	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Trichlorobenzene,1,2,4-	3.4	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Trichloroethane,1,1,1-	0.8	0.011 U	0.086 U	0.01 U	0.003 J	0.084 U	0.012 U
Trichloroethane,1,1,2-	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Trichloroethene	0.7	0.005 J	0.086 U	0.005 J	0.052	0.084 U	0.003 J
Trichlorofluoromethane	NS	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
Vinyl chloride	0.2	0.011 U	0.086 U	0.01 U	0.011 U	0.084 U	0.012 U
VOCs by TCLP (mg/L)							
Benzene	0.06	NA	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acenaphthene	50.0	0.94 J	6.2 J	0.12 J	0.08 J	0.42 U	0.078 J
Acenaphthylene	41.0	2.4 J	8.9 J	1.1 J	0.82	0.42 U	0.87
Anthracene	50.0	3.8 J	11 J	0.78 J	0.4	0.42 U	0.67 J
Benzo[g,h,i]perylene	50	1.4 J	15 J	0.61 J	0.24 J	0.42 U	0.5 J
Fluoranthene	50.0	14	58	2.6	0.92	0.42 U	3.2
Fluorene	50.0	2.8 J	8.6 J	0.18 J	0.16 J	0.42 U	0.18 J
Methylnaphthalene,2-	36.4	1.4 J	4.3 J	0.18 J	0.04 J	0.011 J	0.12 J
Naphthalene	13.0	1.7 J	10 J	0.3 J	0.068 J B	3.3	0.14 J B
Phenanthrene	50.0	12	49	1.6	0.31 J	0.42 U	2.4
Pyrene	50.0	19	100	3.2	0.94	0.42 U	4.6
Total PAHs (Non-carcinogenic)	NS	59.44	271	10.67	3.978	3.311	12.758

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP10 GP10-4-8 6/29/2001 (4-8)	GP10 GP10-8-11 6/29/2001 (8-11)	GP11 GP11-0-4 6/29/2001 (0-4)	GP11 GP11-4-8 6/29/2001 (4-8)	GP11 GP11-8-12 6/29/2001 (8-12)	GP12 GP12-0-4 6/29/2001 (0-4)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Benz[a]anthracene	0.224	15	62	2.7	0.87	0.42 U	2.4
Benzo[a]pyrene	0.061	22	82	8	2.4	0.42 U	2.8
Benzo[b]fluoranthene	1.1	16	41	5.4	1.4	0.42 U	3.5
Benzo[k]fluoranthene	1.1	12	44	3.8	1.3	0.42 U	2.1
Chrysene	0.4	16	68	3.6	1	0.42 U	3
Dibenz[a,h]anthracene	0.014	1.1 J	12 J	0.29 J	0.07 J	0.42 U	0.18 J
Indeno[1,2,3-cd]pyrene	3.2	2.3 J	23	0.64 J	0.18 J	0.42 U	0.59 J
Total PAHs (Carcinogenic)	NS	84.4	309	24.43	7.22	ND	14.57
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acetophenone	NS	3.9 U	22 U	1.5 U	0.36 U	0.029 J	0.85 U
Benzaldehyde	NS	3.9 U	22 U	1.5 U	0.36 U	0.42 U	0.85 U
Biphenyl,1,1-	NS	0.29 J	3.2 J	1.5 U	0.016 J	0.42 U	0.034 J
Bis(2-ethylhexyl)phthalate	50.0	3.9 U	22 U	0.38 J	0.038 J B	0.046 J B	0.56 J
Butyl benzyl phthalate	50.0	3.9 U	22 U	1.5 U	0.36 U	0.42 U	0.85 U
Carbazole	NS	1.2 J	2.9 J	0.13 J	0.023 J	0.42 U	0.16 J
Chloro-3-methylphenol,4-	0.240	3.9 U	22 U	1.5 U	0.36 U	0.42 U	0.85 U
Chloronaphthalene,2-	NS	3.9 U	22 U	1.5 U	0.36 U	0.42 U	0.85 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA	NA
Dibenzofuran	6.2	1.8 J	3.8 J	0.096 J	0.087 J	0.42 U	0.11 J
Dimethyl phthalate	2.0	3.9 U	22 U	1.5 U	0.36 U	0.42 U	0.85 U
Dimethylphenol, 2,4-	NS	3.9 U	22 U	1.5 U	0.36 U	0.078 J	0.85 U
Di-n-butyl phthalate	8.1	3.9 U	22 U	0.13 J	0.36 U	0.42 U	1.8
Di-n-octyl phthalate	50.0	3.9 U	22 U	1.5 U	0.36 U	0.42 U	0.85 U
Hexachlorobenzene	0.41	3.9 U	22 U	1.5 U	0.36 U	0.42 U	0.85 U
Isophorone	4.40	3.9 U	22 U	1.5 U	0.36 U	0.42 U	0.85 U
Methylphenol, 4-	0.9	0.44 J	22 U	1.5 U	0.36 U	0.067 J	0.85 U
Methylphenol,2-	0.100	3.9 U	22 U	1.5 U	0.36 U	0.056 J	0.85 U
Nitrophenol,4-	0.100	9.6 J	54 J	3.8 J	0.88 J	1 J	2 J
N-Nitrosodi-n-propylamine	NS	3.9 U	22 U	1.5 U	0.36 U	0.42 U	0.85 U
N-Nitrosodiphenylamine	NS	3.9 U	22 U	1.5 U	0.36 U	0.42 U	0.85 U
Phenol	0.03	0.23 J	22 U	1.5 U	0.36 U	0.23 J	0.85 U
Metals by Methods 6010 and ILM04.1 (mg/kg)							
Aluminum	NS	NA	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)							
Barium	300	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)							
Cyanide, Total	NS	3	0.42	4.1	0.50 U	0.52 U	0.49 U
Geochemical Analyses by Various Methods							
pH (pH units)	NS	NA	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		93B Maple Avenue					
		GP12 GP12-4-8 6/29/2001 (4-8)	GP13 GP13-0-4 6/29/2001 (0-4)	GP13 GP13-7 6/29/2001 (7)	GP13 GP13-8-12 6/29/2001 (8-12)	GP13 GP13-12-14.2 6/29/2001 (12-14.2)	GP14 GP14-0-4 6/29/2001 (0-4)
BTEX by Methods 91-1 and 95-1 (mg/kg)							
Benzene	0.06	0.021	0.002 J	0.057 J	2.6	0.003 J	0.002 J
Toluene	1.5	0.006 J	0.005 J	0.036 J	1.6 U	0.013 U	0.003 J
Ethylbenzene	5.5	0.012 U	0.001 J	0.11	1.6 U	0.013 U	0.011 U
Xylene, Total	1.2	0.004 J	0.038	2.7	1.6 U	0.013 U	0.011 U
Total BTEX	NS	0.031	0.046	2.903	2.6	0.003	0.005
Other VOCs by Methods 91-1 and 95-1 (mg/kg)							
Acetone	0.2	0.062	0.024 B	0.077 J B	1 JB	0.011 J B	0.011 U
Bromodichloromethane	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Bromoform	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Bromomethane	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Butanone,2- (MEK)	0.3	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Carbon disulfide	2.7	0.004 J	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Carbon tetrachloride	0.6	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Chlorobenzene	1.7	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Chloroethane	1.9	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Chloroform	0.3	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Chloromethane	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Cyclohexane	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dibromo-3-chloropropane,1,2-	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dibromochloromethane	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dibromoethane,1,2-	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichlorobenzene,1,2-	7.9	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichlorobenzene,1,3-	1.6	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichlorobenzene,1,4-	8.5	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichlorodifluoromethane	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichloroethane,1,1-	0.2	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichloroethane,1,2-	0.1	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichloroethene, cis-1,2-	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichloroethene,1,1-	0.4	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichloropropane,1,2-	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichloropropene, cis-1,3	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Dichloropropene, trans-1,3	NS	0.012 U	0.011 U	0.096 U	1.6 U	0.013 U	0.011 U
Freon 113	6.0	0.012 U	0.002 J	0.01 J	1.6 U	0.013 U	0.011 U
Hexanone,2-	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Isopropyl benzene	NS	0.0008 J	0.011 U	0.068 J	1.6 U	0.013 U	0.011 U
Methyl Acetate	NS	0.012 U	0.011 U	0.098 U	0.35 J	0.013 U	0.011 U
Methyl tert-butyl ether	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Methyl-2-pentanone,4-	1.0	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Methylcyclohexane	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Methylene chloride	0.1	0.006 J B	0.023 B	0.093 J	0.34 J	0.012 J B	0.02 B
Styrene	NS	0.012 U	0.011 U	0.22	1.6 U	0.013 U	0.011 U
Tetrachloroethane,1,1,2,2-	0.6	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Tetrachloroethene	1.4	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Trans-1,2-Dichloroethene	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Trichlorobenzene,1,2,4-	3.4	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Trichloroethane,1,1,1-	0.8	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Trichloroethane,1,1,2-	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Trichloroethene	0.7	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.002 J
Trichlorofluoromethane	NS	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
Vinyl chloride	0.2	0.012 U	0.011 U	0.098 U	1.6 U	0.013 U	0.011 U
VOCs by TCLP (mg/L)							
Benzene	0.06	NA	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acenaphthene	50.0	1.5 J	2 J	12 J	0.44 U	0.42 U	18 U
Acenaphthylene	41.0	4.9 J	7.3 J	18 J	0.44 U	0.42 U	7.8 J
Anthracene	50.0	9.8	19	33 J	0.44 U	0.42 U	4.3 J
Benzo[g,h,i]perylene	50	24	15 J	24 J	0.44 U	0.42 U	85
Fluoranthene	50.0	34	82	140	0.44 U	0.42 U	24
Fluorene	50.0	5.2 J	7.2 J	26 J	0.44 U	0.42 U	0.77 J
Methylnaphthalene,2-	36.4	0.48 J	2.9 J	3.1 J	0.44 U	0.42 U	1.8 J
Naphthalene	13.0	0.68 J	6.4 J	5.6 J	0.44 U	0.42 U	1.2 J
Phenanthrene	50.0	31	67	40	0.44 U	0.42 U	6 J
Pyrene	50.0	48	88	130	0.44 U	0.42 U	82
Total PAHs (Non-carcinogenic)	NS	159.56	296.8	431.7	ND	ND	212.87

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP12 GP12-4-8 6/29/2001 (4-8)	GP13 GP13-0-4 6/29/2001 (0-4)	GP13 GP13-7 6/29/2001 (7)	GP13 GP13-8-12 6/29/2001 (8-12)	GP13 GP13-12-14.2 6/29/2001 (12-14.2)	GP14 GP14-0-4 6/29/2001 (0-4)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Benz[a]anthracene	0.224	24	61	93	0.44 U	0.42 U	31
Benzo[a]pyrene	0.061	22	51	71	0.44 U	0.42 U	49
Benzo[b]fluoranthene	1.1	14	31	41	0.44 U	0.42 U	30
Benzo[k]fluoranthene	1.1	17	41	58	0.44 U	0.42 U	31
Chrysene	0.4	24	58	82	0.44 U	0.42 U	34
Dibenz[a,h]anthracene	0.014	8 J	10 J	15 J	0.44 U	0.42 U	17 J
Indeno[1,2,3-cd]pyrene	3.2	20	24	34 J	0.44 U	0.42 U	46
Total PAHs (Carcinogenic)	NS	109	252	394	ND	ND	192
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acetophenone	NS	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Benzaldehyde	NS	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Biphenyl,1,1-	NS	0.21 J	18 U	36 U	0.44 U	0.42 U	18 U
Bis(2-ethylhexyl)phthalate	50.0	8.1 U	18 U	36 U	0.088 J B	0.069 J B	18 U
Butyl benzyl phthalate	50.0	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Carbazole	NS	1.9 J	4.1 J	2.9 J	0.44 U	0.42 U	0.45 J
Chloro-3-methylphenol,4-	0.240	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Chloronaphthalene,2-	NS	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA	NA
Dibenzofuran	6.2	1.6 J	4.4 J	13 J	0.44 U	0.42 U	0.5 J
Dimethyl phthalate	2.0	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Dimethylphenol, 2,4-	NS	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Di-n-butyl phthalate	8.1	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Di-n-octyl phthalate	50.0	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Hexachlorobenzene	0.41	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Isophorone	4.40	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Methylphenol, 4-	0.9	0.23 J	18 U	36 U	0.44 U	0.42 U	18 U
Methylphenol,2-	0.100	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Nitrophenol,4-	0.100	20 U	44 J	87 J	1.1 J	1 J	44 J
N-Nitrosodi-n-propylamine	NS	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
N-Nitrosodiphenylamine	NS	8.1 U	18 U	36 U	0.44 U	0.42 U	18 U
Phenol	0.03	0.17 J	18 U	36 U	0.03 J	0.42 U	18 U
Metals by Methods 6010 and ILM04.1 (mg/kg)							
Aluminum	NS	NA	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)							
Barium	300	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)							
Cyanide, Total	NS	0.57 U	0.60 U	2.3	0.55 U	0.60 U	13.5
Geochemical Analyses by Various Methods							
pH (pH units)	NS	NA	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)			
		93B Maple Avenue			
		GP14A	GP14A	GP14A	GP14A
		GP14A-7	GP14A-8-12	GP14A-12-12.5	GP14A-12-15
		6/29/2001	6/29/2001	6/29/2001	6/29/2001
		(7)	(8-12)	(12-12.5)	(12-15)
BTEX by Methods 91-1 and 95-1 (mg/kg)					
Benzene	0.06	0.002 J	0.23	0.011	NA
Toluene	1.5	0.002 J	0.003 J	0.004 J	NA
Ethylbenzene	5.5	0.002 J	0.012 U	0.006 J	NA
Xylene, Total	1.2	0.006 J	0.012 U	0.008 J	NA
Total BTEX	NS	0.012	0.233	0.029	NA
Other VOCs by Methods 91-1 and 95-1 (mg/kg)					
Acetone	0.2	0.043	0.098	0.1	NA
Bromodichloromethane	NS	0.01 U	0.012 U	0.011 U	NA
Bromoform	NS	0.002 J	0.012 U	0.005 J	NA
Bromomethane	NS	0.01 U	0.012 U	0.011 U	NA
Butanone,2- (MEK)	0.3	0.01 U	0.012 U	0.011 U	NA
Carbon disulfide	2.7	0.003 J	0.003 J	0.002 J	NA
Carbon tetrachloride	0.6	0.01 U	0.012 U	0.011 U	NA
Chlorobenzene	1.7	0.01 U	0.012 U	0.011 U	NA
Chloroethane	1.9	0.01 U	0.012 U	0.011 U	NA
Chloroform	0.3	0.01 U	0.012 U	0.011 U	NA
Chloromethane	NS	0.01 U	0.012 U	0.011 U	NA
Cyclohexane	NS	0.01 U	0.012 U	0.011 U	NA
Dibromo-3-chloropropane,1,2-	NS	0.01 U	0.012 U	0.011 U	NA
Dibromochloromethane	NS	0.01 U	0.012 U	0.011 U	NA
Dibromoethane,1,2-	NS	0.01 U	0.012 U	0.011 U	NA
Dichlorobenzene,1,2-	7.9	0.01 U	0.012 U	0.011 U	NA
Dichlorobenzene,1,3-	1.6	0.01 U	0.012 U	0.011 U	NA
Dichlorobenzene,1,4-	8.5	0.01 U	0.012 U	0.011 U	NA
Dichlorodifluoromethane	NS	0.01 U	0.012 U	0.011 U	NA
Dichloroethane,1,1-	0.2	0.01 U	0.012 U	0.011 U	NA
Dichloroethane,1,2-	0.1	0.01 U	0.012 U	0.011 U	NA
Dichloroethene, cis-1,2-	NS	0.01 U	0.012 U	0.011 U	NA
Dichloroethene,1,1-	0.4	0.01 U	0.012 U	0.011 U	NA
Dichloropropane,1,2-	NS	0.01 U	0.012 U	0.011 U	NA
Dichloropropene, cis-1,3	NS	0.01 U	0.012 U	0.011 U	NA
Dichloropropene, trans-1,3	NS	0.01 U	0.012 U	0.011 U	NA
Freon 113	6.0	0.01 U	0.012 U	0.011 U	NA
Hexanone,2-	NS	0.01 U	0.012 U	0.011 U	NA
Isopropyl benzene	NS	0.001 J	0.012 U	0.002 J	NA
Methyl Acetate	NS	0.01 U	0.012 U	0.011 U	NA
Methyl tert-butyl ether	NS	0.01 U	0.012 U	0.011 U	NA
Methyl-2-pentanone,4-	1.0	0.01 U	0.012 U	0.011 U	NA
Methylcyclohexane	NS	0.01 U	0.012 U	0.001 J	NA
Methylene chloride	0.1	0.012 B	0.027 B	0.026 B	NA
Styrene	NS	0.006 J	0.012 U	0.001 J	NA
Tetrachloroethane,1,1,2,2-	0.6	0.01 U	0.012 U	0.011 U	NA
Tetrachloroethene	1.4	0.01 U	0.012 U	0.011 U	NA
Trans-1,2-Dichloroethene	NS	0.01 U	0.012 U	0.011 U	NA
Trichlorobenzene,1,2,4-	3.4	0.01 U	0.012 U	0.011 U	NA
Trichloroethane,1,1,1-	0.8	0.01 U	0.012 U	0.011 U	NA
Trichloroethane,1,1,2-	NS	0.01 U	0.012 U	0.011 U	NA
Trichloroethene	0.7	0.01 U	0.012 U	0.002 J	NA
Trichlorofluoromethane	NS	0.01 U	0.012 U	0.011 U	NA
Vinyl chloride	0.2	0.01 U	0.012 U	0.011 U	NA
VOCs by TCLP (mg/L)					
Benzene	0.06	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Acenaphthene	50.0	6.5 J	0.42 U	0.033 J	NA
Acenaphthylene	41.0	32 J	0.42 U	0.031 J	NA
Anthracene	50.0	24 J	0.42 U	0.011 J	NA
Benzo[g,h,i]perylene	50	90	0.015 J	0.37 U	NA
Fluoranthene	50.0	140	0.017 J	0.022 J	NA
Fluorene	50.0	6 J	0.42 U	0.042 J	NA
Methylnaphthalene,2-	36.4	33 U	0.42 U	0.37 U	NA
Naphthalene	13.0	33 U	0.42 U	0.054 J B	NA
Phenanthrene	50.0	21 J	0.42 U	0.056 J	NA
Pyrene	50.0	210	0.026 J	0.027 J	NA
Total PAHs (Non-carcinogenic)	NS	529.5	0.058	0.276	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP14A GP14A-7 6/29/2001 (7)	GP14A GP14A-8-12 6/29/2001 (8-12)	GP14A GP14A-12-12.5 6/29/2001 (12-12.5)	GP14A GP14A-12-15 6/29/2001 (12-15)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Benz[a]anthracene	0.224	**92**	0.014 J	0.014 J	NA
Benzo[a]pyrene	0.061	**110**	0.015 J	0.37 U	NA
Benzo[b]fluoranthene	1.1	**70**	0.42 U	0.37 U	NA
Benzo[k]fluoranthene	1.1	**82**	0.42 U	0.37 U	NA
Chrysene	0.4	**87**	0.014 J	0.01 J	NA
Dibenz[a,h]anthracene	0.014	**28 J**	0.42 U	0.37 U	NA
Indeno[1,2,3-cd]pyrene	3.2	**80**	0.42 U	0.37 U	NA
Total PAHs (Carcinogenic)	NS	469	0.043	0.024	NA
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Acetophenone	NS	33 U	0.42 U	0.37 U	NA
Benzaldehyde	NS	33 U	0.42 U	0.072 J B	NA
Biphenyl,1,1-	NS	33 U	0.42 U	0.053 J	NA
Bis(2-ethylhexyl)phthalate	50.0	33 U	0.026 J B	0.02 J B	NA
Butyl benzyl phthalate	50.0	33 U	0.42 U	0.37 U	NA
Carbazole	NS	3.7 J	0.42 U	0.029 J	NA
Chloro-3-methylphenol,4-	0.240	33 U	0.42 U	0.37 U	NA
Chloronaphthalene,2-	NS	33 U	0.42 U	0.37 U	NA
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA
Dibenzofuran	6.2	1.4 J	0.42 U	0.015 J	NA
Dimethyl phthalate	2.0	33 U	0.42 U	0.37 U	NA
Dimethylphenol, 2,4-	NS	33 U	0.42 U	0.37 U	NA
Di-n-butyl phthalate	8.1	33 U	0.007 J B	0.007 J B	NA
Di-n-octyl phthalate	50.0	33 U	0.42 U	0.37 U	NA
Hexachlorobenzene	0.41	33 U	0.42 U	0.37 U	NA
Isophorone	4.40	33 U	0.42 U	0.37 U	NA
Methylphenol, 4-	0.9	33 U	0.42 U	0.37 U	NA
Methylphenol,2-	0.100	33 U	0.42 U	0.37 U	NA
Nitrophenol,4-	0.100	**81 J**	**1 J**	**0.9 J**	NA
N-Nitrosodi-n-propylamine	NS	33 U	0.42 U	0.37 U	NA
N-Nitrosodiphenylamine	NS	33 U	0.42 U	0.37 U	NA
Phenol	0.03	33 U	0.42 U	0.37 U	NA
Metals by Methods 6010 and ILM04.1 (mg/kg)					
Aluminum	NS	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA
Metals by TCLP (mg/L)					
Barium	300	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)					
Cyanide, Total	NS	9.8	0.70 U	NA	0.39 U
Geochemical Analyses by Various Methods					
pH (pH units)	NS	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP15 GP15-0-4 6/29/2001 (0-4)	GP15 GP15-4-8 6/29/2001 (4-8)	GP15 GP15-8-12 6/29/2001 (8-12)	GP15 GP15-12-14 6/29/2001 (12-14)
BTEX by Methods 91-1 and 95-1 (mg/kg)					
Benzene	0.06	0.002 J	0.002 J	0.039	0.004 J
Toluene	1.5	0.003 J	0.005 J	0.013	0.002 J
Ethylbenzene	5.5	0.011 U	0.01 U	0.048	0.007 J
Xylene, Total	1.2	0.011 U	0.006 J	0.068	0.01 J
Total BTEX	NS	0.005	0.013	0.168	0.023
Other VOCs by Methods 91-1 and 95-1 (mg/kg)					
Acetone	0.2	0.061 B	0.028 B	0.038 B	0.032 B
Bromodichloromethane	NS	0.011 U	0.01 U	0.01 U	0.011 U
Bromoform	NS	0.011 U	0.01 U	0.01 U	0.011 U
Bromomethane	NS	0.011 U	0.01 U	0.01 U	0.011 U
Butanone,2- (MEK)	0.3	0.011 U	0.01 U	0.01 U	0.011 U
Carbon disulfide	2.7	0.011 U	0.01 U	0.002 J	0.011 U
Carbon tetrachloride	0.6	0.011 U	0.01 U	0.01 U	0.011 U
Chlorobenzene	1.7	0.011 U	0.01 U	0.01 U	0.011 U
Chloroethane	1.9	0.011 U	0.01 U	0.01 U	0.011 U
Chloroform	0.3	0.011 U	0.01 U	0.01 U	0.011 U
Chloromethane	NS	0.011 U	0.01 U	0.01 U	0.011 U
Cyclohexane	NS	0.011 U	0.01 U	0.01 U	0.011 U
Dibromo-3-chloropropane,1,2-	NS	0.011 U	0.01 U	0.01 U	0.011 U
Dibromochloromethane	NS	0.011 U	0.01 U	0.01 U	0.011 U
Dibromoethane,1,2-	NS	0.011 U	0.01 U	0.01 U	0.011 U
Dichlorobenzene,1,2-	7.9	0.011 U	0.01 U	0.01 U	0.011 U
Dichlorobenzene,1,3-	1.6	0.011 U	0.01 U	0.01 U	0.011 U
Dichlorobenzene,1,4-	8.5	0.011 U	0.01 U	0.01 U	0.011 U
Dichlorodifluoromethane	NS	0.011 U	0.01 U	0.01 U	0.011 U
Dichloroethane,1,1-	0.2	0.011 U	0.01 U	0.01 U	0.011 U
Dichloroethane,1,2-	0.1	0.011 U	0.01 U	0.01 U	0.011 U
Dichloroethene, cis-1,2-	NS	0.011 U	0.01 U	0.01 U	0.011 U
Dichloroethene,1,1-	0.4	0.011 U	0.01 U	0.01 U	0.011 U
Dichloropropane,1,2-	NS	0.011 U	0.01 U	0.01 U	0.011 U
Dichloropropene, cis-1,3	NS	0.011 U	0.01 U	0.01 U	0.011 U
Dichloropropene, trans-1,3	NS	0.011 U	0.01 U	0.01 U	0.011 U
Freon 113	6.0	0.003 J	0.002 J	0.002 J	0.002 J
Hexanone,2-	NS	0.011 U	0.01 U	0.01 U	0.011 U
Isopropyl benzene	NS	0.011 U	0.01 U	0.003 J	0.011 U
Methyl Acetate	NS	0.011 U	0.01 U	0.01 U	0.011 U
Methyl tert-butyl ether	NS	0.011 U	0.01 U	0.01 U	0.011 U
Methyl-2-pentanone,4-	1.0	0.011 U	0.01 U	0.01 U	0.011 U
Methylcyclohexane	NS	0.007 J	0.001 J	0.01 U	0.011 U
Methylene chloride	0.1	0.031 B	0.021 B	0.028 B	0.026 B
Styrene	NS	0.011 U	0.01 U	0.01 U	0.011 U
Tetrachloroethane,1,1,2,2-	0.6	0.011 U	0.01 U	0.01 U	0.011 U
Tetrachloroethene	1.4	0.011 U	0.01 U	0.01 U	0.011 U
Trans-1,2-Dichloroethene	NS	0.011 U	0.01 U	0.01 U	0.011 U
Trichlorobenzene,1,2,4-	3.4	0.011 U	0.01 U	0.01 U	0.011 U
Trichloroethane,1,1,1-	0.8	0.011 U	0.01 U	0.01 U	0.011 U
Trichloroethane,1,1,2-	NS	0.011 U	0.01 U	0.01 U	0.011 U
Trichloroethene	0.7	0.011 U	0.01 U	0.004 J	0.011 U
Trichlorofluoromethane	NS	0.011 U	0.01 U	0.01 U	0.011 U
Vinyl chloride	0.2	0.011 U	0.01 U	0.01 U	0.011 U
VOCs by TCLP (mg/L)					
Benzene	0.06	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Acenaphthene	50.0	0.48 J	0.14 J	0.026 J B	0.38 U
Acenaphthylene	41.0	2.3 J	0.86	0.081 J	0.043 J
Anthracene	50.0	2.8 J	0.76	0.35 U	0.01 J
Benzo[g,h,i]perylene	50	3.9	0.36 J	0.35 U	0.38 U
Fluoranthene	50.0	15	1.4	0.35 U	0.04 J
Fluorene	50.0	0.58 J	0.16 J	0.032 J	0.077 J
Methylnaphthalene,2-	36.4	0.43 J	0.32 J	0.042 J	0.38 U
Naphthalene	13.0	1.1 J	0.53 J	0.56	0.081 J B
Phenanthrene	50.0	7.2	1.7	0.028 J	0.11 J
Pyrene	50.0	22	2.3 J	0.35 U	0.052 J
Total PAHs (Non-carcinogenic)	NS	55.79	8.53	0.769	0.413

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue GP15 GP15-0-4 6/29/2001 (0-4)	GP15 GP15-4-8 6/29/2001 (4-8)	GP15 GP15-8-12 6/29/2001 (8-12)	GP15 GP15-12-14 6/29/2001 (12-14)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Benz[a]anthracene	0.224	16	1.9	0.35 U	0.031 J
Benzo[a]pyrene	0.061	19	4.6	0.35 U	0.38 U
Benzo[b]fluoranthene	1.1	11	2.5	0.35 U	0.38 U
Benzo[k]fluoranthene	1.1	10	2.1	0.35 U	0.38 U
Chrysene	0.4	16	2.3	0.35 U	0.036 J
Dibenz[a,h]anthracene	0.014	2.4 J	0.17 J	0.35 U	0.38 U
Indeno[1,2,3-cd]pyrene	3.2	5.5	0.41 J	0.35 U	0.38 U
Total PAHs (Carcinogenic)	NS	74.4	13.98	ND	0.067
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Acetophenone	NS	3.8 U	0.04 J	0.35 U	0.38 U
Benzaldehyde	NS	3.8 U	0.72 U	0.35 U	0.38 U
Biphenyl,1,1-	NS	3.8 U	0.094 J	0.039 J	0.05 J
Bis(2-ethylhexyl)phthalate	50.0	1 J	0.067 J B	0.083 J	0.14 J B
Butyl benzyl phthalate	50.0	3.8 U	0.72 U	0.35 U	0.38 U
Carbazole	NS	0.66 J	0.16 J	0.039 J	0.12 J
Chloro-3-methylphenol,4-	0.240	3.8 U	0.72 U	0.35 U	0.38 U
Chloronaphthalene,2-	NS	3.8 U	0.72 U	0.35 U	0.38 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA
Dibenzofuran	6.2	0.37 J	0.15 J	0.03 J	0.051 J
Dimethyl phthalate	2.0	3.8 U	0.72 U	0.35 U	0.38 U
Dimethylphenol, 2,4-	NS	3.8 U	0.72 U	0.35 U	0.38 U
Di-n-butyl phthalate	8.1	3.8 U	0.72 U	0.35 U	0.38 U
Di-n-octyl phthalate	50.0	3.8 U	0.72 U	0.35 U	0.38 U
Hexachlorobenzene	0.41	3.8 U	0.72 U	0.35 U	0.38 U
Isophorone	4.40	3.8 U	0.72 U	0.35 U	0.38 U
Methylphenol, 4-	0.9	3.8 U	0.72 U	0.35 U	0.38 U
Methylphenol,2-	0.100	3.8 U	0.72 U	0.35 U	0.38 U
Nitrophenol,4-	0.100	9.3 J	1.7 J	0.85 J	0.91 J
N-Nitrosodi-n-propylamine	NS	3.8 U	0.72 U	0.35 U	0.38 U
N-Nitrosodiphenylamine	NS	3.8 U	0.72 U	0.35 U	0.38 U
Phenol	0.03	3.8 U	0.72 U	0.35 U	0.38 U
Metals by Methods 6010 and ILM04.1 (mg/kg)					
Aluminum	NS	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA
Metals by TCLP (mg/L)					
Barium	300	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)					
Cyanide, Total	NS	1.1	0.49 U	0.53 U	0.50 U
Geochemical Analyses by Various Methods					
pH (pH units)	NS	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue MW-27 HA-MW27-18 6/21/2001 (18)	SB01 SB1 (6-8) 5/9/1997 (6-8)	SB02 93BSB02-10-12 12/18/1998 (10-12)	SB02 93BSB02-12-14 12/21/1998 (12-14)
BTEX by Methods 91-1 and 95-1 (mg/kg)					
Benzene	0.06	0.0007 J	0.007 J	0.013 U	0.013 U
Toluene	1.5	0.011 U	0.033 J	0.013 U	0.013 U
Ethylbenzene	5.5	0.011 U	0.29	0.013 U	0.013 U
Xylene, Total	1.2	0.011 U	0.84	0.013 U	0.013 U
Total BTEX	NS	0.0007	1.17	ND	ND
Other VOCs by Methods 91-1 and 95-1 (mg/kg)					
Acetone	0.2	0.011 U	NA	0.013 U	0.013 U
Bromodichloromethane	NS	0.011 U	NA	0.013 U	0.013 U
Bromoform	NS	0.011 U	NA	0.013 U	0.013 U
Bromomethane	NS	0.011 U	NA	0.013 U	0.013 U
Butanone,2- (MEK)	0.3	0.011 U	NA	0.013 U	0.013 U
Carbon disulfide	2.7	0.011 U	NA	0.013 U	0.013 U
Carbon tetrachloride	0.6	0.011 U	NA	0.013 U	0.013 U
Chlorobenzene	1.7	0.011 U	NA	0.013 U	0.013 U
Chloroethane	1.9	0.011 U	NA	0.013 U	0.013 U
Chloroform	0.3	0.011 U	NA	0.013 U	0.013 U
Chloromethane	NS	0.011 U	NA	0.013 U	0.013 U
Cyclohexane	NS	NA	NA	NA	NA
Dibromo-3-chloropropane,1,2-	NS	NA	NA	NA	NA
Dibromochloromethane	NS	0.011 U	NA	0.013 U	0.013 U
Dibromoethane,1,2-	NS	NA	NA	NA	NA
Dichlorobenzene,1,2-	7.9	NA	NA	NA	NA
Dichlorobenzene,1,3-	1.6	NA	NA	NA	NA
Dichlorobenzene,1,4-	8.5	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NA	NA	NA	NA
Dichloroethane,1,1-	0.2	0.011 U	NA	0.013 U	0.013 U
Dichloroethane,1,2-	0.1	0.011 U	NA	0.013 U	0.013 U
Dichloroethene, cis-1,2-	NS	NA	NA	NA	NA
Dichloroethene,1,1-	0.4	0.011 U	NA	0.013 U	0.013 U
Dichloropropane,1,2-	NS	0.011 U	NA	0.013 U	0.013 U
Dichloropropene, cis-1,3	NS	0.011 U	NA	0.013 U	0.013 U
Dichloropropene, trans-1,3	NS	0.011 U	NA	0.013 U	0.013 U
Freon 113	6.0	NA	NA	NA	NA
Hexanone,2-	NS	0.011 U	NA	0.013 U	0.013 U
Isopropyl benzene	NS	NA	NA	NA	NA
Methyl Acetate	NS	NA	NA	NA	NA
Methyl tert-butyl ether	NS	NA	NA	NA	NA
Methyl-2-pentanone,4-	1.0	0.011 U	NA	0.013 U	0.013 U
Methylcyclohexane	NS	NA	NA	NA	NA
Methylene chloride	0.1	0.045 U	NA	0.013 U	0.013 U
Styrene	NS	0.011 U	NA	0.013 U	0.013 U
Tetrachloroethane,1,1,2,2-	0.6	0.011 U	NA	0.013 U	0.013 U
Tetrachloroethene	1.4	0.011 U	NA	0.013 U	0.013 U
Trans-1,2-Dichloroethene	NS	NA	NA	NA	NA
Trichlorobenzene,1,2,4-	3.4	NA	NA	NA	NA
Trichloroethane,1,1,1-	0.8	0.011 U	NA	0.013 U	0.013 U
Trichloroethane,1,1,2-	NS	0.011 U	NA	0.013 U	0.013 U
Trichloroethene	0.7	0.011 U	NA	0.013 U	0.013 U
Trichlorofluoromethane	NS	NA	NA	NA	NA
Vinyl chloride	0.2	0.011 UJ	NA	0.013 U	0.013 U
VOCs by TCLP (mg/L)					
Benzene	0.06	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Acenaphthene	50.0	0.39 U	55	0.43 U	0.43 U
Acenaphthylene	41.0	0.39 U	7.6 J	0.43 U	0.43 U
Anthracene	50.0	0.39 U	47	0.43 U	0.43 U
Benzo[g,h,i]perylene	50	0.39 UJ	9.7 J	0.1 J	0.43 U
Fluoranthene	50.0	0.015 J	62	0.21 J	0.43 U
Fluorene	50.0	0.39 U	46	0.43 U	0.43 U
Methylnaphthalene,2-	36.4	0.011 J	NA	0.43 U	0.43 U
Naphthalene	13.0	0.035 J	40	0.2 J	0.43 U
Phenanthrene	50.0	0.021 J	120	0.12 J	0.43 U
Pyrene	50.0	0.014 J	75	0.31 J	0.43 U
Total PAHs (Non-carcinogenic)	NS	0.096	462.3	0.94	ND

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue MW-27 HA-MW27-18 6/21/2001 (18)	SB01 SB1 (6-8) 5/9/1997 (6-8)	SB02 93BSB02-10-12 12/18/1998 (10-12)	SB02 93BSB02-12-14 12/21/1998 (12-14)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Benz[a]anthracene	0.224	0.39 U	34	0.12 J	0.43 U
Benzo[a]pyrene	0.061	0.39 U	30	0.15 J	0.43 U
Benzo[b]fluoranthene	1.1	0.39 U	28 J	0.14 J	0.43 U
Benzo[k]fluoranthene	1.1	0.39 U	9.7 J	0.051 J	0.43 U
Chrysene	0.4	0.39 U	32	0.13 J	0.43 U
Dibenz[a,h]anthracene	0.014	0.39 UJ	30 U	0.43 U	0.43 U
Indeno[1,2,3-cd]pyrene	3.2	0.39 UJ	12 J	0.086 J	0.43 U
Total PAHs (Carcinogenic)	NS	ND	145.7	0.677	ND
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Acetophenone	NS	NA	NA	NA	NA
Benzaldehyde	NS	NA	NA	NA	NA
Biphenyl,1,1-	NS	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	50.0	0.62 U	NA	0.43 U	0.43 U
Butyl benzyl phthalate	50.0	0.39 U	NA	0.43 U	0.43 U
Carbazole	NS	0.39 U	NA	0.43 U	0.43 U
Chloro-3-methylphenol,4-	0.240	0.39 U	NA	0.43 U	0.43 U
Chloronaphthalene,2-	NS	0.39 U	NA	0.43 U	0.43 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA
Dibenzofuran	6.2	0.39 U	NA	0.43 U	0.43 U
Dimethyl phthalate	2.0	0.39 U	NA	0.43 U	0.43 U
Dimethylphenol, 2,4-	NS	0.39 UJ	NA	0.43 U	0.43 U
Di-n-butyl phthalate	8.1	0.39 U	NA	0.43 U	0.43 U
Di-n-octyl phthalate	50.0	0.39 U	NA	0.43 U	0.43 U
Hexachlorobenzene	0.41	0.39 U	NA	0.43 U	0.43 U
Isophorone	4.40	0.39 U	NA	0.43 U	0.43 U
Methylphenol, 4-	0.9	0.39 UJ	NA	0.43 U	0.43 U
Methylphenol,2-	0.100	0.39 UJ	NA	0.43 U	0.43 U
Nitrophenol,4-	0.100	0.98 U	NA	1.1 U	1.1 U
N-Nitrosodi-n-propylamine	NS	0.39 U	NA	0.43 U	0.43 U
N-Nitrosodiphenylamine	NS	0.39 U	NA	0.43 U	0.43 U
Phenol	0.03	0.39 U	NA	0.43 U	0.43 U
Metals by Methods 6010 and ILM04.1 (mg/kg)					
Aluminum	NS	4090	*	15700	NA
Antimony	NS	0.96 UJ	*	1.2 UJN	NA
Arsenic	7.5	3.3	*	9.7 J	NA
Barium	300	28.1	*	153	NA
Beryllium	0.16	0.11 U	*	0.8 B	NA
Cadmium	1	0.20 U	*	0.9 JB	NA
Calcium	NS	14800	*	3480	NA
Chromium	10	6.6	*	23.1	NA
Cobalt	30	4.2	*	16 B	NA
Copper	25	9.4	*	36.5	NA
Iron	2000	10600	*	31400	NA
Lead	500	3.2	*	24.2	NA
Magnesium	NS	3890	*	8700	NA
Manganese	NS	211	*	548	NA
Mercury	0.1	0.0038 U	*	0.1 U	NA
Nickel	13	9	*	31.5	NA
Potassium	NS	1010	*	3510 JE	NA
Selenium	2	1.1 U	*	0.8 U	NA
Silver	NS	0.22 U	*	0.6 UJ	NA
Sodium	NS	4.3 U	*	570 UB	NA
Thallium	NS	2.0 U	*	1.7 UB	NA
Vanadium	150	10.1	*	24.9	NA
Zinc	20	24.3	*	109 *	NA
Metals by TCLP (mg/L)					
Barium	300	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)					
Cyanide, Total	NS	0.57 U	2.2	1.3 U	NA
Geochemical Analyses by Various Methods					
pH (pH units)	NS	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)			
		93B Maple Avenue			
		SB03	SB25	SB25	TP-04
		SB03-12-13.5	HA-SB25-13	HA-SB25-21	93BTP-04-4.5
		12/21/1998	6/21/2001	6/21/2001	10/19/1998
		(12-13.5)	(13)	(21)	(4-4.5)
BTEX by Methods 91-1 and 95-1 (mg/kg)					
Benzene	0.06	0.013 U	860	0.008 J	2.8 U
Toluene	1.5	0.013 U	2800	0.02 B	0.27 J
Ethylbenzene	5.5	0.013 U	340	0.002 J	0.9 J
Xylene, Total	1.2	0.013 U	2800	0.016	0.69 J
Total BTEX	NS	ND	6800	0.046	1.86
Other VOCs by Methods 91-1 and 95-1 (mg/kg)					
Acetone	0.2	0.013 U	280 UJ	0.012 U	2.8 UJ
Bromodichloromethane	NS	0.013 U	270 U	0.012 U	2.8 U
Bromoform	NS	0.013 U	270 U	0.012 U	2.8 U
Bromomethane	NS	0.013 U	270 U	0.012 U	2.8 U
Butanone,2- (MEK)	0.3	0.013 U	270 U	0.012 U	2.8 UJ
Carbon disulfide	2.7	0.013 U	270 U	0.012 U	2.8 U
Carbon tetrachloride	0.6	0.013 U	270 U	0.012 U	2.8 U
Chlorobenzene	1.7	0.013 U	270 U	0.012 U	2.8 U
Chloroethane	1.9	0.013 U	270 UJ	0.012 U	2.8 U
Chloroform	0.3	0.013 U	270 U	0.012 U	2.8 U
Chloromethane	NS	0.013 U	270 UJ	0.012 U	2.8 U
Cyclohexane	NS	NA	NA	NA	NA
Dibromo-3-chloropropane,1,2-	NS	NA	NA	NA	NA
Dibromochloromethane	NS	0.013 U	270 U	0.012 U	2.8 U
Dibromoethane,1,2-	NS	NA	NA	NA	NA
Dichlorobenzene,1,2-	7.9	NA	NA	NA	NA
Dichlorobenzene,1,3-	1.6	NA	NA	NA	NA
Dichlorobenzene,1,4-	8.5	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NA	NA	NA	NA
Dichloroethane,1,1-	0.2	0.013 U	270 U	0.012 U	2.8 U
Dichloroethane,1,2-	0.1	0.013 U	270 U	0.012 U	2.8 U
Dichloroethene, cis-1,2-	NS	NA	NA	NA	NA
Dichloroethene,1,1-	0.4	0.013 U	270 U	0.012 U	2.8 U
Dichloropropane,1,2-	NS	0.013 U	270 U	0.012 U	2.8 U
Dichloropropene, cis-1,3	NS	0.013 U	270 U	0.012 U	2.8 U
Dichloropropene, trans-1,3	NS	0.013 U	270 U	0.012 U	2.8 U
Freon 113	6.0	NA	NA	NA	NA
Hexanone,2-	NS	0.013 U	270 U	0.012 U	2.8 UJ
Isopropyl benzene	NS	NA	NA	NA	NA
Methyl Acetate	NS	NA	NA	NA	NA
Methyl tert-butyl ether	NS	NA	NA	NA	NA
Methyl-2-pentanone,4-	1.0	0.013 U	270 U	0.012 U	2.8 U
Methylcyclohexane	NS	NA	NA	NA	NA
Methylene chloride	0.1	0.013 U	210 U	0.032 U	2.8 U
Styrene	NS	0.013 U	1200	0.007 J	2.8 U
Tetrachloroethane,1,1,2,2-	0.6	0.013 U	270 U	0.012 U	2.8 U
Tetrachloroethene	1.4	0.013 U	270 U	0.012 U	0.42 J
Trans-1,2-Dichloroethene	NS	NA	NA	NA	NA
Trichlorobenzene,1,2,4-	3.4	NA	NA	NA	NA
Trichloroethane,1,1,1-	0.8	0.013 U	270 U	0.012 U	2.8 U
Trichloroethane,1,1,2-	NS	0.013 U	270 U	0.012 U	2.8 U
Trichloroethene	0.7	0.013 U	270 U	0.012 U	2.8 U
Trichlorofluoromethane	NS	NA	NA	NA	NA
Vinyl chloride	0.2	0.013 U	270 U	0.012 UJ	2.8 U
VOCs by TCLP (mg/L)					
Benzene	0.06	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Acenaphthene	50.0	0.43 UJ	4.4 J	0.4 UJ	93 D
Acenaphthylene	41.0	0.43 UJ	18	0.028 J	11
Anthracene	50.0	0.43 UJ	18	0.044 J	120 D
Benzo[g,h,i]perylene	50	0.43 UJ	6.5 J	0.4 UJ	32 D
Fluoranthene	50.0	0.044 J	23	0.069 J	170 D
Fluorene	50.0	0.43 UJ	19	0.036 J	97 D
Methylnaphthalene,2-	36.4	0.43 UJ	45	0.04 J	1.5 J
Naphthalene	13.0	0.43 UJ	78	0.058 J	2.5
Phenanthrene	50.0	0.43 UJ	57	0.15 J	480 D
Pyrene	50.0	0.43 UJ	32	0.086 J	290 DJ
Total PAHs (Non-carcinogenic)	NS	0.044	300.9	0.511	1297

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93B Maple Avenue SB03 SB03-12-13.5 12/21/1998 (12-13.5)	SB25 HA-SB25-13 6/21/2001 (13)	SB25 HA-SB25-21 6/21/2001 (21)	TP-04 93BTP-04-4.5 10/19/1998 (4-4.5)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Benz[a]anthracene	0.224	0.43 UJ	14 J	0.04 J	110 D
Benzo[a]pyrene	0.061	0.43 UJ	10 J	0.027 J	77 DJ
Benzo[b]fluoranthene	1.1	0.43 UJ	5.8 J	0.018 J	60 DJ
Benzo[k]fluoranthene	1.1	0.43 UJ	7 J	0.022 J	20 DJ
Chrysene	0.4	0.43 UJ	12 J	0.035 J	80 DJ
Dibenz[a,h]anthracene	0.014	0.43 UJ	2.3 J	0.4 UJ	7.5
Indeno[1,2,3-cd]pyrene	3.2	0.43 UJ	4.8 J	0.4 UJ	29 DJ
Total PAHs (Carcinogenic)	NS	ND	55.9	0.142	383.5
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)					
Acetophenone	NS	NA	NA	NA	NA
Benzaldehyde	NS	NA	NA	NA	NA
Biphenyl,1,1-	NS	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	50.0	0.43 UJ	15 U	0.4 UJ	1.9 J
Butyl benzyl phthalate	50.0	0.43 UJ	15 U	0.4 UJ	2.2 UJ
Carbazole	NS	0.43 UJ	4.5 J	0.03 J	2.2 U
Chloro-3-methylphenol,4-	0.240	0.43 UJ	15 U	0.4 UJ	2.2 U
Chloronaphthalene,2-	NS	0.43 UJ	15 U	0.4 UJ	2.2 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA
Dibenzofuran	6.2	0.43 UJ	10 J	0.019 J	31 E
Dimethyl phthalate	2.0	0.43 UJ	15 U	0.4 UJ	2.2 U
Dimethylphenol, 2,4-	NS	0.43 UJ	15 UJ	0.4 UJ	2.2 U
Di-n-butyl phthalate	8.1	0.43 UJ	15 U	0.4 UJ	2.2 U
Di-n-octyl phthalate	50.0	0.43 UJ	15 U	0.4 UJ	2.2 U
Hexachlorobenzene	0.41	0.43 UJ	15 U	0.4 UJ	2.2 U
Isophorone	4.40	0.43 UJ	15 U	0.4 UJ	2.2 U
Methylphenol, 4-	0.9	0.43 UJ	15 UJ	0.4 UJ	2.2 U
Methylphenol,2-	0.100	0.43 UJ	15 UJ	0.4 UJ	2.2 U
Nitrophenol,4-	0.100	1.1 UJ	38 U	1 UJ	5.6 UR
N-Nitrosodi-n-propylamine	NS	0.43 UJ	15 U	0.4 UJ	2.2 U
N-Nitrosodiphenylamine	NS	0.43 UJ	15 U	0.4 UJ	2.2 U
Phenol	0.03	0.43 UJ	0.41 J	0.4 UJ	2.2 U
Metals by Methods 6010 and ILM04.1 (mg/kg)					
Aluminum	NS	15200	7710	5780	11200
Antimony	NS	1.2 UJN	0.91 UJ	1.1 UJ	0.7 UJR
Arsenic	7.5	8.9 J	3.4	2.7	6.3 J
Barium	300	136	62	56.4	58.9 B
Beryllium	0.16	0.8 B	0.10 U	0.12 U	0.4 BJ
Cadmium	1	0.8 JB	0.52	0.32 J	0.8 BJ
Calcium	NS	19800	17500	19800	2640 J*
Chromium	10	23.6	12.1	9.4	15.2
Cobalt	30	15.5 B	6.1	5.4	9.5 BJ
Copper	25	34	16.1	13.4	41.2
Iron	2000	31100	17600	14900	24900 EJ
Lead	500	17.8	26	5	13.7 J
Magnesium	NS	11000	5950	5120	4590
Manganese	NS	684	363	312	147 EJ
Mercury	0.1	0.1 U	0.026	0.0073	0.09 U
Nickel	13	30.3	17.7	12.1	20.5
Potassium	NS	3850 JE	2040	1260	1230
Selenium	2	0.8 U	1.0 U	1.2 U	0.7 UJN
Silver	NS	0.6 UJ	0.21 U	0.24 U	0.6 U
Sodium	NS	671 UB	4.1 U	4.9 U	599 UB
Thallium	NS	0.6 U	1.9 U	2.2 U	0.7 U
Vanadium	150	25.5	14.2	13.1	19.2 B
Zinc	20	81.1 *	81.6	36	69.9
Metals by TCLP (mg/L)					
Barium	300	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)					
Cyanide, Total	NS	1.3 U	0.54 U	0.63 U	1.1 U
Geochemical Analyses by Various Methods					
pH (pH units)	NS	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	88.8

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)				
		93B Maple Avenue		93A Maple Avenue		
		TP-05	TP-05	GP01	GP01	GP01
		93BTP-05-6.5	93BTP-05-10.5	GP01-4-8	GP01-9.3	GP01-12-16
		10/19/1998	10/19/98	6/28/01	6/28/01	6/28/01
		(6.5)	(10.5)	(4-8)	(9.3)	(12-16)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	0.029 J	NA	0.011 U	0.039 U	0.012 UJ
Toluene	1.5	0.054 J	NA	0.011 U	0.039 U	0.012 UJ
Ethylbenzene	5.5	0.36	NA	0.011 U	0.039 U	0.012 UJ
Xylene, Total	1.2	0.15	NA	0.011 U	0.039 U	0.012 UJ
Total BTEX	NS	0.593	NA	ND	ND	ND
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Bromodichloromethane	NS	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Bromoform	NS	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Bromomethane	NS	0.056 UJ	NA	0.011 U	0.039 U	0.012 UJ
Butanone,2- (MEK)	0.3	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Carbon disulfide	2.7	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Carbon tetrachloride	0.6	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Chlorobenzene	1.7	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Chloroethane	1.9	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Chloroform	0.3	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Chloromethane	NS	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Cyclohexane	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Dibromo-3-chloropropane,1,2-	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Dibromochloromethane	NS	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Dibromoethane,1,2-	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Dichlorobenzene,1,2-	7.9	NA	NA	0.011 U	0.039 U	0.012 UJ
Dichlorobenzene,1,3-	1.6	NA	NA	0.011 U	0.039 U	0.012 UJ
Dichlorobenzene,1,4-	8.5	NA	NA	0.011 U	0.039 U	0.012 UJ
Dichlorodifluoromethane	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Dichloroethane,1,1-	0.2	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Dichloroethane,1,2-	0.1	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Dichloroethene, cis-1,2-	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Dichloroethene,1,1-	0.4	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Dichloropropane,1,2-	NS	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Dichloropropene, cis-1,3	NS	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Dichloropropene, trans-1,3	NS	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Freon 113	6.0	NA	NA	0.002 J	0.009 J	0.003 J
Hexanone,2-	NS	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Isopropyl benzene	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Methyl Acetate	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Methyl tert-butyl ether	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Methyl-2-pentanone,4-	1.0	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Methylcyclohexane	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Methylene chloride	0.1	0.056 U	NA	0.007 J B	0.024 J B	0.008 J B
Styrene	NS	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Tetrachloroethane,1,1,2,2-	0.6	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Tetrachloroethene	1.4	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Trans-1,2-Dichloroethene	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Trichlorobenzene,1,2,4-	3.4	NA	NA	0.011 U	0.039 U	0.012 UJ
Trichloroethane,1,1,1-	0.8	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Trichloroethane,1,1,2-	NS	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Trichloroethene	0.7	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
Trichlorofluoromethane	NS	NA	NA	0.011 U	0.039 U	0.012 UJ
Vinyl chloride	0.2	0.056 U	NA	0.011 U	0.039 U	0.012 UJ
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	0.065 J	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	0.2 U	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	8.9	NA	0.38 U	0.085 J	0.46 U
Acenaphthylene	41.0	3.1	NA	0.038 J	1.5 J	0.46 U
Anthracene	50.0	13 DJ	NA	0.013 J	0.62 J	0.46 U
Benzo[g,h,i]perylene	50	2.8	NA	0.13 J	14	0.46 U
Fluoranthene	50.0	13 DJ	NA	0.38 U	4.2	0.054 J
Fluorene	50.0	11	NA	0.38 U	0.15 J	0.46 U
Methylnaphthalene,2-	36.4	0.24 J	NA	0.38 U	0.61 J	0.46 U
Naphthalene	13.0	0.63 J	NA	0.38 U	2.1 U	0.46 U
Phenanthrene	50.0	57 D	NA	0.005 J	2.4	0.032 J
Pyrene	50.0	42 DJ	NA	0.007 J	15	0.11 J
Total PAHs (Non-carcinogenic)	NS	151.67	NA	0.19	39	0.20

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)				
		93B Maple Avenue		93A Maple Avenue		
		TP-05 93BTP-05-6.5 10/19/1998 (6.5)	TP-05 93BTP-05-10.5 10/19/98 (10.5)	GP01 GP01-4-8 6/28/01 (4-8)	GP01 GP01-9.3 6/28/01 (9.3)	GP01 GP01-12-16 6/28/01 (12-16)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	13	NA	0.38 U	5.2	0.034 J
Benzo[a]pyrene	0.061	13	NA	0.38 U	11	0.017 J
Benzo[b]fluoranthene	1.1	11	NA	0.38 U	5	0.46 U
Benzo[k]fluoranthene	1.1	2.4	NA	0.38 U	3.3	0.46 U
Chrysene	0.4	11 J	NA	0.38 U	5.8	0.029 J
Dibenz[a,h]anthracene	0.014	0.74 J	NA	0.38 U	3.8	0.46 U
Indeno[1,2,3-cd]pyrene	3.2	2.5	NA	0.38 U	9	0.46 U
Total PAHs (Carcinogenic)	NS	53.64	NA	ND	43	0.08
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	NA	NA	0.38 U	2.1 U	0.46 U
Benzaldehyde	NS	NA	NA	0.38 U	2.1 U	0.46 U
Biphenyl,1,1-	NS	NA	NA	0.38 U	2.1 U	0.46 U
Bis(2-ethylhexyl)phthalate	50.0	0.33 J	NA	0.033 J	0.24 J	0.028 J
Butyl benzyl phthalate	50.0	2.2 UJ	NA	0.38 U	2.1 U	0.46 U
Carbazole	NS	2.2 U	NA	0.38 U	2.1 U	0.46 U
Chloro-3-methylphenol,4-	0.240	2.2 U	NA	0.38 U	2.1 U	0.46 U
Chloronaphthalene,2-	NS	2.2 U	NA	0.38 U	2.1 U	0.46 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA
Dibenzofuran	6.2	2.2 U	NA	0.38 U	0.12 J	0.46 U
Dimethyl phthalate	2.0	2.2 U	NA	0.38 U	2.1 U	0.46 U
Dimethylphenol, 2,4-	NS	2.2 U	NA	0.38 U	2.1 U	0.46 U
Di-n-butyl phthalate	8.1	2.2 U	NA	0.38 U	2.1 U	0.46 U
Di-n-octyl phthalate	50.0	2.2 U	NA	0.38 U	2.1 U	0.46 U
Hexachlorobenzene	0.41	2.2 U	NA	0.38 U	2.1 U	0.46 U
Isophorone	4.40	2.2 U	NA	0.38 U	2.1 U	0.46 U
Methylphenol, 4-	0.9	2.2 U	NA	0.38 U	2.1 U	0.46 U
Methylphenol,2-	0.100	2.2 U	NA	0.38 U	2.1 U	0.46 U
Nitrophenol,4-	0.100	5.6 UR	NA	0.91 U	5.1 U	1.1 U
N-Nitrosodi-n-propylamine	NS	2.2 U	NA	0.38 U	2.1 U	0.46 U
N-Nitrosodiphenylamine	NS	2.2 U	NA	0.38 U	2.1 U	0.46 U
Phenol	0.03	2.2 U	NA	0.38 U	2.1 U	0.46 U
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	16800	NA	NA	NA	NA
Antimony	NS	0.72 UJR	NA	NA	NA	NA
Arsenic	7.5	7.1 J	NA	NA	NA	NA
Barium	300	100	NA	NA	NA	NA
Beryllium	0.16	0.7 BJ	NA	NA	NA	NA
Cadmium	1	0.8 BJ	NA	NA	NA	NA
Calcium	NS	2250 J*	NA	NA	NA	NA
Chromium	10	22.4	NA	NA	NA	NA
Cobalt	30	14.6 BJ	NA	NA	NA	NA
Copper	25	28.8	NA	NA	NA	NA
Iron	2000	27100 EJ	NA	NA	NA	NA
Lead	500	14.8	NA	NA	NA	NA
Magnesium	NS	7220	NA	NA	NA	NA
Manganese	NS	241 EJ	NA	NA	NA	NA
Mercury	0.1	0.08 U	NA	NA	NA	NA
Nickel	13	27.3	NA	NA	NA	NA
Potassium	NS	3410	NA	NA	NA	NA
Selenium	2	0.74 UJN	NA	NA	NA	NA
Silver	NS	0.9 BJ	NA	NA	NA	NA
Sodium	NS	515 UB	NA	NA	NA	NA
Thallium	NS	1.2 UB	NA	NA	NA	NA
Vanadium	150	25	NA	NA	NA	NA
Zinc	20	79.6	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	0.844	NA	NA	NA
Chromium	10	NA	0.0125 J	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	1.1 U	NA	0.0006 U	0.00059 U	0.00054 U
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	8.8	NA	NA	NA
Sulfide (mg/kg)	NS	NA	19.2	NA	NA	NA
Flash Point (degrees F)	NS	NA	200	NA	NA	NA
Residue, Total (%)	NS	89	72.9	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)				
		93A Maple Avenue				
		GP01 GP01-16-20 6/28/01 (16-20)	GP-16 GP-16-0-4 11/5/2001 (0-4)	GP-16 GP-16-4-8 11/5/2001 (4-8)	GP-16 GP-16-8-12 11/5/2001 (8-12)	GP-16 GP-16-12-16 11/5/2001 (12-16)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	0.013 U	0.011 U	0.011 U	**0.51 J**	0.014 UJ
Toluene	1.5	0.013 U	0.011 U	0.011 U	**0.96 J**	0.014 UJ
Ethylbenzene	5.5	0.013 U	0.011 U	0.011 U	**19**	0.014 UJ
Xylene, Total	1.2	0.013 U	0.011 U	0.011 U	**18**	0.014 UJ
Total BTEX	NS	ND	ND	ND	38	ND
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	0.02	0.011 UJ	0.011 UJ	**2 J**	0.014 UJ
Bromodichloromethane	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Bromoform	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Bromomethane	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Butanone,2- (MEK)	0.3	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Carbon disulfide	2.7	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Carbon tetrachloride	0.6	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Chlorobenzene	1.7	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Chloroethane	1.9	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Chloroform	0.3	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Chloromethane	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Cyclohexane	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dibromo-3-chloropropane,1,2-	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dibromochloromethane	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dibromoethane,1,2-	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichlorobenzene,1,2-	7.9	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichlorobenzene,1,3-	1.6	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichlorobenzene,1,4-	8.5	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichlorodifluoromethane	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichloroethane,1,1-	0.2	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichloroethane,1,2-	0.1	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichloroethene, cis-1,2-	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichloroethene,1,1-	0.4	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichloropropane,1,2-	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichloropropene, cis-1,3	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Dichloropropene, trans-1,3	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Freon 113	6.0	0.002 J	0.011 UJ	0.011 UJ	2.8 U	0.014 UJ
Hexanone,2-	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Isopropyl benzene	NS	0.013 U	0.011 U	0.011 U	2.8	0.014 UJ
Methyl Acetate	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Methyl tert-butyl ether	NS	0.013 U	0.011 UJ	0.011 UJ	2.8 U	0.014 UJ
Methyl-2-pentanone,4-	1.0	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Methylcyclohexane	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Methylene chloride	0.1	0.009 J B	0.011 U	0.011 U	2.8 U	0.014 UJ
Styrene	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Tetrachloroethane,1,1,2,2-	0.6	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Tetrachloroethene	1.4	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Trans-1,2-Dichloroethene	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Trichlorobenzene,1,2,4-	3.4	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Trichloroethane,1,1,1-	0.8	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Trichloroethane,1,1,2-	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Trichloroethene	0.7	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Trichlorofluoromethane	NS	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
Vinyl chloride	0.2	0.013 U	0.011 U	0.011 U	2.8 U	0.014 UJ
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	0.45 U	0.023 J	0.005 J	8.7 J	0.16 J
Acenaphthylene	41.0	0.45 U	0.054 J	0.02 J	3.1 J	0.025 J
Anthracene	50.0	0.45 U	0.062 J	0.029 J	8.4 J	0.2 J
Benzo[g,h,i]perylene	50	0.45 U	0.16 J	0.079 J	10 J	0.035 J
Fluoranthene	50.0	0.45 U	0.63	0.16 J	12	0.28 J
Fluorene	50.0	0.45 U	0.028 J	0.007 J	6.7 J	0.12 J
Methylnaphthalene,2-	36.4	0.45 U	0.029 J	0.005 J	6.9 J	0.18 J
Naphthalene	13.0	0.45 U	0.034 J	0.01 J	**21**	0.33 J
Phenanthrene	50.0	0.45 U	0.45	0.092 J	23	0.64
Pyrene	50.0	0.45 U	0.79	0.22 J	35	0.5
Total PAHs (Non-carcinogenic)	NS	ND	2.26	0.63	135	2.5

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)				
		93A Maple Avenue				
		GP01 GP01-16-20 6/28/01 (16-20)	GP-16 GP-16-0-4 11/5/2001 (0-4)	GP-16 GP-16-4-8 11/5/2001 (4-8)	GP-16 GP-16-8-12 11/5/2001 (8-12)	GP-16 GP-16-12-16 11/5/2001 (12-16)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	0.45 U	0.32 J	0.11 J	13	0.2 J
Benzo[a]pyrene	0.061	0.45 U	0.33 J	0.1 J	14	0.14 J
Benzo[b]fluoranthene	1.1	0.45 U	0.33 J	0.1 J	5.8 J	0.064 J
Benzo[k]fluoranthene	1.1	0.45 U	0.38	0.12 J	7 J	0.09 J
Chrysene	0.4	0.45 U	0.41	0.12 J	13	0.19 J
Dibenz[a,h]anthracene	0.014	0.45 U	0.089 J	0.03 J	3.1 J	0.019 J
Indeno[1,2,3-cd]pyrene	3.2	0.45 U	0.27 J	0.11 J	8.1 J	0.048 J
Total PAHs (Carcinogenic)	NS	ND	2.13	0.7	64	0.8
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
Benzaldehyde	NS	0.45 U	0.36 UJ	0.37 UJ	8.8 UJ	0.47 UJ
Biphenyl,1,1-	NS	0.45 U	0.36 U	0.37 U	2.9 J	0.47 U
Bis(2-ethylhexyl)phthalate	50.0	0.052 J	0.36 U	0.37 U	8.8 U	0.47 U
Butyl benzyl phthalate	50.0	0.45 U	0.36 U	0.014 J	8.8 U	0.47 U
Carbazole	NS	0.45 U	0.037 J	0.01 J	1.9 J	0.02 J
Chloro-3-methylphenol,4-	0.240	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
Chloronaphthalene,2-	NS	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA
Dibenzofuran	6.2	0.45 U	0.018 J	0.005 J	3.6 J	0.035 J
Dimethyl phthalate	2.0	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
Dimethylphenol, 2,4-	NS	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
Di-n-butyl phthalate	8.1	0.006 J	0.36 U	0.37 U	8.8 U	0.47 U
Di-n-octyl phthalate	50.0	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
Hexachlorobenzene	0.41	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
Isophorone	4.40	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
Methylphenol, 4-	0.9	0.45 U	0.36 UJ	0.37 UJ	0.14 J	0.47 UJ
Methylphenol,2-	0.100	0.45 U	0.36 UJ	0.37 UJ	8.8 UJ	0.47 UJ
Nitrophenol,4-	0.100	1.1 U	0.87 U	0.9 U	21 U	1.1 U
N-Nitrosodi-n-propylamine	NS	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
N-Nitrosodiphenylamine	NS	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
Phenol	0.03	0.45 U	0.36 U	0.37 U	8.8 U	0.47 U
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	0.00059 U	.55 U	.55 U	.59 U	.7 U
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)				
		93A Maple Avenue				
		GP-17	GP-17	GP-17	GP-20	GP-20
		GP-17-0-4	GP-17-4-8	GP-17-8-12	GP-20-0-4	GP-20-4-8
		11/5/2001	11/5/2001	11/5/2001	11/5/2001	11/5/2001
		(0-4)	(4-8)	(8-12)	(0-4)	(4-8)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Toluene	1.5	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Ethylbenzene	5.5	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Xylene, Total	1.2	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Total BTEX	NS	ND	ND	ND	ND	ND
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	0.018 UJ	0.012 UJ	0.013 UJ	0.011 UJ	0.011 UJ
Bromodichloromethane	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Bromoform	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Bromomethane	NS	0.011 UJ	0.012 UJ	0.013 UJ	0.011 U	0.011 U
Butanone,2- (MEK)	0.3	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Carbon disulfide	2.7	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Carbon tetrachloride	0.6	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Chlorobenzene	1.7	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Chloroethane	1.9	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Chloroform	0.3	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Chloromethane	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Cyclohexane	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dibromo-3-chloropropane,1,2-	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dibromochloromethane	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dibromoethane,1,2-	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dichlorobenzene,1,2-	7.9	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dichlorobenzene,1,3-	1.6	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dichlorobenzene,1,4-	8.5	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dichlorodifluoromethane	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dichloroethane,1,1-	0.2	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dichloroethane,1,2-	0.1	0.011 UJ	0.012 U	0.013 UJ	0.011 U	0.011 U
Dichloroethene, cis-1,2-	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dichloroethene,1,1-	0.4	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dichloropropane,1,2-	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dichloropropene, cis-1,3	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Dichloropropene, trans-1,3	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Freon 113	6.0	0.011 UJ	0.012 UJ	0.013 UJ	0.011 UJ	0.011 UJ
Hexanone,2-	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Isopropyl benzene	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Methyl Acetate	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Methyl tert-butyl ether	NS	0.011 UJ	0.012 UJ	0.013 UJ	0.011 UJ	0.011 UJ
Methyl-2-pentanone,4-	1.0	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Methylcyclohexane	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Methylene chloride	0.1	0.027 U	0.012 U	0.013 U	0.011 U	0.011 U
Styrene	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Tetrachloroethane,1,1,2,2-	0.6	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Tetrachloroethene	1.4	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Trans-1,2-Dichloroethene	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Trichlorobenzene,1,2,4-	3.4	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Trichloroethane,1,1,1-	0.8	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Trichloroethane,1,1,2-	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Trichloroethene	0.7	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Trichlorofluoromethane	NS	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
Vinyl chloride	0.2	0.011 U	0.012 U	0.013 U	0.011 U	0.011 U
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	0.008 J	0.017 J	0.39 U	0.12 J	0.007 J
Acenaphthylene	41.0	0.032 J	0.086 J	0.39 U	0.63 J	0.05 J
Anthracene	50.0	0.057 J	0.37	0.39 U	0.81 J	0.031 J
Benzo[g,h,i]perylene	50	0.1 J	0.34 J	0.011 J	2.9 J	0.16 J
Fluoranthene	50.0	0.44	1.5	0.004 J	3.8	0.22 J
Fluorene	50.0	0.009 J	0.068 J	0.39 U	0.12 J	0.008 J
Methylnaphthalene,2-	36.4	0.003 J	0.024 J	0.39 U	0.065 J	0.009 J
Naphthalene	13.0	0.004 J	0.03 J	0.003 J	0.12 J	0.015 J
Phenanthrene	50.0	0.22 J	1.1	0.004 J	2.1	0.1 J
Pyrene	50.0	0.57	1.7	0.009 J	6 J	0.36 J
Total PAHs (Non-carcinogenic)	NS	1.4	5.2	0.03	17	1.0

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs) 93A Maple Avenue GP-17 GP-17-0-4 11/5/2001 (0-4)	GP-17 GP-17-4-8 11/5/2001 (4-8)	GP-17 GP-17-8-12 11/5/2001 (8-12)	GP-20 GP-20-0-4 11/5/2001 (0-4)	GP-20 GP-20-4-8 11/5/2001 (4-8)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	0.29 J	1.3	0.004 J	3.2 J	0.19 J
Benzo[a]pyrene	0.061	0.22 J	0.87	0.017 J	3.3	0.22 J
Benzo[b]fluoranthene	1.1	0.22 J	0.58	0.005 J	2.6	0.19 J
Benzo[k]fluoranthene	1.1	0.23 J	0.99	0.004 J	2.8	0.23 J
Chrysene	0.4	0.29 J	1.2	0.004 J	3.2 J	0.22 J
Dibenz[a,h]anthracene	0.014	0.065 J	0.26 J	0.39 U	1.3 J	0.059 J
Indeno[1,2,3-cd]pyrene	3.2	0.17 J	0.56	0.014 J	4.1	0.19 J
Total PAHs (Carcinogenic)	NS	1.49	5.8	0.05	20.5	1.30
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
Benzaldehyde	NS	0.38 UJ	0.35 UJ	0.39 UJ	1.5 UJ	0.38 UJ
Biphenyl,1,1-	NS	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
Bis(2-ethylhexyl)phthalate	50.0	0.38 U	0.35 U	0.39 U	1.5 UJ	0.38 U
Butyl benzyl phthalate	50.0	0.38 U	0.35 U	0.003 J	1.5 UJ	0.011 J
Carbazole	NS	0.024 J	0.076 J	0.002 J	0.12 J	0.01 J
Chloro-3-methylphenol,4-	0.240	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
Chloronaphthalene,2-	NS	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA
Dibenzofuran	6.2	0.003 J	0.041 J	0.39 U	0.061 J	0.005 J
Dimethyl phthalate	2.0	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
Dimethylphenol, 2,4-	NS	0.38 U	0.008 J	0.39 U	1.5 U	0.38 U
Di-n-butyl phthalate	8.1	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
Di-n-octyl phthalate	50.0	0.38 U	0.35 U	0.005 J	1.5 U	0.38 U
Hexachlorobenzene	0.41	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
Isophorone	4.40	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
Methylphenol, 4-	0.9	0.38 UJ	0.018 J	0.39 UJ	0.017 J	0.38 UJ
Methylphenol,2-	0.100	0.38 UJ	0.004 J	0.39 UJ	1.5 UJ	0.38 UJ
Nitrophenol,4-	0.100	0.91 U	0.86 U	0.96 U	3.7 U	0.91 U
N-Nitrosodi-n-propylamine	NS	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
N-Nitrosodiphenylamine	NS	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
Phenol	0.03	0.38 U	0.35 U	0.39 U	1.5 U	0.38 U
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	.56 U	.61 U	.65 U	.54 U	.54 U
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		93A Maple Avenue				91 Maple Avenue	
		GP-20	GP-21	GP-21	GP-21	GP-18	GP-18
		GP-20-8-11	GP-21-0-4	GP-21-4-8	GP21-8-10.5	GP-18-0-4	GP-18-4-8
		11/5/2001	11/5/2001	11/5/2001	11/5/2001	11/05/01	11/05/01
		(8-11)	(0-4)	(4-8)	(8-10.5)	(0-4)	(4-8)
BTEX by Methods 91-1 and 95-1 (mg/kg)							
Benzene	0.06	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Toluene	1.5	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Ethylbenzene	5.5	13	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Xylene, Total	1.2	9.8	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Total BTEX	NS	38	ND	ND	ND	ND	ND
Other VOCs by Methods 91-1 and 95-1 (mg/kg)							
Acetone	0.2	7 J	0.012 UJ	0.011 UJ	0.011 UJ	0.011 UJ	0.01 UJ
Bromodichloromethane	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Bromoform	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Bromomethane	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 UJ	0.01 UJ
Butanone,2- (MEK)	0.3	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Carbon disulfide	2.7	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Carbon tetrachloride	0.6	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Chlorobenzene	1.7	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Chloroethane	1.9	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Chloroform	0.3	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Chloromethane	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Cyclohexane	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dibromo-3-chloropropane,1,2-	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dibromochloromethane	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dibromoethane,1,2-	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichlorobenzene,1,2-	7.9	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichlorobenzene,1,3-	1.6	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichlorobenzene,1,4-	8.5	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichlorodifluoromethane	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichloroethane,1,1-	0.2	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichloroethane,1,2-	0.1	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichloroethene, cis-1,2-	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichloroethene,1,1-	0.4	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichloropropane,1,2-	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichloropropene, cis-1,3	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Dichloropropene, trans-1,3	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Freon 113	6.0	7.6 U	0.012 UJ	0.011 UJ	0.011 UJ	0.011 UJ	0.01 UJ
Hexanone,2-	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Isopropyl benzene	NS	2.3 J	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Methyl Acetate	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Methyl tert-butyl ether	NS	7.6 U	0.012 UJ	0.011 UJ	0.011 UJ	0.011 UJ	0.01 UJ
Methyl-2-pentanone,4-	1.0	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Methylcyclohexane	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Methylene chloride	0.1	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Styrene	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Tetrachloroethane,1,1,2,2-	0.6	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Tetrachloroethene	1.4	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Trans-1,2-Dichloroethene	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Trichlorobenzene,1,2,4-	3.4	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Trichloroethane,1,1,1-	0.8	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Trichloroethane,1,1,2-	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Trichloroethene	0.7	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Trichlorofluoromethane	NS	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
Vinyl chloride	0.2	7.6 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U
VOCs by TCLP (mg/L)							
Benzene	0.06	NA	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acenaphthene	50.0	110	0.038 J	0.38 U	0.39 U	1.3 J	2.2 J
Acenaphthylene	41.0	6.7 J	0.022 J	0.002 J	0.002 J	0.96 J	1.1 J
Anthracene	50.0	82	0.11 J	0.38 U	0.004 J	3.6 J	5.6 J
Benzo[g,h,i]perylene	50	35 J	0.17 J	0.005 J	0.03 J	4.5 J	8.2 J
Fluoranthene	50.0	66	0.58	0.011 J	0.014 J	23 J	26
Fluorene	50.0	54	0.039 J	0.38 U	0.39 U	1.7 J	2.9 J
Methylnaphthalene,2-	36.4	170	0.009 J	0.38 U	0.39 U	0.55 J	1 J
Naphthalene	13.0	260	0.01 J	0.003 J	0.005 J	1 J	1.6 J
Phenanthrene	50.0	230	0.49	0.005 J	0.01 J	14 J	23
Pyrene	50.0	220	0.75	0.013 J	0.016 J	24 J	28
Total PAHs (Non-carcinogenic)	NS	1234	2.22	0.04	0.08	75	100

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		93A Maple Avenue				91 Maple Avenue	
		GP-20 GP-20-8-11 11/5/2001 (8-11)	GP-21 GP-21-0-4 11/5/2001 (0-4)	GP-21 GP-21-4-8 11/5/2001 (4-8)	GP-21 GP21-8-10.5 11/5/2001 (8-10.5)	GP-18 GP-18-0-4 11/05/01 (0-4)	GP-18 GP-18-4-8 11/05/01 (4-8)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Benz[a]anthracene	0.224	63	0.34 J	0.008 J	0.01 J	9.9 J	12
Benzo[a]pyrene	0.061	50	0.29 J	0.01 J	0.008 J	8.9 J	11
Benzo[b]fluoranthene	1.1	20 J	0.28 J	0.009 J	0.007 J	6.8 J	8.5
Benzo[k]fluoranthene	1.1	25 J	0.27 J	0.01 J	0.008 J	8.8 J	10
Chrysene	0.4	57	0.35 J	0.012 J	0.01 J	9.8 J	12
Dibenz[a,h]anthracene	0.014	8.7 J	0.086 J	0.38 U	0.39 U	2.4 J	2.8 J
Indeno[1,2,3-cd]pyrene	3.2	24 J	0.25 J	0.007 J	0.005 J	7.3 J	8.8
Total PAHs (Carcinogenic)	NS	248	1.87	0.06	0.05	53.9	65
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acetophenone	NS	41 U	0.39 U	0.38 U	0.39 U	6.9 U	7.5 U
Benzaldehyde	NS	41 UJ	0.39 UJ	0.38 UJ	0.39 UJ	6.9 UJ	7.5 UJ
Biphenyl,1,1-	NS	47	0.39 U	0.38 U	0.39 U	6.9 U	7.5 U
Bis(2-ethylhexyl)phthalate	50.0	41 U	0.39 U	0.38 U	0.39 U	6.9 UJ	7.5 U
Butyl benzyl phthalate	50.0	41 U	0.005 J	0.38 U	0.004 J	6.9 UJ	7.5 U
Carbazole	NS	1.7 J	0.064 J	0.38 U	0.003 J	1.4 J	1.9 J
Chloro-3-methylphenol,4-	0.240	41 U	0.005 J	0.38 U	0.39 U	6.9 U	7.5 U
Chloronaphthalene,2-	NS	41 U	0.39 U	0.38 U	0.39 U	6.9 U	7.5 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA	NA
Dibenzofuran	6.2	4.9 J	0.019 J	0.38 U	0.39 U	0.98 J	1.7 J
Dimethyl phthalate	2.0	41 U	0.39 U	0.38 U	0.39 U	6.9 U	7.5 U
Dimethylphenol, 2,4-	NS	41 U	0.39 U	0.38 U	0.39 U	6.9 U	7.5 U
Di-n-butyl phthalate	8.1	41 U	0.39 U	0.38 U	0.39 U	6.9 UJ	7.5 U
Di-n-octyl phthalate	50.0	41 U	0.39 U	0.38 U	0.005 J	6.9 UJ	7.5 U
Hexachlorobenzene	0.41	41 U	0.39 U	0.38 U	0.39 U	6.9 UJ	7.5 U
Isophorone	4.40	41 U	0.39 U	0.38 U	0.39 U	6.9 U	7.5 U
Methylphenol, 4-	0.9	41 UJ	0.39 UJ	0.38 UJ	0.39 UJ	6.9 UJ	7.5 UJ
Methylphenol,2-	0.100	41 UJ	0.39 UJ	0.38 UJ	0.39 UJ	6.9 UJ	7.5 UJ
Nitrophenol,4-	0.100	99 U	0.94 U	0.92 U	0.94 U	17 U	18 U
N-Nitrosodi-n-propylamine	NS	41 U	0.39 U	0.38 U	0.39 U	6.9 U	7.5 U
N-Nitrosodiphenylamine	NS	41 U	0.39 U	0.38 U	0.39 U	6.9 UJ	7.5 U
Phenol	0.03	41 U	0.39 U	0.38 U	0.39 U	6.9 U	7.5 U
Metals by Methods 6010 and ILM04.1 (mg/kg)							
Aluminum	NS	NA	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)							
Barium	300	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)							
Cyanide, Total	NS	.63 U	.6 U	.56 U	.59 U	1.45	1.74
Geochemical Analyses by Various Methods							
pH (pH units)	NS	NA	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		91 Maple Avenue					
		GP-18 GP-18-8-12 11/05/01 (8-12)	GP-19 GP-19-0-4 11/05/01 (0-4)	GP-19 GP-19-4-8 11/05/01 (4-8)	GP-19 GP-19-8-12 11/05/01 (8-12)	GP-26 GP-26-0-4 11/05/01 (0-4)	GP-26 GP-26-4-8 11/05/01 (4-8)
BTEX by Methods 91-1 and 95-1 (mg/kg)							
Benzene	0.06	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Toluene	1.5	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Ethylbenzene	5.5	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Xylene, Total	1.2	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Total BTEX	NS	ND	ND	ND	ND	ND	ND
Other VOCs by Methods 91-1 and 95-1 (mg/kg)							
Acetone	0.2	0.013 UJ	0.011 UJ	0.011 UJ	0.013 UJ	0.011 UJ	0.012 UJ
Bromodichloromethane	NS	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Bromoform	NS	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Bromomethane	NS	0.013 UJ	0.011 UJ	0.011 UJ	0.013 UJ	0.011 U	0.012 U
Butanone,2- (MEK)	0.3	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 UJ
Carbon disulfide	2.7	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Carbon tetrachloride	0.6	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Chlorobenzene	1.7	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Chloroethane	1.9	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Chloroform	0.3	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Chloromethane	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Cyclohexane	NS	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dibromo-3-chloropropane,1,2-	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dibromochloromethane	NS	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dibromoethane,1,2-	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichlorobenzene,1,2-	7.9	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichlorobenzene,1,3-	1.6	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichlorobenzene,1,4-	8.5	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichlorodifluoromethane	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichloroethane,1,1-	0.2	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichloroethane,1,2-	0.1	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichloroethene, cis-1,2-	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichloroethene,1,1-	0.4	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichloropropane,1,2-	NS	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichloropropene, cis-1,3	NS	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Dichloropropene, trans-1,3	NS	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Freon 113	6.0	0.013 UJ	0.011 UJ	0.011 UJ	0.001 J	0.011 UJ	0.012 UJ
Hexanone,2-	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Isopropyl benzene	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Methyl Acetate	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Methyl tert-butyl ether	NS	0.013 UJ	0.011 UJ	0.011 UJ	0.013 UJ	0.011 UJ	0.012 UJ
Methyl-2-pentanone,4-	1.0	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Methylcyclohexane	NS	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Methylene chloride	0.1	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Styrene	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Tetrachloroethane,1,1,2,2-	0.6	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Tetrachloroethene	1.4	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Trans-1,2-Dichloroethene	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Trichlorobenzene,1,2,4-	3.4	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Trichloroethane,1,1,1-	0.8	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Trichloroethane,1,1,2-	NS	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Trichloroethene	0.7	0.013 UJ	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Trichlorofluoromethane	NS	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
Vinyl chloride	0.2	0.013 U	0.011 UJ	0.011 U	0.013 U	0.011 U	0.012 U
VOCs by TCLP (mg/L)							
Benzene	0.06	NA	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acenaphthene	50.0	0.025 J	0.059 J	0.12 J	0.005 J	0.078 J	0.074 J
Acenaphthylene	41.0	0.036 J	0.31 J	0.85 J	0.007 J	0.58 J	0.31 J
Anthracene	50.0	0.018 J	0.34 J	2	0.008 J	0.45 J	0.33 J
Benzo[g,h,i]perylene	50	0.027 J	1.6 J	3 J	0.075 J	1.8	0.48
Fluoranthene	50.0	0.058 J	1.9	6	0.008 J	2.9	1.8
Fluorene	50.0	0.004 J	0.058 J	0.4 J	0.004 J	0.091 J	0.18 J
Methylnaphthalene,2-	36.4	0.093 J	0.043 J	0.12 J	0.019 J	0.033 J	0.1 J
Naphthalene	13.0	0.081 J	0.06 J	0.21 J	0.28 J	0.055 J	0.13 J
Phenanthrene	50.0	0.11 J	0.96	4.2	0.01 J	1.2	1.8
Pyrene	50.0	0.084 J	3.3 J	10 J	0.014 J	3.5	3
Total PAHs (Non-carcinogenic)	NS	0.54	8.6	27	0.43	10.7	8

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		91 Maple Avenue					
		GP-18 GP-18-8-12 11/05/01 (8-12)	GP-19 GP-19-0-4 11/05/01 (0-4)	GP-19 GP-19-4-8 11/05/01 (4-8)	GP-19 GP-19-8-12 11/05/01 (8-12)	GP-26 GP-26-0-4 11/05/01 (0-4)	GP-26 GP-26-4-8 11/05/01 (4-8)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Benz[a]anthracene	0.224	0.048 J	1.6 J	5.4 J	0.007 J	1.7	1.2
Benzo[a]pyrene	0.061	0.067 J	1.8	4.8 J	0.021 J	1.8	1.3
Benzo[b]fluoranthene	1.1	0.039 J	1.7	3.5 J	0.007 J	1.4	0.78
Benzo[k]fluoranthene	1.1	0.051 J	1.6	3.6 J	0.006 J	1.8	1
Chrysene	0.4	0.054 J	2 J	5 J	0.008 J	2	1.4
Dibenz[a,h]anthracene	0.014	0.015 J	0.83	1.7 J	0.005 J	0.7	0.26 J
Indeno[1,2,3-cd]pyrene	3.2	0.037 J	2.5	4.6 J	0.018 J	2.1	0.66
Total PAHs (Carcinogenic)	NS	0.311	12	29	0.072	12	7
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acetophenone	NS	0.4 U	0.72 U	1.4 U	0.43 U	0.69 U	0.38 U
Benzaldehyde	NS	0.4 UJ	0.72 UJ	1.4 UJ	0.43 UJ	0.69 U	0.38 UJ
Biphenyl,1,1-	NS	0.21 J	0.72 U	1.4 U	0.43 U	0.69 U	0.038 J
Bis(2-ethylhexyl)phthalate	50.0	0.61	0.72 UJ	1.4 UJ	0.43 U	0.69 U	0.34 J
Butyl benzyl phthalate	50.0	0.4 U	0.025 J	1.4 UJ	0.008 J	0.22 J	0.52
Carbazole	NS	0.16 J	0.14 J	0.16 J	0.006 J	0.11 J	0.12 J
Chloro-3-methylphenol,4-	0.240	0.4 U	0.72 U	1.4 U	0.43 U	0.69 U	0.38 U
Chloronaphthalene,2-	NS	0.4 U	0.72 U	1.4 U	0.005 J	0.69 U	0.38 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA	NA
Dibenzofuran	6.2	0.22 J	0.038 J	0.22 J	0.004 J	0.037 J	0.093 J
Dimethyl phthalate	2.0	0.4 U	0.72 U	1.4 U	0.005 J	0.69 U	0.38 U
Dimethylphenol, 2,4-	NS	0.4 U	0.72 U	0.022 J	0.43 U	0.69 U	0.38 U
Di-n-butyl phthalate	8.1	0.4 U	0.72 U	1.4 U	0.43 U	0.036 J	0.022 J
Di-n-octyl phthalate	50.0	0.4 U	0.72 U	1.4 UJ	0.008 J	0.69 U	0.38 U
Hexachlorobenzene	0.41	0.4 U	0.72 U	1.4 U	0.006 J	0.69 U	0.38 U
Isophorone	4.40	0.4 U	0.72 U	1.4 U	0.005 J	0.69 U	0.38 U
Methylphenol, 4-	0.9	0.4 UJ	0.015 J	0.065 J	0.43 UJ	0.69 UJ	0.025 J
Methylphenol,2-	0.100	0.4 UJ	0.72 UJ	0.018 J	0.43 UJ	0.69 UJ	0.38 UJ
Nitrophenol,4-	0.100	0.98 U	1.7 U	3.5 U	1 U	1.7 U	0.92 U
N-Nitrosodi-n-propylamine	NS	0.4 U	0.72 U	1.4 U	0.43 U	0.69 U	0.38 U
N-Nitrosodiphenylamine	NS	0.4 U	0.72 U	1.4 U	0.003 J	0.69 U	0.38 U
Phenol	0.03	0.4 UJ	0.72 U	1.4 U	0.43 U	0.69 U	0.027 J
Metals by Methods 6010 and ILM04.1 (mg/kg)							
Aluminum	NS	NA	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)							
Barium	300	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)							
Cyanide, Total	NS	.65 U	0.87	0.98	.67 U	.52 U	.59 U
Geochemical Analyses by Various Methods							
pH (pH units)	NS	NA	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		91 Maple Avenue					
		GP-26 GP-26-8-11 11/05/01 (8-11)	GP-27 GP-27-0-4 11/05/01 (0-4)	GP-27 GP-27-4-8 11/05/01 (4-8)	GP-27 GP-27-8-10 11/05/01 (8-10)	GP-28 GP-28-0-4 11/05/01 (0-4)	GP-28 GP-28-4-8 11/05/01 (4-8)
BTEX by Methods 91-1 and 95-1 (mg/kg)							
Benzene	0.06	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Toluene	1.5	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Ethylbenzene	5.5	270	0.011 U	0.013 U	29	0.011 U	0.012 U
Xylene, Total	1.2	210	0.011 U	0.013 U	16	0.011 U	0.012 U
Total BTEX	NS	552	ND	ND	73	ND	ND
Other VOCs by Methods 91-1 and 95-1 (mg/kg)							
Acetone	0.2	33 J	0.011 UJ	0.013 UJ	26 J	0.011 UJ	0.012 U
Bromodichloromethane	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Bromoform	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Bromomethane	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Butanone,2- (MEK)	0.3	36 U	0.011 UJ	0.013 UJ	50 J	0.011 UJ	0.012 UJ
Carbon disulfide	2.7	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Carbon tetrachloride	0.6	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Chlorobenzene	1.7	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Chloroethane	1.9	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Chloroform	0.3	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Chloromethane	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Cyclohexane	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dibromo-3-chloropropane,1,2-	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dibromochloromethane	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dibromoethane,1,2-	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichlorobenzene,1,2-	7.9	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichlorobenzene,1,3-	1.6	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichlorobenzene,1,4-	8.5	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichlorodifluoromethane	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichloroethane,1,1-	0.2	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichloroethane,1,2-	0.1	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichloroethene, cis-1,2-	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichloroethene,1,1-	0.4	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichloropropane,1,2-	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichloropropene, cis-1,3	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Dichloropropene, trans-1,3	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Freon 113	6.0	36 U	0.011 UJ	0.013 UJ	14 U	0.011 UJ	0.012 UJ
Hexanone,2-	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Isopropyl benzene	NS	34 J	0.011 U	0.013 U	12 J	0.011 U	0.012 U
Methyl Acetate	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Methyl tert-butyl ether	NS	36 U	0.011 UJ	0.013 UJ	14 U	0.011 UJ	0.012 UJ
Methyl-2-pentanone,4-	1.0	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Methylcyclohexane	NS	4.9 J	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Methylene chloride	0.1	36 U	0.011 U	0.013 U	18	0.011 U	0.032 U
Styrene	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Tetrachloroethane,1,1,2,2-	0.6	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Tetrachloroethene	1.4	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Trans-1,2-Dichloroethene	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Trichlorobenzene,1,2,4-	3.4	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Trichloroethane,1,1,1-	0.8	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Trichloroethane,1,1,2-	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Trichloroethene	0.7	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Trichlorofluoromethane	NS	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
Vinyl chloride	0.2	36 U	0.011 U	0.013 U	14 U	0.011 U	0.012 U
VOCs by TCLP (mg/L)							
Benzene	0.06	NA	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acenaphthene	50.0	210	0.52 J	0.28 J	100	0.39 J	0.4 U
Acenaphthylene	41.0	22 J	0.96 J	0.32 J	9.8 J	1.8	0.021 J
Anthracene	50.0	160	2.1	0.88	87	1.6 J	0.028 J
Benzo[g,h,i]perylene	50	61 J	5	2.4	29 J	2.7	0.14 J
Fluoranthene	50.0	140	11	3.9	79	5.6	0.2 J
Fluorene	50.0	100	0.66 J	0.37 J	58	0.53 J	0.4 U
Methylnaphthalene,2-	36.4	410	0.089 J	0.082 J	140	0.39 J	0.4 U
Naphthalene	13.0	560	0.11 J	0.1 J	120	0.34 J	0.009 J
Phenanthrene	50.0	500	6.8	3.1	280	5	0.1 J
Pyrene	50.0	320	14	5	180	9	0.24 J
Total PAHs (Non-carcinogenic)	NS	2483	41	16	1083	27	0.7

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		91 Maple Avenue					
		GP-26 GP-26-8-11 11/05/01 (8-11)	GP-27 GP-27-0-4 11/05/01 (0-4)	GP-27 GP-27-4-8 11/05/01 (4-8)	GP-27 GP-27-8-10 11/05/01 (8-10)	GP-28 GP-28-0-4 11/05/01 (0-4)	GP-28 GP-28-4-8 11/05/01 (4-8)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Benz[a]anthracene	0.224	110	6.2	2.2	59	3.6	0.13 J
Benzo[a]pyrene	0.061	99	6.2	2.1	51	3.9	0.12 J
Benzo[b]fluoranthene	1.1	31 J	4.2	1.4	17 J	2.7	0.11 J
Benzo[k]fluoranthene	1.1	58 J	5.1	1.8	30 J	3.5	0.13 J
Chrysene	0.4	100	6.2	2.2	56	4.4	0.15 J
Dibenz[a,h]anthracene	0.014	14 J	2	0.75 J	7.5 J	1 J	0.043 J
Indeno[1,2,3-cd]pyrene	3.2	36 J	6	2.1	19 J	3.1	0.14 J
Total PAHs (Carcinogenic)	NS	448	36	12.6	240	22	0.82
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acetophenone	NS	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Benzaldehyde	NS	80 UJ	1.7 UJ	0.84 UJ	38 UJ	1.8 UJ	0.4 UJ
Biphenyl,1,1-	NS	85	1.7 U	0.025 J	44	0.12 J	0.4 U
Bis(2-ethylhexyl)phthalate	50.0	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Butyl benzyl phthalate	50.0	80 U	1.7 U	0.84 U	38 U	1.8	0.12 J
Carbazole	NS	80 U	0.36 J	0.22 J	38 U	0.5 J	0.01 J
Chloro-3-methylphenol,4-	0.240	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Chloronaphthalene,2-	NS	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA	NA
Dibenzofuran	6.2	80 U	0.26 J	0.18 J	38 U	0.21 J	0.4 U
Dimethyl phthalate	2.0	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Dimethylphenol, 2,4-	NS	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Di-n-butyl phthalate	8.1	80 U	1.7 U	0.84 U	38 U	0.061 J	0.4 U
Di-n-octyl phthalate	50.0	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Hexachlorobenzene	0.41	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Isophorone	4.40	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Methylphenol, 4-	0.9	80 UJ	1.7 UJ	0.84 UJ	38 UJ	1.8 UJ	0.4 UJ
Methylphenol,2-	0.100	80 UJ	1.7 UJ	0.84 UJ	38 UJ	1.8 UJ	0.4 UJ
Nitrophenol,4-	0.100	190 U	4.2 U	2 U	93 U	4.3 U	0.96 U
N-Nitrosodi-n-propylamine	NS	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
N-Nitrosodiphenylamine	NS	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Phenol	0.03	80 U	1.7 U	0.84 U	38 U	1.8 U	0.4 U
Metals by Methods 6010 and ILM04.1 (mg/kg)							
Aluminum	NS	NA	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)							
Barium	300	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)							
Cyanide, Total	NS	.76 U	.55 U	.65 U	.6 U	1.31	.61 U
Geochemical Analyses by Various Methods							
pH (pH units)	NS	NA	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)				
		91 Maple Avenue				87 Maple Avenue
		GP-28	GP-29	GP-29	GP-29	GP-22
		GP-28-8-12	GP-29-0-4	GP-29-4-8	GP-29-8-12	GP-22-0-4
		11/05/01	11/05/01	11/05/01	11/05/01	11/5/2001
		(8-12)	(0-4)	(4-8)	(8-12)	(0-4)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	0.012 U	0.001 J	0.011 U	0.013 U	0.011 U
Toluene	1.5	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Ethylbenzene	5.5	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Xylene, Total	1.2	0.012 U	0.01 U	0.0006 J	0.013 U	0.011 U
Total BTEX	NS	ND	0.001	0.0006	ND	ND
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	0.012 UJ	0.01 UJ	0.011 UJ	0.013 UJ	0.011 UJ
Bromodichloromethane	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Bromoform	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Bromomethane	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 UJ
Butanone,2- (MEK)	0.3	0.012 UJ	0.008 J	0.007 J	0.009 J	0.011 U
Carbon disulfide	2.7	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Carbon tetrachloride	0.6	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Chlorobenzene	1.7	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Chloroethane	1.9	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Chloroform	0.3	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Chloromethane	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Cyclohexane	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dibromo-3-chloropropane,1,2-	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dibromochloromethane	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dibromoethane,1,2-	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichlorobenzene,1,2-	7.9	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichlorobenzene,1,3-	1.6	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichlorobenzene,1,4-	8.5	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichlorodifluoromethane	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichloroethane,1,1-	0.2	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichloroethane,1,2-	0.1	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichloroethene, cis-1,2-	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichloroethene,1,1-	0.4	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichloropropane,1,2-	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichloropropene, cis-1,3	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Dichloropropene, trans-1,3	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Freon 113	6.0	0.012 UJ	0.01 UJ	0.011 UJ	0.013 UJ	0.001 J
Hexanone,2-	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Isopropyl benzene	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Methyl Acetate	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Methyl tert-butyl ether	NS	0.012 UJ	0.01 UJ	0.011 UJ	0.013 UJ	0.011 UJ
Methyl-2-pentanone,4-	1.0	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Methylcyclohexane	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Methylene chloride	0.1	0.012 U	0.03 U	0.011 UJ	0.019 U	0.011 U
Styrene	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Tetrachloroethane,1,1,2,2-	0.6	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Tetrachloroethene	1.4	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Trans-1,2-Dichloroethene	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Trichlorobenzene,1,2,4-	3.4	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Trichloroethane,1,1,1-	0.8	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Trichloroethane,1,1,2-	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Trichloroethene	0.7	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Trichlorofluoromethane	NS	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
Vinyl chloride	0.2	0.012 U	0.01 U	0.011 U	0.013 U	0.011 U
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	0.44 U	0.22 J	2.4 J	0.42 U	0.005 J
Acenaphthylene	41.0	0.44 U	0.23 J	1.5 J	0.42 U	0.033 J
Anthracene	50.0	0.44 U	0.8	6.3 J	0.42 U	0.019 J
Benzo[g,h,i]perylene	50	0.44 U	1.6 J	11 J	0.42 UJ	0.046 J
Fluoranthene	50.0	0.44 U	3	30	0.42 U	0.14 J
Fluorene	50.0	0.44 U	0.29 J	3.7 J	0.42 U	0.004 J
Methylnaphthalene,2-	36.4	0.44 U	0.061 J	1 J	0.42 U	0.008 J
Naphthalene	13.0	0.44 U	0.066 J	1.6 J	0.42 U	0.009 J
Phenanthrene	50.0	0.44 U	2.9	25	0.42 U	0.066 J
Pyrene	50.0	0.44 U	3.6	25	0.42 U	0.21 J
Total PAHs (Non-carcinogenic)	NS	ND	13	108	ND	0.54

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)				
		91 Maple Avenue				87 Maple Avenue
		GP-28 GP-28-8-12 11/05/01 (8-12)	GP-29 GP-29-0-4 11/05/01 (0-4)	GP-29 GP-29-4-8 11/05/01 (4-8)	GP-29 GP-29-8-12 11/05/01 (8-12)	GP-22 GP-22-0-4 11/5/2001 (0-4)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	0.44 U	2	13	0.42 U	0.092 J
Benzo[a]pyrene	0.061	0.44 U	1.7	11	0.42 U	0.097 J
Benzo[b]fluoranthene	1.1	0.44 U	1.3	9.9	0.42 U	0.1 J
Benzo[k]fluoranthene	1.1	0.44 U	1.3	9.6	0.42 U	0.1 J
Chrysene	0.4	0.44 U	2	12	0.42 U	0.11 J
Dibenz[a,h]anthracene	0.014	0.44 U	0.62 J	3.1 J	0.42 U	0.028 J
Indeno[1,2,3-cd]pyrene	3.2	0.44 U	1.7 J	9 J	0.42 U	0.087 J
Total PAHs (Carcinogenic)	NS	ND	11	68	ND	0.6
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Benzaldehyde	NS	0.076 J	0.69 UJ	7.1 U	0.42 UJ	0.36 UJ
Biphenyl,1,1-	NS	0.44 U	0.024 J	7.1 U	0.42 U	0.36 U
Bis(2-ethylhexyl)phthalate	50.0	0.24 J	0.69 U	7.1 U	0.42 U	0.36 U
Butyl benzyl phthalate	50.0	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Carbazole	NS	0.44 U	0.15 J	1.6 J	0.42 U	0.008 J
Chloro-3-methylphenol,4-	0.240	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Chloronaphthalene,2-	NS	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	0.36 U
Dibenzofuran	6.2	0.44 U	0.15 J	1.9 J	0.42 U	0.004 J
Dimethyl phthalate	2.0	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Dimethylphenol, 2,4-	NS	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Di-n-butyl phthalate	8.1	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Di-n-octyl phthalate	50.0	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Hexachlorobenzene	0.41	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Isophorone	4.40	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Methylphenol, 4-	0.9	0.44 UJ	0.69 UJ	7.1 UJ	0.42 UJ	0.36 UJ
Methylphenol,2-	0.100	0.44 UJ	0.69 UJ	7.1 UJ	0.42 UJ	0.36 UJ
Nitrophenol,4-	0.100	1.1 U	1.7 U	17 U	1 U	0.86 U
N-Nitrosodi-n-propylamine	NS	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
N-Nitrosodiphenylamine	NS	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Phenol	0.03	0.44 U	0.69 U	7.1 U	0.42 U	0.36 U
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	.62 U	.49 U	.53 U	.63 U	.52 U
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)				
		87 Maple Avenue				
		GP-22 GP-22-4-8 11/5/2001 (4-8)	GP-22 GP-22-9-12 11/5/2001 (9-12)	GP-23 GP-23-0-4 11/5/2001 (0-4)	GP-23 GP-23-4-8 11/5/2001 (4-8)	GP-23 GP-23-8-12 11/5/2001 (8-12)
BTEX by Methods 91-1 and 95-1 (mg/kg)						
Benzene	0.06	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Toluene	1.5	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Ethylbenzene	5.5	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Xylene, Total	1.2	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Total BTEX	NS	ND	ND	ND	ND	ND
Other VOCs by Methods 91-1 and 95-1 (mg/kg)						
Acetone	0.2	0.011 UJ	0.011 UJ	0.01 UJ	0.01 UJ	0.011 UJ
Bromodichloromethane	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Bromoform	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Bromomethane	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Butanone,2- (MEK)	0.3	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Carbon disulfide	2.7	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Carbon tetrachloride	0.6	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Chlorobenzene	1.7	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Chloroethane	1.9	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Chloroform	0.3	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Chloromethane	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Cyclohexane	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dibromo-3-chloropropane,1,2-	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dibromochloromethane	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dibromoethane,1,2-	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichlorobenzene,1,2-	7.9	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichlorobenzene,1,3-	1.6	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichlorobenzene,1,4-	8.5	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichlorodifluoromethane	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichloroethane,1,1-	0.2	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichloroethane,1,2-	0.1	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichloroethene, cis-1,2-	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichloroethene,1,1-	0.4	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichloropropane,1,2-	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichloropropene, cis-1,3	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Dichloropropene, trans-1,3	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Freon 113	6.0	0.011 UJ	0.011 UJ	0.01 UJ	0.01 UJ	0.011 UJ
Hexanone,2-	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Isopropyl benzene	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Methyl Acetate	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Methyl tert-butyl ether	NS	0.011 UJ	0.011 UJ	0.01 UJ	0.01 UJ	0.011 UJ
Methyl-2-pentanone,4-	1.0	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Methylcyclohexane	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Methylene chloride	0.1	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Styrene	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Tetrachloroethane,1,1,2,2-	0.6	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Tetrachloroethene	1.4	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Trans-1,2-Dichloroethene	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Trichlorobenzene,1,2,4-	3.4	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Trichloroethane,1,1,1-	0.8	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Trichloroethane,1,1,2-	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Trichloroethene	0.7	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Trichlorofluoromethane	NS	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
Vinyl chloride	0.2	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U
VOCs by TCLP (mg/L)						
Benzene	0.06	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acenaphthene	50.0	0.021 J	0.39 U	0.36 U	0.076 J	0.36 U
Acenaphthylene	41.0	0.37 J	0.39 U	0.36 U	0.86	0.36 U
Anthracene	50.0	0.4 J	0.39 U	0.006 J	0.56 J	0.004 J
Benzo[g,h,i]perylene	50	1.3	0.39 U	0.023 J	0.78	0.038 J
Fluoranthene	50.0	2.7 J	0.39 U	0.051 J	1.6	0.36 U
Fluorene	50.0	0.084 J	0.39 U	0.36 U	0.12 J	0.36 U
Methylnaphthalene,2-	36.4	0.027 J	0.39 U	0.36 U	0.19 J	0.36 U
Naphthalene	13.0	0.065 J	0.39 U	0.36 U	0.26 J	0.36 U
Phenanthrene	50.0	0.93	0.39 U	0.028 J	0.91	0.006 J
Pyrene	50.0	4.4 J	0.39 U	0.058 J	4.3	0.008 J
Total PAHs (Non-carcinogenic)	NS	10.297	ND	0.166	9.656	0.056

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)				
		87 Maple Avenue				
		GP-22 GP-22-4-8 11/5/2001 (4-8)	GP-22 GP-22-9-12 11/5/2001 (9-12)	GP-23 GP-23-0-4 11/5/2001 (0-4)	GP-23 GP-23-4-8 11/5/2001 (4-8)	GP-23 GP-23-8-12 11/5/2001 (8-12)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Benz[a]anthracene	0.224	2.3 J	0.39 U	0.028 J	2.1	0.36 U
Benzo[a]pyrene	0.061	1.9	0.39 U	0.031 J	4.4	0.36 U
Benzo[b]fluoranthene	1.1	1.1 J	0.39 U	0.032 J	2	0.36 U
Benzo[k]fluoranthene	1.1	1.8	0.39 U	0.029 J	1.3	0.36 U
Chrysene	0.4	2.1 J	0.39 U	0.034 J	2.5	0.36 U
Dibenz[a,h]anthracene	0.014	0.6 J	0.39 U	0.36 U	0.42 J	0.36 U
Indeno[1,2,3-cd]pyrene	3.2	1.6	0.39 U	0.024 J	0.68	0.36 U
Total PAHs (Carcinogenic)	NS	11.4	ND	0.178	13.4	ND
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)						
Acetophenone	NS	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Benzaldehyde	NS	0.73 UJ	0.39 UJ	0.36 UJ	0.68 U	0.36 UJ
Biphenyl,1,1-	NS	0.73 U	0.39 U	0.36 U	0.054 J	0.36 U
Bis(2-ethylhexyl)phthalate	50.0	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Butyl benzyl phthalate	50.0	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Carbazole	NS	0.042 J	0.39 U	0.36 U	0.039 J	0.36 U
Chloro-3-methylphenol,4-	0.240	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Chloronaphthalene,2-	NS	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Chlorophenol-D4, 2-	NS	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Dibenzofuran	6.2	0.037 J	0.39 U	0.36 U	0.065 J	0.36 U
Dimethyl phthalate	2.0	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Dimethylphenol, 2,4-	NS	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Di-n-butyl phthalate	8.1	0.73 U	0.39 U	0.006 J	0.68 U	0.36 U
Di-n-octyl phthalate	50.0	0.73 U	0.39 U	0.36 U	0.68 U	0.007 J
Hexachlorobenzene	0.41	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Isophorone	4.40	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Methylphenol, 4-	0.9	0.73 UJ	0.39 UJ	0.36 UJ	0.05 J	0.36 UJ
Methylphenol,2-	0.100	0.73 UJ	0.39 UJ	0.36 UJ	0.68 UJ	0.36 UJ
Nitrophenol,4-	0.100	1.8 U	0.95 U	0.87 U	1.6 U	0.87 U
N-Nitrosodi-n-propylamine	NS	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
N-Nitrosodiphenylamine	NS	0.73 U	0.39 U	0.36 U	0.68 U	0.36 U
Phenol	0.03	0.029 J	0.39 U	0.36 U	0.025 J	0.36 U
Metals by Methods 6010 and ILM04.1 (mg/kg)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)						
Barium	300	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)						
Cyanide, Total	NS	.53 U	.55 U	.5 U	.54 U	.55 U
Geochemical Analyses by Various Methods						
pH (pH units)	NS	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		6 TOR					
		GP-24	GP-24	GP-24	GP-25	GP-25	GP-25
		GP-24-0-4	GP-24-4-8	GP-24-8-12	GP-25-0-4	GP-25-4-8	GP-25-8-12
		11/5/2001	11/5/2001	11/5/2001	11/5/2001	11/5/2001	11/5/2001
		(0-4)	(4-8)	(8-12)	(0-4)	(4-8)	(8-12)
BTEX by Methods 91-1 and 95-1 (mg/kg)							
Benzene	0.06	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Toluene	1.5	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Ethylbenzene	5.5	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Xylene, Total	1.2	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Total BTEX	NS	ND	ND	ND	ND	ND	ND
Other VOCs by Methods 91-1 and 95-1 (mg/kg)							
Acetone	0.2	0.011 UJ	0.011 UJ	0.013 UJ	0.012 UJ	0.012 UJ	0.015 UJ
Bromodichloromethane	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Bromoform	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Bromomethane	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Butanone,2- (MEK)	0.3	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Carbon disulfide	2.7	0.011 U	0.011 U	0.001 J	0.0005 J	0.012 U	0.015 UJ
Carbon tetrachloride	0.6	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Chlorobenzene	1.7	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Chloroethane	1.9	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Chloroform	0.3	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Chloromethane	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Cyclohexane	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dibromo-3-chloropropane,1,2-	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dibromochloromethane	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dibromoethane,1,2-	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichlorobenzene,1,2-	7.9	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichlorobenzene,1,3-	1.6	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichlorobenzene,1,4-	8.5	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichlorodifluoromethane	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichloroethane,1,1-	0.2	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichloroethane,1,2-	0.1	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichloroethene, cis-1,2-	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichloroethene,1,1-	0.4	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichloropropane,1,2-	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichloropropene, cis-1,3	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Dichloropropene, trans-1,3	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Freon 113	6.0	0.011 UJ	0.011 UJ	0.013 UJ	0.012 UJ	0.012 UJ	0.015 UJ
Hexanone,2-	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Isopropyl benzene	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Methyl Acetate	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Methyl tert-butyl ether	NS	0.011 UJ	0.011 UJ	0.013 UJ	0.012 UJ	0.012 UJ	0.015 UJ
Methyl-2-pentanone,4-	1.0	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Methylcyclohexane	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Methylene chloride	0.1	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Styrene	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Tetrachloroethane,1,1,2,2-	0.6	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Tetrachloroethene	1.4	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Trans-1,2-Dichloroethene	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Trichlorobenzene,1,2,4-	3.4	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Trichloroethane,1,1,1-	0.8	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Trichloroethane,1,1,2-	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Trichloroethene	0.7	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Trichlorofluoromethane	NS	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
Vinyl chloride	0.2	0.011 U	0.011 U	0.013 UJ	0.012 U	0.012 U	0.015 UJ
VOCs by TCLP (mg/L)							
Benzene	0.06	NA	NA	NA	NA	NA	NA
Dichloroethane,1,2-	0.1	NA	NA	NA	NA	NA	NA
PAHs (Non-carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acenaphthene	50.0	0.21 J	0.058 J	0.42 U	0.034 J	0.1 J	0.44 U
Acenaphthylene	41.0	0.99 J	0.058 J	0.42 U	0.1 J	1.8	0.44 U
Anthracene	50.0	1.7	0.11 J	0.004 J	0.14 J	1.2 J	0.44 U
Benzo[g,h,i]perylene	50	4.1	0.66	0.42 U	0.4 J	4.1	0.44 U
Fluoranthene	50.0	6.2	0.38 J	0.008 J	0.62	5.4	0.44 U
Fluorene	50.0	0.72 J	0.043 J	0.42 U	0.03 J	0.21 J	0.44 U
Methylnaphthalene,2-	36.4	0.22 J	0.052 J	0.42 U	0.032 J	0.14 J	0.44 U
Naphthalene	13.0	0.18 J	0.084 J	0.42 U	0.059 J	0.33 J	0.44 U
Phenanthrene	50.0	5.7	0.29 J	0.014 J	0.33 J	2.2	0.44 U
Pyrene	50.0	7	0.62	0.015 J	1.4	7.7	0.44 U
Total PAHs (Non-carcinogenic)	NS	27.0	2.36	0.041	3.1	23.2	ND

Table 7 (continued)
Soil Boring Analytical Results
93B Maple Avenue Former MGP Site
Havestraw, New York

Analyte	NYSDEC Soil Cleanup Objectives	Location ID / Sample ID / Date Collected / Depth (ft bgs)					
		6 TOR					
		GP-24 GP-24-0-4 11/5/2001 (0-4)	GP-24 GP-24-4-8 11/5/2001 (4-8)	GP-24 GP-24-8-12 11/5/2001 (8-12)	GP-25 GP-25-0-4 11/5/2001 (0-4)	GP-25 GP-25-4-8 11/5/2001 (4-8)	GP-25 GP-25-8-12 11/5/2001 (8-12)
PAHs (Carcinogenic) by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Benz[a]anthracene	0.224	4	0.49	0.42 U	0.95	4.9	0.44 U
Benzo[a]pyrene	0.061	3.9	0.75	0.42 U	1.8	5.2	0.44 U
Benzo[b]fluoranthene	1.1	2.3	0.5	0.42 U	0.9	3.4	0.44 U
Benzo[k]fluoranthene	1.1	3.2	0.44	0.42 U	0.92	3.8	0.44 U
Chrysene	0.4	3.8	0.51	0.42 U	1.1	4.8	0.44 U
Dibenz[a,h]anthracene	0.014	1.5	0.28 J	0.42 U	0.42	1.7	0.44 U
Indeno[1,2,3-cd]pyrene	3.2	3.9	0.73	0.42 U	1	4.7	0.44 U
Total PAHs (Carcinogenic)	NS	22.6	3.7	ND	7.09	28.5	ND
Other SVOCs by NYSASP Method 95-2, 91-2, and 8270 (mg/kg)							
Acetophenone	NS	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Benzaldehyde	NS	1.4 U	0.39 UJ	0.42 UJ	0.41 UJ	1.5 U	0.44 UJ
Biphenyl,1,1-	NS	0.074 J	0.021 J	0.42 U	0.015 J	0.046 J	0.44 U
Bis(2-ethylhexyl)phthalate	50.0	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Butyl benzyl phthalate	50.0	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Carbazole	NS	0.44 J	0.042 J	0.42 U	0.039 J	0.21 J	0.44 U
Chloro-3-methylphenol,4-	0.240	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Chloronaphthalene,2-	NS	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Chlorophenol-D4, 2-	NS	NA	NA	NA	NA	NA	NA
Dibenzofuran	6.2	0.51 J	0.027 J	0.42 U	0.021 J	0.15 J	0.44 U
Dimethyl phthalate	2.0	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Dimethylphenol, 2,4-	NS	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Di-n-butyl phthalate	8.1	1.4 U	0.39 U	0.42 U	0.006 J	1.5 U	0.44 U
Di-n-octyl phthalate	50.0	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Hexachlorobenzene	0.41	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Isophorone	4.40	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Methylphenol, 4-	0.9	1.4 UJ	0.39 UJ	0.42 UJ	0.41 UJ	1.5 UJ	0.44 UJ
Methylphenol,2-	0.100	1.4 UJ	0.39 UJ	0.42 UJ	0.41 UJ	1.5 UJ	0.44 UJ
Nitrophenol,4-	0.100	3.5 U	0.94 U	1 U	0.99 U	3.7 U	1 U
N-Nitrosodi-n-propylamine	NS	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
N-Nitrosodiphenylamine	NS	1.4 U	0.39 U	0.42 U	0.41 U	1.5 U	0.44 U
Phenol	0.03	1.4 U	0.39 U	0.42 U	0.016 J	1.5 U	0.44 U
Metals by Methods 6010 and ILM04.1 (mg/kg)							
Aluminum	NS	NA	NA	NA	NA	NA	NA
Antimony	NS	NA	NA	NA	NA	NA	NA
Arsenic	7.5	NA	NA	NA	NA	NA	NA
Barium	300	NA	NA	NA	NA	NA	NA
Beryllium	0.16	NA	NA	NA	NA	NA	NA
Cadmium	1	NA	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cobalt	30	NA	NA	NA	NA	NA	NA
Copper	25	NA	NA	NA	NA	NA	NA
Iron	2000	NA	NA	NA	NA	NA	NA
Lead	500	NA	NA	NA	NA	NA	NA
Magnesium	NS	NA	NA	NA	NA	NA	NA
Manganese	NS	NA	NA	NA	NA	NA	NA
Mercury	0.1	NA	NA	NA	NA	NA	NA
Nickel	13	NA	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA	NA
Selenium	2	NA	NA	NA	NA	NA	NA
Silver	NS	NA	NA	NA	NA	NA	NA
Sodium	NS	NA	NA	NA	NA	NA	NA
Thallium	NS	NA	NA	NA	NA	NA	NA
Vanadium	150	NA	NA	NA	NA	NA	NA
Zinc	20	NA	NA	NA	NA	NA	NA
Metals by TCLP (mg/L)							
Barium	300	NA	NA	NA	NA	NA	NA
Chromium	10	NA	NA	NA	NA	NA	NA
Cyanide by Various Methods (mg/kg)							
Cyanide, Total	NS	.52 U	.51 U	.65 U	.58 U	1.61	.72 U
Geochemical Analyses by Various Methods							
pH (pH units)	NS	NA	NA	NA	NA	NA	NA
Sulfide (mg/kg)	NS	NA	NA	NA	NA	NA	NA
Flash Point (degrees F)	NS	NA	NA	NA	NA	NA	NA
Residue, Total (%)	NS	NA	NA	NA	NA	NA	NA

Notes:

U - Analyte not detected
J - Estimated value
B - Analyte detected in associated blank
E - Exceeds calibration range
W - Post digest spike recovery furnace analysis outside 85-115% control limit, while sample absorbance less than 50% of spike absorbanc

D - Dilution result
ND - Not detected
NS - No standard
NA - Not analyzed
* - Duplicate analysis outside control limits

Table 8
TCLP Soil Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	Toxicity Characteristic Maximum Concentration	Sample Location/Sample ID / Date Collected / Depth: GP-5 GP05-16-16.5 6/28/01 16' - 16.5' bgs	GP-12 GP12-11 6/29/2001 8' - 11' bgs
TCLP Volatile Organic Compounds (ug/L)			
Benzene	500	2 J	6
Carbon Tetrachloride	500	5 U	5 U
Chlorobenzene	100000	5 U	5 U
Chloroform	6000	5 U	5 U
2-Butanone	200000	10 U	3 JB
Tetrachloroethene	700	5 U	5 U
Trichloroethene	500	5 U	5 U
Vinyl Chloride	200	10 U	10 U
1,2-Dichloroethane	500	5 U	5 U
1,1-Dichloroethene	700	5 U	5 U
TCLP Semivolatile Organic Compounds (ug/L)			
1,4-Dichlorobenzene	7500	10 U	10 U
Hexachloroethane	3000	10 U	10 U
Nitrobenzene	2000	10 U	10 U
Hexachlorobutadiene	500	10 U	10 U
2,4,6-Trichlorophenol	2000	10 U	10 U
2,4,5-Trichlorophenol	400000	50 U	50 U
2,4-Dinitrotoluene	130	10 U	10 U
Hexachlorobenzene	130	10 U	10 U
Pentachlorophenol	100000	50 U	50 U
2-Methylphenol	200000	10 U	1 J
4-Methylphenol	200000	10 U	2 J
Pyridine	5000	10 U	10 U
TCLP RCRA 8 Metals (ug/L)			
Arsenic	5000	20.5 U	20.5 U
Barium	100000	629 B	379 B
Cadmium	1000	20 B	4 U
Chromium	5000	5 U	5 U
Lead	5000	181	567
Mercury	200	1 U	1 U
Selenium	1000	23 U	23 U
Silver	5000	5 U	5 U

Notes:

Toxicity Characteristic Maximum Concentrations are based on Federal Regulations presented in *40 CFR, Ch. 1, Part 261.24*

TCLP - Toxicity Characteristic Leaching Procedure

U - not detected

ug/L - micrograms per liter

bgs - below ground surface

J - estimated value

B - analyte detected in laboratory blank

Table 9
Groundwater Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Ambient Groundwater Limits (GA)	Location ID / Sample ID / Date Collected / Result Type: MW-01 MW-1 6/3/1997 Primary	MW-01 MW1 6/4/1997 Primary	MW-01 MAMW01-01 2/4/1999 Primary	MW-01 93B-MW-1 11/30/2001 Primary	MW-01 MW-01-93B 12/18/2001 Primary	MW-02 MAMW02-01 2/4/1999 Primary
BTEX by NYSASP Method 95-1 (ug/L)							
Benzene	1.0	**550 D**	*	**51**	**880**	**260**	10 U
Toluene	5	2 J	*	2 J	100 U	20 U	10 U
Ethylbenzene	5	10 U	*	4 J	100 U	20 U	10 U
Xylene, Total	5	10 U	*	**13**	100 U	20 U	10 U
Total BTEX		552		70	880	260	ND
Other VOCs by NYSASP Method 95-1 (ug/L)							
Acetone	NS	10 U	*	5 J	100 U	20 UB	10 U
Dichloroethane,1,2-	0.6	10 U	*	10 U	100 U	20 U	10 U
Methylene chloride	5	10 U	*	10 U	**30 J**	20 U	10 U
PAHs (Non-carcinogenic) by NYSASP Method 95-2 and 8270 (ug/L)							
Acenaphthene	20	4 J	*	**24**	**34**	4 J	10 U
Acenaphthylene	50	2 J	*	4 J	5 J	10 U	10 U
Anthracene	50	3 J	*	1 J	2 J	10 U	10 U
Benzo[g,h,i]perylene	NS	2 J	*	10 U	.4 J	10 U	10 U
Fluoranthene	50	6 J	*	10 U	1 J	10 U	10 U
Fluorene	50	3 J	*	8 J	14	10 U	10 U
Methylnaphthalene,2-	NS	NA	NA	1 J	11 U	10 U	10 U
Naphthalene	10	4 J	*	**20**	.7 J	10 U	2 J
Phenanthrene	50	8 J	*	1 J	9 J	10 U	10 U
Pyrene	50	6 J	*	10 U	1 J	10 U	10 U
Total PAHs (Non-carc.)		38	ND	59	67	4	2
PAHs (Carcinogenic) by NYSASP Method 95-2 and 8270 (ug/L)							
Benz[a]anthracene	0.002	**4 J**	*	10 U	**.4 J**	10 U	10 U
Benzo[a]pyrene	0.002	**3 J**	*	10 U	**.5 J**	10 U	10 U
Benzo[b]fluoranthene	0.002	**3 J**	*	10 U	11 U	10 U	10 U
Benzo[k]fluoranthene	0.002	**1 J**	*	10 U	11 U	10 U	10 U
Chrysene	0.002	**3 J**	*	10 U	**.4 J**	10 U	10 U
Dibenz[a,h]anthracene	NS	11 U	*	10 U	11 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002	**2 J**	*	10 U	**.4 J**	10 U	10 U
Total PAHs (Carcinogenic)		16	ND	ND	1.7	ND	ND
Other SVOCs by NYSASP Method 95-2 and 8270 (ug/L)							
Benzoic acid	NS	NA	NA	NA	56 UR	NA	NA
Carbazole	NS	NA	NA	43	20	10 U	10 U
Dibenzofuran	NS	NA	NA	4 J	7 J	10 U	10 U
Di-n-butyl phthalate	50	NA	NA	10 U	11 U	10 U	10 U
Phenol	1	NA	NA	**2 J**	**15 J**	10 U	10 U
Metals by CLP Methods ILM04.1/200.7 (ug/L)							
Aluminum	100	*	**38900**	**143 JB**	**2210**	NA	**237 J**
Antimony	3	*	**6.9 B**	8.9 UB	4.6 U	NA	4.1 UB
Arsenic	25	*	18	13.4 U	22.5	NA	1.5 UB
Barium	1000	*	724	287	310	NA	119
Beryllium	3	*	**1.5 B**	0.1 U	**0.51 J**	NA	**0.4 B**
Cadmium	5	*	2.8 B	0.2 U	0.80 U	NA	0.28 UB
Calcium		*	194000	182000 J	173000	NA	78300 J
Chromium	50	*	**55.9**	0.6 U	2.6	NA	0.6 U
Cobalt	5	*	**32.2 B**	2 UB	1.4 J	NA	1.5 UB
Copper	200	*	142	5.4 UB	4.8	NA	14.8 B
Iron	300	*	**72300** *	**4140 J**	**9810**	NA	**352**
Iron, Ferrous (II)	NS	NA	NA	9200	NA	NA	200 U
Lead	25	*	**188**	7.3 J	2.8 J	NA	3.5 J

Table 9 (continued)
Groundwater Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Ambient Groundwater Limits (GA)	Location ID / Sample ID / Date Collected / Result Type: MW-01 MW-1 6/3/1997 Primary	MW-01 MW1 6/4/1997 Primary	MW-01 MAMW01-01 2/4/1999 Primary	MW-01 93B-MW-1 11/30/2001 Primary	MW-01 MW-01-93B 12/18/2001 Primary	MW-02 MAMW02-01 2/4/1999 Primary
Magnesium	35000	*	**85800**	**114000**	**75800**	NA	16200
Manganese	300	*	**1920**	**530**	**715**	NA	98.8
Mercury	0.7	*	0.64	0.2 U	0.10 U	NA	0.2 U
Nickel	100	*	77	3.4 UB	3.0	NA	3.8 UB
Potassium		*	14200	9640 J	15500 J	NA	4780 JB
Selenium	10	*	4.7 B	1.6 UJW	4.9 UJ	NA	4 JBW
Silver	50	*	0.63 B	1.2 U	1.0 UJ	NA	1.2 U
Sodium	20000	*	**53300**	**62000 J**	**57900**	NA	**62500 J**
Thallium	0.5	*	**5.5 B**	1.1 U	10.0 UJ	NA	1.1 U
Vanadium	14	*	**60.3**	1.9 B	2.0	NA	1.4 B
Zinc	2000	*	443	*EU	27.4	NA	*EU
Cyanides by CLP Methods (ug/L)							
Cyanide, Amenable	NS	NA	NA	NA	252	NA	NA
Cyanide, Digestion	NS	NA	NA	NA	NA	Complete	NA
Cyanide, Total	200	**404**	*	**439 J***	**366**	**403 J**	13 J
Cyanide, Weak Acid Dissociable	NS	NA	NA	78	NA	18.8 J	10 U
Geochemical Analyses by Various Methods (ug/L)							
Total Dissolved Solids	NS	NA	NA	NA	1010000	NA	NA
Chloride	NS	NA	NA	NA	93100	NA	NA
Fluoride	NS	NA	NA	NA	100 U	NA	NA
Nitrate-Nitrite	NS	NA	NA	200 U	NA	NA	2900
Sulfate	250000	NA	NA	192000	NA	NA	142000
Carbon Dioxide	NS	NA	NA	1500000	NA	NA	1500000
Nitrogen	NS	NA	NA	1000000	NA	NA	1000000
Oxygen	NS	NA	NA	1600000	NA	NA	1500000

Table 9 (continued)
Groundwater Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Ambient Groundwater Limits (GA)	MW-02 93B-MW-2 11/30/2001 Primary	MW-02 MW-02-93B 12/18/2001 Primary	MW-03 MAMW03-01 2/4/1999 Primary	MW-03 MW-03-93B 12/18/2001 Primary	MW-27 MW-27 12/18/2001 Primary
BTEX by NYSASP Method 95-1 (ug/L)						
Benzene	1.0	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U
Xylene, Total	5	10 U	10 U	10 U	10 U	10 U
Total BTEX		ND	ND	ND	ND	ND
Other VOCs by NYSASP Method 95-1 (ug/L)						
Acetone	NS	10 U	10 UJ	10 U	10 UJ	10 UJ
Dichloroethane,1,2-	0.6	**3 J**	10 U	10 U	10 U	10 U
Methylene chloride	5	10 U	10 U	10 U	10 U	10 U
PAHs (Non-carcinogenic) by NYSASP Method 95-2 and 8270 (ug/L)						
Acenaphthene	20	10 U	11 U	10 UJ	10 U	10 U
Acenaphthylene	50	10 U	.8 J	10 UJ	10 U	10 U
Anthracene	50	10 U	.4 J	10 U	10 U	10 U
Benzo[g,h,i]perylene	NS	10 UJ	3 J	10 U	10 UJ	10 U
Fluoranthene	50	10 U	2 J	10 U	10 U	10 U
Fluorene	50	10 U	11 U	10 UJ	10 U	10 U
Methylnaphthalene,2-	NS	10 U	11 U	10 UJ	10 U	10 U
Naphthalene	10	10 U	11 U	4 J	10 U	10 U
Phenanthrene	50	10 U	.3 J	10 U	10 U	10 U
Pyrene	50	10 U	3 J	10 U	10 U	10 U
Total PAHs (Non-carc.)		ND	9.5	4	ND	ND
PAHs (Carcinogenic) by NYSASP Method 95-2 and 8270 (ug/L)						
Benz[a]anthracene	0.002	10 U	**1 J**	10 U	10 U	10 U
Benzo[a]pyrene	0.002	10 U	**3 J**	10 U	10 U	10 U
Benzo[b]fluoranthene	0.002	10 U	**2 J**	10 U	10 U	10 U
Benzo[k]fluoranthene	0.002	10 U	**2 J**	10 U	10 U	10 U
Chrysene	0.002	10 UJ	**2 J**	10 U	10 UJ	10 U
Dibenz[a,h]anthracene	NS	10 U	.9 J	10 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002	10 UJ	**2 J**	10 U	10 UJ	10 U
Total PAHs (Carcinogenic)		ND	12.9	ND	ND	ND
Other SVOCs by NYSASP Method 95-2 and 8270 (ug/L)						
Benzoic acid	NS	NA	1 J	NA	NA	NA
Carbazole	NS	10 U	11 U	10 U	10 U	10 U
Dibenzofuran	NS	10 U	11 U	10 UJ	10 U	10 U
Di-n-butyl phthalate	50	10 U	11 U	1 J	10 U	10 U
Phenol	1	10 U	11 UJ	10 U	10 U	10 U
Metals by CLP Methods ILM04.1/200.7 (ug/L)						
Aluminum	100	**728**	NA	**146 JB**	NA	NA
Antimony	3	4.6 U	NA	2.3 U	NA	NA
Arsenic	25	4.4 U	NA	1.2 U	NA	NA
Barium	1000	200	NA	252	NA	NA
Beryllium	3	0.50 U	NA	0.1 U	NA	NA
Cadmium	5	0.80 U	NA	0.2 U	NA	NA
Calcium		101000	NA	116000 J	NA	NA
Chromium	50	1.1 J	NA	0.6 U	NA	NA
Cobalt	5	1.3 U	NA	0.6 U	NA	NA
Copper	200	3.8	NA	4.2 UB	NA	NA
Iron	300	**1070**	NA	**402**	NA	NA
Iron, Ferrous (II)	NS	NA	NA	200 U	NA	NA
Lead	25	2.0 U	NA	1.1 UJ	NA	NA

Table 9 (continued)
Groundwater Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Ambient Groundwater Limits (GA)	MW-02 93B-MW-2 11/30/2001 Primary	MW-02 MW-02-93B 12/18/2001 Primary	MW-03 MAMW03-01 2/4/1999 Primary	MW-03 MW-03-93B 12/18/2001 Primary	MW-27 MW-27 12/18/2001 Primary
Magnesium	35000	22300	NA	23200	NA	NA
Manganese	300	**636**	NA	196	NA	NA
Mercury	0.7	0.10 U	NA	0.2 U	NA	NA
Nickel	100	2.2 J	NA	2.5 UB	NA	NA
Potassium		7350 J	NA	5080 J	NA	NA
Selenium	10	4.9 UJ	NA	3.2 JBW	NA	NA
Silver	50	1.0 UJ	NA	1.2 U	NA	NA
Sodium	20000	**78800**	NA	**112000 J**	NA	NA
Thallium	0.5	10.0 UJ	NA	1.1 U	NA	NA
Vanadium	14	1.0 U	NA	1.2 U	NA	NA
Zinc	2000	28.0	NA	*EU	NA	NA
Cyanides by CLP Methods (ug/L)						
Cyanide, Amenable	NS	10 U	NA	NA	NA	NA
Cyanide, Digestion	NS	NA	Complete	NA	Complete	Complete
Cyanide, Total	200	10 U	3 U	10 U*	3 U	3 U
Cyanide, Weak Acid Dissociable	NS	NA	3 UJ	10 U	3 UJ	3 UJ
Geochemical Analyses by Various Methods (ug/L)						
Total Dissolved Solids	NS	826000	NA	NA	NA	NA
Chloride	NS	198000	NA	NA	NA	NA
Fluoride	NS	220	NA	NA	NA	NA
Nitrate-Nitrite	NS	NA	NA	910	NA	NA
Sulfate	250000	NA	NA	80000	NA	NA
Carbon Dioxide	NS	NA	NA	1500000	NA	NA
Nitrogen	NS	NA	NA	1000000	NA	NA
Oxygen	NS	NA	NA	1600000	NA	NA

Notes:

U - Analyte not detected
J - Estimated value
B - Analyte detected in associated blank
R - Historic unknown qualifier
E - Exceeds calibration range
W - Post-digest spike recovery furnace analysis outside 85-115% control limit, while sample absorbance less than 50% of spike absorbance
NS - No standard
NA - Not analyzed
ND - Not detected
* - Duplicate analysis outside control limits

Table 10
Stormwater Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	NYSDEC Ambient Groundwater Limits (GA)	Sample ID / Date Collected / Sample Type				
		6 TOR	Apartments			Hudson
		SW013102-1 1/31/2002 Primary	SW013102-5 1/31/2002 Primary	SW013102-6 1/31/2002 Primary	SW013102-8 1/31/2002 Duplicate	SWOUT013002-1 1/30/2002
BTEX by NYSASP Method 95-1 (ug/L)						
Benzene	1.0	10 U	0.5 J	5 J	5 J	4 J
Toluene	5	2 J	10 U	10 UJ	10 UJ	10 UJ
Ethylbenzene	5	10 U	1 J	3 J	3 J	2J
Xylene, Total	5	10 U	0.7 J	2 J	2 J	1J
Total BTEX		2	2	10	10	7
Other VOCs by NYSASP Method 95-1 (ug/L)						
Butanone,2- (MEK)	NS	9 J	10 U	10 UJ	10 UJ	10 UJ
Chloroform	7	0.5 J	10 U	10 UJ	10 UJ	10 UJ
Dichloroethene,1,2- (Total)	5	0.5 J	10 U	10 UJ	10 UJ	10 UJ
Methyl-2-pentanone,4-	NS	6 J	1 J	10 UJ	10 UJ	10 UJ
Methylene chloride	5	10 U	10 U	10 UJ	10 UJ	10 UJ
Tetrachloroethene	5	0.6 J	10 U	10 UJ	10 UJ	10 UJ
PAHs (Non-carcinogenic) by NYSASP Method 95-2 (ug/L)						
Acenaphthene	20	10 U	4 J	11 J	9 J	9 J
Anthracene	50	10 U	10 U	1 J	11 U	10 U
Fluoranthene	50	2 J	10 U	2 J	1 J	10 U
Fluorene	50	10 U	1 J	4 J	3 J	3 J
Methylnaphthalene,2-	NS	10 U	1 J	12 U	11 U	2 J
Naphthalene	10	10 U	4 J	12 U	11 U	5 J
Phenanthrene	50	1 J	1 J	6 J	4 J	2 J
Pyrene	50	2 J	10 U	2 J	2 J	10 U
Total PAHs (Non-carc.)		5	11	26	19	21
PAHs (Carcinogenic) by NYSASP Method 95-2 (ug/L)						
Chrysene	0.002	**1 J**	10 U	12 U	11 U	10 U
Dibenz[a,h]anthracene	NS	10 U	10 U	12 U	11 U	10 U
Indeno[1,2,3-cd]pyrene	0.002	**1 J**	10 U	12 U	11 U	10 U
Total PAHs (Carc.)		2	ND	ND	ND	ND
Other SVOCs by NYSASP Method 95-2 (ug/L)						
Benzaldehyde	NS	1 J	10 UJ	12 UJ	11 UJ	10 UJ
Butyl benzyl phthalate	50	2 J	10 U	12 U	11 U	10 U
Diethyl phthalate	50	1 J	10 U	12 U	11 U	10 U
Dinitrotoluene,2,6-	5	10 U	10 U	12 U	11 U	**10**
Methylphenol,2-	1	**1 J**	10 UJ	12 UJ	11 UJ	10 UJ
Nitrophenol,4-	1	**3 J**	25 U	29 U	28 U	25 U
Phenol	1	**4 J**	10 U	12 U	11 U	10 U
Trichlorophenol,2,4,6-	1	10 U	10 U	12 U	11 U	10 U
Metals by 200.7 (ug/L)						
Aluminum	100	NA	NA	NA	NA	NA
Antimony	3	NA	NA	NA	NA	NA
Arsenic	25	NA	NA	NA	NA	NA
Barium	1000	NA	NA	NA	NA	NA
Beryllium	3	NA	NA	NA	NA	NA
Cadmium	5	NA	NA	NA	NA	NA
Calcium	NS	NA	NA	NA	NA	NA
Chromium	50	NA	NA	NA	NA	NA
Cobalt	5	NA	NA	NA	NA	NA
Copper	200	NA	NA	NA	NA	NA
Iron	300	NA	NA	NA	NA	NA
Lead	25	NA	NA	NA	NA	NA
Magnesium	35000	NA	NA	NA	NA	NA
Manganese	300	NA	NA	NA	NA	NA
Mercury	0.7	NA	NA	NA	NA	NA
Nickel	100	NA	NA	NA	NA	NA
Potassium	NS	NA	NA	NA	NA	NA
Selenium	10	NA	NA	NA	NA	NA
Silver	50	NA	NA	NA	NA	NA
Sodium	20000	NA	NA	NA	NA	NA
Thallium	0.5	NA	NA	NA	NA	NA
Vanadium	14	NA	NA	NA	NA	NA
Zinc	2000	NA	NA	NA	NA	NA
Cyanides by CLP Methods (4500CN and ILM04.0) (ug/L)						
Cyanide, Weak Acid Dissociable	NS	3 U	4.7 U	3 U	3 U	3 U
Cyanide, Total	200	29.4	3 U	3 U	3 U	3 U
Geochemical Analyses by Various Methods						
pH	NS	7.31	7.47	7.37	7.41	7.38 J
Hardness	NS	206	332	346	336	346

Notes:

U - Analyte not detected

B - Analyte detected in associated blank

* - Duplicate analysis outside control limits

W - Post-digest spike recovery furnace outside 85-115% control limit, while sample absorbance less than 50% of spike absorbance

E - Exceeds calibration range

Table 11
Storm Sewer Sediments Analytical Results
93B Maple Avenue Former MGP Site
Haverstraw, New York

Analyte	Site ID/Date *Apartments* SD013102-6 1/31/2002
BTEX by NYSASP Method 95-1 and 91-1 (mg/kg)	
Benzene	0.008 J
Toluene	0.001 J
Ethylbenzene	0.043
Xylene, Total	0.027
Total BTEX	0.08
Other VOCs by NYSASP Method 95-1 and 91-1 (mg/kg)	
Butanone,2- (MEK)	0.014 U
Methyl-2-pentanone,4-	0.014 U
Tetrachloroethene	0.014 U
PAHs (Non-carcinogenic) by NYSASP Methods 91-2 and 95-2 (mg/kg)	
Acenaphthene	14
Acenaphthylene	4.4 U
Anthracene	3.6 J
Benzo[g,h,i]perylene	0.46 J
Fluoranthene	3.9 J
Fluorene	5.7
Methylnaphthalene,2-	6.4
Naphthalene	6.9
Phenanthrene	24
Pyrene	6.7
Total PAHs (Non-carcinogenic)	72
PAHs (Carcinogenic) by NYSASP Methods 91-2 and 95-2 (mg/kg)	
Benz[a]anthracene	0.51 J
Benzo[a]pyrene	4.4 U
Benzo[b]fluoranthene	4.4 U
Benzo[k]fluoranthene	4.4 U
Chrysene	0.5 J
Dibenz[a,h]anthracene	4.4 U
Indeno[1,2,3-cd]pyrene	4.4 U
Total PAHs (Carcinogenic)	1.0
Other SVOCs by NYSASP Methods 91-2 and 95-2 (mg/kg)	
Biphenyl,1,1-	1.5 J
Bis(2-ethylhexyl)phthalate	4.4 U
Butyl benzyl phthalate	4.4 U
Carbazole	4.4 U
Dibenzofuran	0.69 J
TAL Metals by CLP Method 6010 (mg/kg)	
Aluminum	NA
Arsenic	NA
Barium	NA
Beryllium	NA
Calcium	NA
Chromium	NA
Cobalt	NA
Copper	NA
Iron	NA
Lead	NA
Magnesium	NA
Manganese	NA
Nickel	NA
Potassium	NA
Sodium	NA
Vanadium	NA
Zinc	NA
Cyanides by CLP Methods (ILM04.0 and 4500CNI) (mg/kg)	
Cyanide, Total	0.19 U
Inorganic Analyses by CLP Methods (various units)	
Hardness (mg/kg)	7.13
pH (pH units)	5170
TOC Average Quads (mg/kg)	70700

Notes:
U - Analyte Not detected
J - Estimated value
NS - No standard
ND - Not Detected
NA - Not Analyzed

Table 12
Exposure Pathway Assessment
93B Maple Avenue Parcel
93B Maple Avenue Former MGP Site
Haverstraw, New York

Constituents of Concern	Media	Screening Criteria	Exceeds Criteria?	Potential Receptors	Complete Exposure Pathway?
BTEX	Surface Soil	TAGM 4046 and background concentrations	No	O'Kane Associates Employee	No
				Utility Worker	No
				Trespasser	No
				Construction Worker	No
				Future Resident	No
	Subsurface Soil	TAGM 4046	Yes	O'Kane Associates Employee	Yes
				Utility Worker	Yes
				Trespasser	No
				Construction Worker	Yes
				Future Resident	Yes
	Groundwater	NYSWQS	Yes	O'Kane Associates Employee	Yes
				Utility Worker	Yes
				Trespasser	No
				Construction Worker	Yes
				Future Resident	Yes
PAHs	Surface Soil	TAGM 4046 and background concentrations	Yes	O'Kane Associates Employee	Yes
				Utility Worker	Yes
				Trespasser	Yes
				Construction Worker	Yes
				Future Resident	Yes
	Subsurface Soil	TAGM 4046	Yes	O'Kane Associates Employee	Yes
				Utility Worker	Yes
				Trespasser	No
				Construction Worker	Yes
				Future Resident	Yes
	Groundwater	NYSWQS	Yes	O'Kane Associates Employee	Yes
				Utility Worker	Yes
				Trespasser	No
				Construction Worker	Yes
				Future Resident	Yes
Cyanide	Surface Soil	EPA Generic Soil Screening Level (1,600 ppm) EPA, 1996a	No	O'Kane Associates Employee	No
				Utility Worker	No
				Trespasser	No
				Construction Worker	No
				Future Resident	No
	Subsurface Soil	EPA Generic Soil Screening Level (1,600 ppm) EPA, 1996a	No	O'Kane Associates Employee	No
				Utility Worker	No
				Trespasser	No
				Construction Worker	No
				Future Resident	No
	Groundwater	NYSWQS	Yes	O'Kane Associates Employee	Yes
				Utility Worker	Yes
				Trespasser	No
				Construction Worker	Yes
				Future Resident	Yes

Table 13
Exposure Pathway Assessment
93A Maple Avenue Parcel
93B Maple Avenue Former MGP Site
Haverstraw, New York

Constituents of Concern	Media	Screening Criteria	Exceeds Criteria?	Potential Receptors	Complete Pathway?
BTEX	Surface Soil	TAGM 4046 and background concentrations	(1)	O'Kane Associates Employee	-
				Passerby/Trespasser	-
				Utility Worker	-
				Construction Worker	-
				Future Resident	-
	Subsurface Soil	TAGM 4046	Yes	O'Kane Associates Employee	Yes
				Passerby/Trespasser	No
				Utility Worker	Yes
				Construction Worker	Yes
				Future Resident	Yes
	Groundwater	NYSWQS	(1)	O'Kane Associates Employee	-
				Passerby/Trespasser	-
				Utility Worker	-
				Construction Worker	-
				Future Resident	-
PAHs	Surface Soil	TAGM 4046 and background concentrations	(1)	O'Kane Associates Employee	-
				Passerby/Trespasser	-
				Utility Worker	-
				Construction Worker	-
				Future Resident	-
	Subsurface Soil	TAGM 4046	Yes	O'Kane Associates Employee	Yes
				Passerby/Trespasser	No
				Utility Worker	Yes
				Construction Worker	Yes
				Future Resident	Yes
	Groundwater	NYSWQS	Yes	O'Kane Associates Employee	-
				Passerby/Trespasser	-
				Utility Worker	-
				Construction Worker	-
				Future Resident	-

Table 13 (Continued)
Exposure Pathway Assessment
93A Maple Avenue Parcel
Clove and Maple Former MGP Site
Haverstraw, New York

Constituents of Concern	Media	Screening Criteria	Exceeds Criteria?	Potential Receptors	Complete Pathway?
Cyanide	Surface Soil	EPA Generic Soil Screening Level (1,600 ppm) (EPA, 1996a)	(1)	O'Kane Associates Employee	-
				Passerby/Trespasser	-
				Utility Worker	-
				Construction Worker	-
				Future Resident	-
	Subsurface Soil	EPA Generic Soil Screening Level (1,600 ppm) (EPA, 1996a)	No	O'Kane Associates Employee	No
				Passerby/Trespasser	No
				Utility Worker	No
				Construction Worker	No
				Future Resident	No
	Groundwater	NYSWQS	(1)	O'Kane Associates Employee	-
				Passerby/Trespasser	-
				Utility Worker	-
				Construction Worker	-
				Future Resident	-

Note:
(1) No samples were analyzed at this parcel.

Table 14
Exposure Pathway Assessment
6 Tor Avenue Parcel
93B Maple Avenue Former MGP Site
Haverstraw, New York

Constituents of Concern	Media	Screening Criteria	Exceeds Criteria?	Potential Receptors	Complete Exposure Pathway?
BTEX	Surface Soil	TAGM 4046 and background concentrations	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Subsurface Soil	TAGM 4046	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Groundwater	NYSWQS	(1)	Passerby	-
				Resident	-
				Utility Worker	-
				Construction Worker	-
PAHs	Surface Soil	TAGM 4046 and background concentrations	Yes	Passerby	Yes
				Resident	Yes
				Utility Worker	Yes
				Construction Worker	Yes
	Subsurface Soil	TAGM 4046	Yes	Passerby	Yes
				Resident	Yes
				Utility Worker	Yes
				Construction Worker	Yes
	Groundwater	NYSWQS	(1)	Passerby	-
				Resident	-
				Utility Worker	-
				Construction Worker	-
Cyanide	Surface Soil	EPA Generic Soil Screening Level (1,600 ppm) EPA, 1996a	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Subsurface Soil	EPA Generic Soil Screening Level (1,600 ppm) EPA, 1996a	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Groundwater	NYSWQS	(1)	Passerby	-
				Resident	-
				Utility Worker	-
				Construction Worker	-

Notes:
(1) No samples were analyzed at this parcel

Table 15
Exposure Pathway Assessment
87 Maple Avenue Parcel
93B Maple Avenue Former MGP Site
Haverstraw, New York

Constituents of Concern	Media	Screening Criteria	Exceeds Criteria?	Potential Receptors	Complete Exposure Pathway?
BTEX	Surface Soil	TAGM 4046 and background concentrations	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Subsurface Soil	TAGM 4046	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Groundwater	NYSWQS	(1)	Passerby	-
				Resident	-
				Utility Worker	-
				Construction Worker	-
PAHs	Surface Soil	TAGM 4046 and background concentrations	No (2)	Passerby	No (2)
				Resident	No (2)
				Utility Worker	No (2)
				Construction Worker	No (2)
	Subsurface Soil	TAGM 4046	Yes	Passerby	No
				Resident	Yes
				Utility Worker	Yes
				Construction Worker	Yes
	Groundwater	NYSWQS	(1)	Passerby	-
				Resident	-
				Utility Worker	-
				Construction Worker	-
Cyanide	Surface Soil	EPA Generic Soil Screening Level (1,600 ppm) EPA, 1996a	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Subsurface Soil	EPA Generic Soil Screening Level (1,600 ppm) EPA, 1996a	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Groundwater	NYSWQS	(1)	Passerby	-
				Resident	-
				Utility Worker	-
				Construction Worker	-

Notes:

(1) No samples were analyzed at this parcel

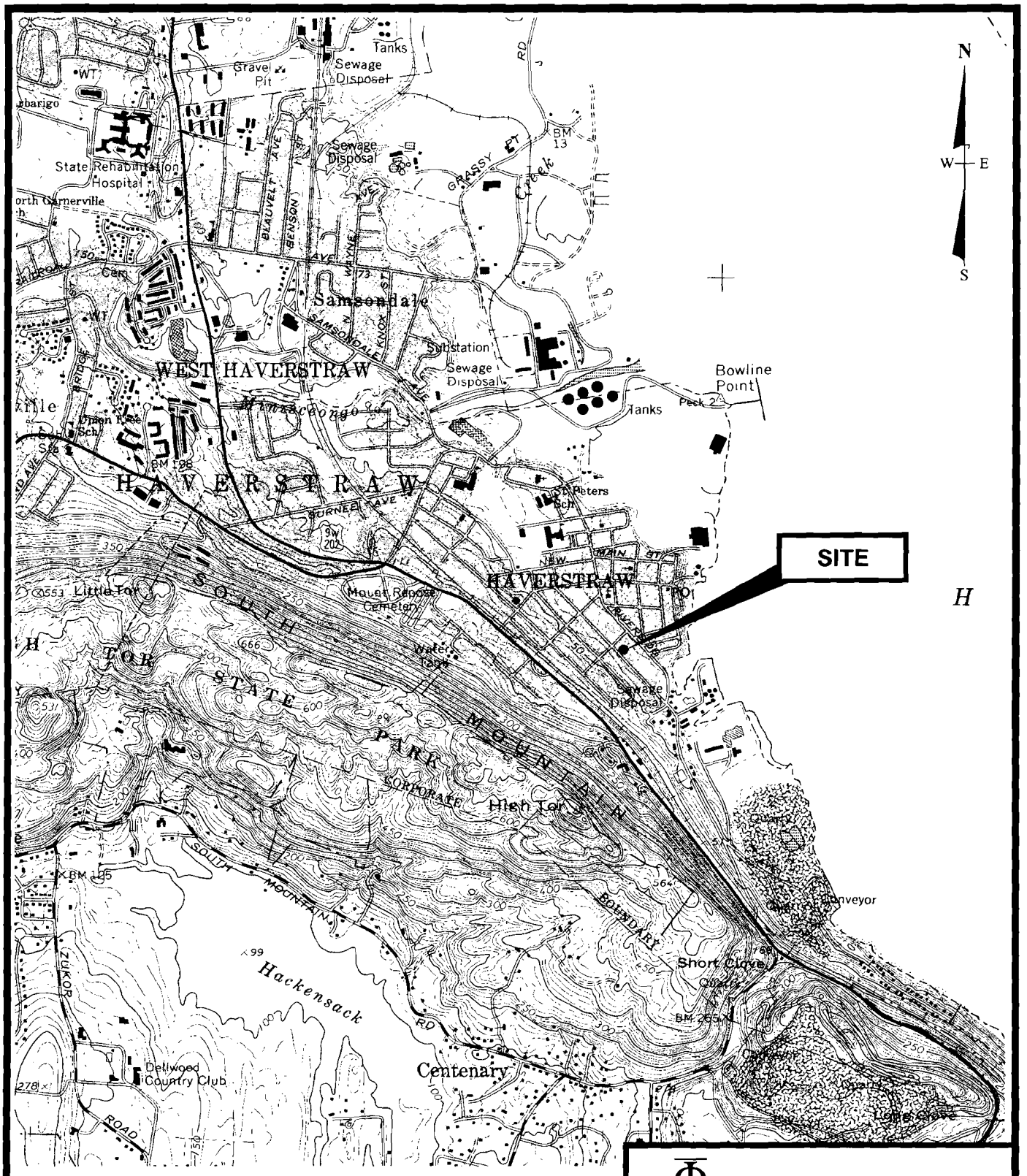
(2) Although surface-soil PAH concentrations exceed TAGM 4046 criteria, the concentrations are similar to Haverstraw background surface-soil sample concentrations (HA-BSS01-1 through HA-BSS01-6). Therefore, the PAH concentrations do not exceed background levels and there is no complete pathway.

Table 16
Exposure Pathway Assessment
91 Maple Avenue Parcel
93B Maple Avenue Former MGP Site
Haverstraw, New York

Constituents of Concern	Media	Screening Criteria	Exceeds Criteria?	Potential Receptors	Complete Exposure Pathway?
BTEX	Surface Soil	TAGM 4046 and background concentrations	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Subsurface Soil	TAGM 4046	Yes	Passerby	No
				Resident	Yes
				Utility Worker	Yes
				Construction Worker	Yes
	Groundwater	NYSWQS	(1)	Passerby	-
				Resident	-
				Utility Worker	-
				Construction Worker	-
PAHs	Surface Soil	TAGM 4046 and background concentrations	Yes	Passerby	Yes
				Resident	Yes
				Utility Worker	Yes
				Construction Worker	Yes
	Subsurface Soil	TAGM 4046	Yes	Passerby	No
				Resident	Yes
				Utility Worker	Yes
				Construction Worker	Yes
	Groundwater	NYSWQS	(1)	Passerby	-
				Resident	-
				Utility Worker	-
				Construction Worker	-
Cyanide	Surface Soil	EPA Generic Soil Screening Level (1,600 ppm) EPA, 1996a	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Subsurface Soil	EPA Generic Soil Screening Level (1,600 ppm) EPA, 1996a	No	Passerby	No
				Resident	No
				Utility Worker	No
				Construction Worker	No
	Groundwater	NYSWQS	(1)	Passerby	-
				Resident	-
				Utility Worker	-
				Construction Worker	-

Notes:
(1) No samples were analyzed at this parcel

Figures



600 300 0 600 1200

GRAPHIC SCALE IN METERS

2000 1000 0 2000 4000

GRAPHIC SCALE IN FEET

GEI Consultants, Inc.

FIGURE 1
SITE LOCATION MAP

REMEDIAL INVESTIGATION
93B MAPLE AVENUE FORMER MGP SITE
HAVERSTRAW, NEW YORK

O&R\HAVR\0108\93B\FIG\93B-LOC.CDR

WEST STREET

AVENUE

TOR

MAPLE AVENUE

NEW YORK STATE COORDINATE SYSTEM
EAST ZONE

62 63 64 65 66 67 68 69

84 81 1 2 3 4 5 6 7

GRAVEL/PAVED ALLEY

SPEED BUMP

SPEED BUMP

PAVED DRIVE

ALLEY

86.2

10' SEWER EASEMENT

STORM SEWER/CULVERT

SMH

20' SEWER EASEMENT

STORM SEWER/CULVERT

SB/MW-03

APPROXIMATE LOCATION OF FORMER MGP BUILDING

HOUSE

SHED

86.1

SB/MW-01

GRAVEL/DIRT

PZ-01

78

#93B
1-STORY CONCRETE BLOCK BUILDING
FF 23.40±

BUILDING OVERHANG

APPROXIMATE UNDERGROUND LOCATION OF FORMER GAS HOLDER

SB/MW-27

SB/MW-02

RAMP

GRASS

GRASS

WOODEN WALKWAY

CURB

APPROXIMATE PROPERTY LINE

12' R.O.W.

BITUMINOUS PAVEMENT

#87 MAPLE

APPROX. LOCATION OF HOUSE

85 80 79

#91
1 AND 2-STORY WOOD FRAME HOUSE

#93A
WOOD FRAME HOUSE

76 75 74

CURB

UP UP UP

LEGEND

- HISTORIC STRUCTURE
- 22 SURFACE ELEVATION CONTOUR
- WOOD FENCE
- CHAIN-LINK FENCE
- O/W OVERHEAD WIRE
- UTILITY POLE
- PROPERTY LINE
- 56 LOT NUMBER
- FIRE HYDRANT
- SMH SEWER MANHOLE
- CB CATCH BASIN
- SB/MW-01 MONITORING WELL LOCATION
- PZ-01 MONITORING WELL LOCATION
- APPROXIMATE PROPERTY LINE

40 20 0 40 80

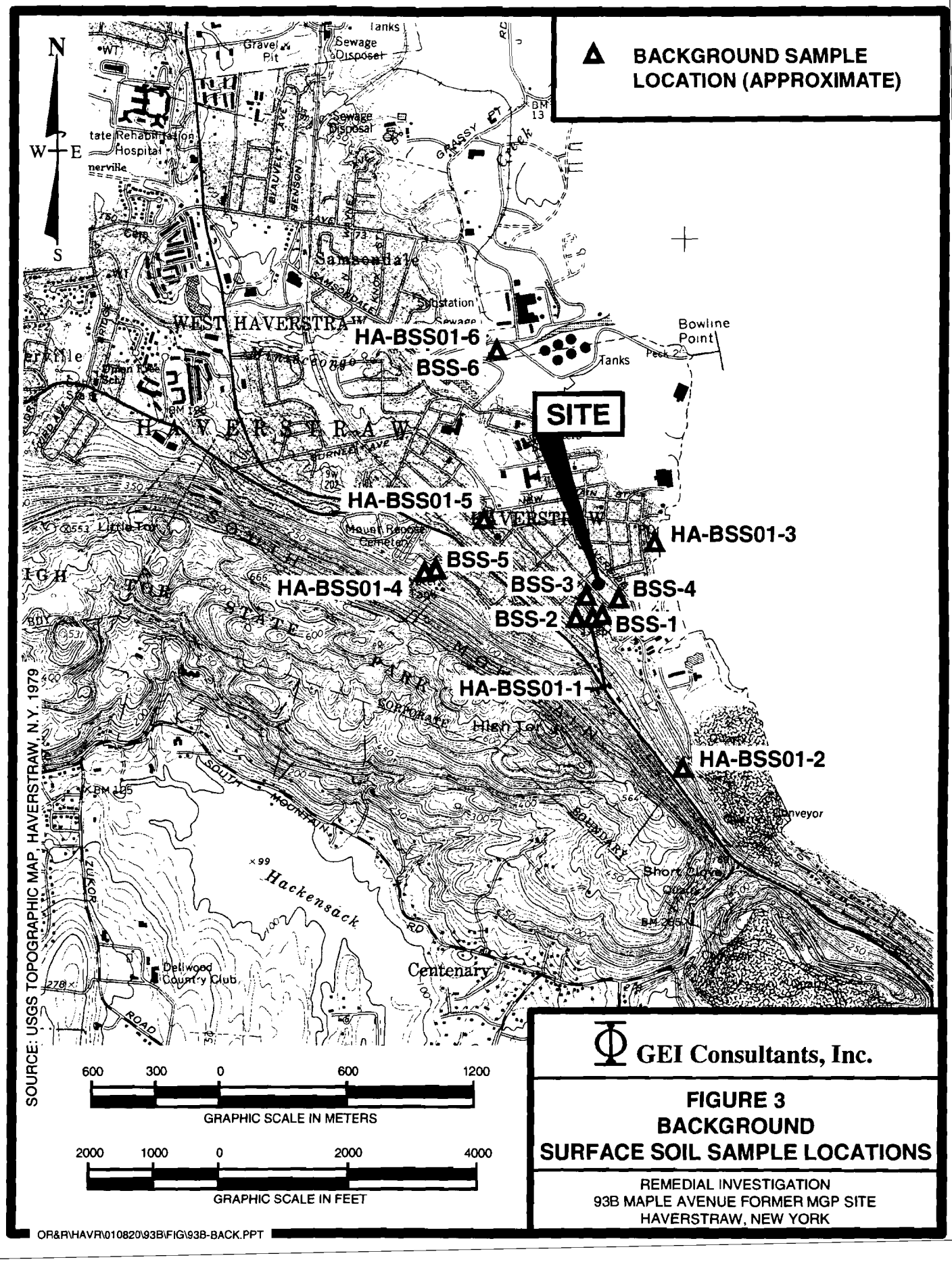
GRAPHIC SCALE IN FEET

GEI Consultants, Inc.

FIGURE 2
SITE PLAN

REMEDIAL INVESTIGATION
93B MAPLE AVENUE FORMER MGP SITE
HAVERSTRAW, NEW YORK

O&R\HWR\01082\93B\FIG\93B-SITE


BACKGROUND SAMPLE LOCATION (APPROXIMATE)
N
W
E
S
SITE
HA-BSS01-6
BSS-6
HA-BSS01-5
HA-BSS01-3
BSS-5
HA-BSS01-4
BSS-3
BSS-4
BSS-2
BSS-1
HA-BSS01-1
HA-BSS01-2
Tanks
Sewage Disposer
Gravel Pit
Sewage Disposal
Bowline Point
Peck Pt
Mount Repose Cemetery
Hackensack
Centenary
Short Clove
Conveyor
Delwood Country Club
Substation
SOURCE: USGS TOPOGRAPHIC MAP, HAVERSTRAW, N.Y. 1979
600 300 0 600 1200
GRAPHIC SCALE IN METERS
2000 1000 0 2000 4000
GRAPHIC SCALE IN FEET
GEI Consultants, Inc.
FIGURE 3
BACKGROUND
SURFACE SOIL SAMPLE LOCATIONS
REMEDIAL INVESTIGATION
93B MAPLE AVENUE FORMER MGP SITE
HAVERSTRAW, NEW YORK
OR&R\HAVR\010820\93B\FIG\93B-BACK.PPT

A
NORTHEAST

A'
SOUTHWEST

SG-09
GP-14/14A
SB/MW-01
GAS HOLDER
GP-10
SB-25
GP-12
GP-6
SB/MW-02
GP-1
GP-16
GP-20
GP-17

HOLDER FOUNDATION FLOOR

FEET (NGVD)

25
20
15
10
5
0
-5
-10
-15

5
2.5
0
5
VERTICAL SCALE IN FEET

10 5 0 10
HORIZONTAL SCALE IN FEET
NOTE: VERTICAL EXAGGERATION = 2X

LEGEND

MW10 — SOIL BORING OR MONITORING WELL LOCATION

POTENTIOMETRIC SURFACE MEASURED ON DECEMBER 17, 2001

SCREENED INTERVAL

INFERRED CONTACT

HYDROCARBON-LIKE ODORS

NAPHTHALENE OR COAL TAR-LIKE ODORS

SHEENS

TAR BLEBS OR TAR LENSES

TAR SATURATED SOIL MATRIX

FILL MATERIAL

FINE SANDS

CLAY MATERIAL

COARSE-GRAINED SANDS AND GRAVELS

CLAY AND FINE SAND/SILT MIXTURES

SILT AND FINE TO COARSE-GRAINED SAND

TILL MATERIAL

GEI Consultants, Inc.

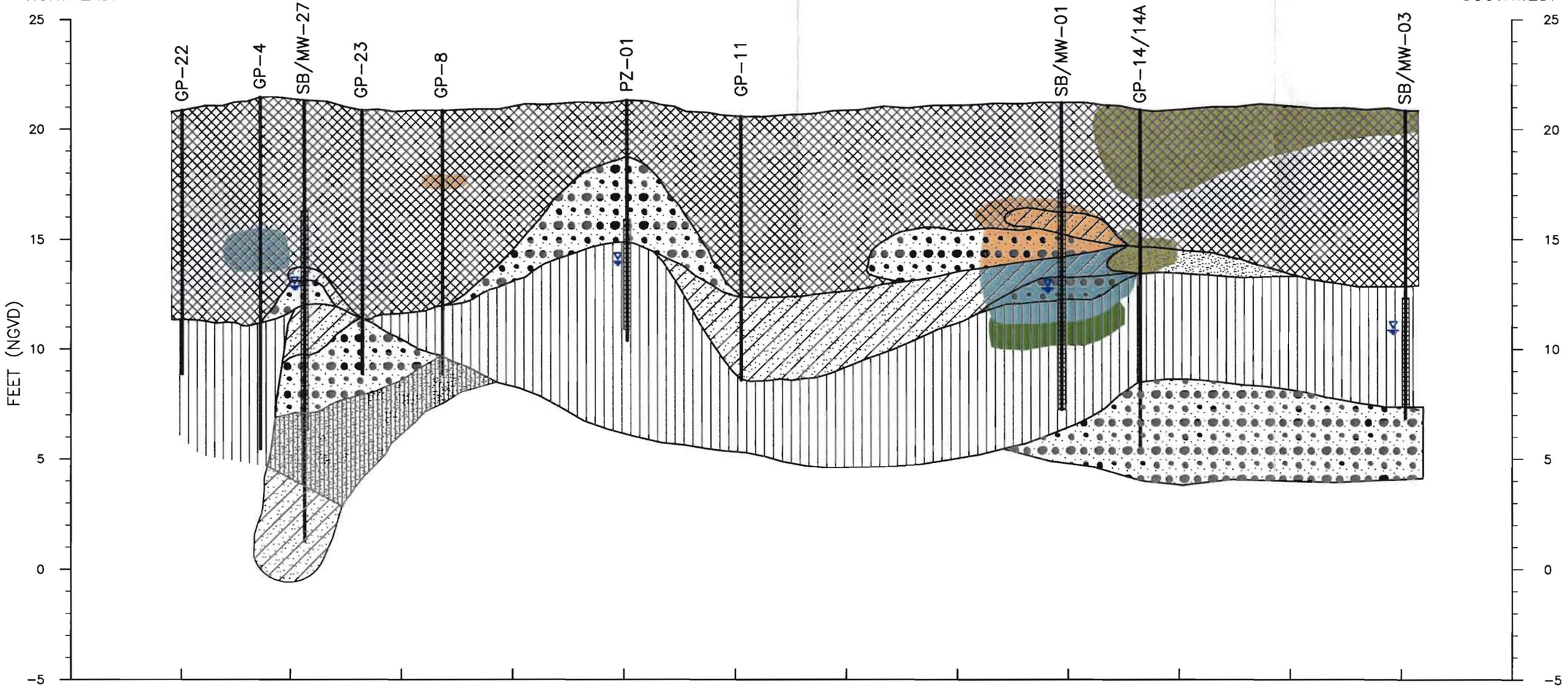
FIGURE 4
GEOLOGIC CROSS-SECTION A-A'

REMEDIAL INVESTIGATION
93B MAPLE AVENUE FORMER MGP SITE
HAVERSTRAW, NEW YORK

O&R\HAVR\01082\93B\93B-A&b

B
NORTHEAST

B'
SOUTHWEST



LEGEND

- MW10 — SOIL BORING OR MONITORING WELL LOCATION
- POTENTIOMETRIC SURFACE MEASURED ON DECEMBER 17, 2001
- SCREENED INTERVAL
- INFERRED CONTACT
- HYDROCARBON-LIKE ODORS
- NAPHTHALENE OR COAL TAR-LIKE ODORS
- SHEENS
- TAR BLEBS OR TAR LENSES
- TAR SATURATED SOIL MATRIX
- FILL MATERIAL
- FINE SANDS
- CLAY MATERIAL
- COARSE-GRAINED SANDS AND GRAVELS
- CLAY AND FINE SAND/SILT MIXTURES
- SILT AND FINE TO COARSE-GRAINED SAND
- TILL MATERIAL

VERTICAL SCALE IN FEET: 5, 2.5, 0, 5

HORIZONTAL SCALE IN FEET: 10, 5, 0, 10

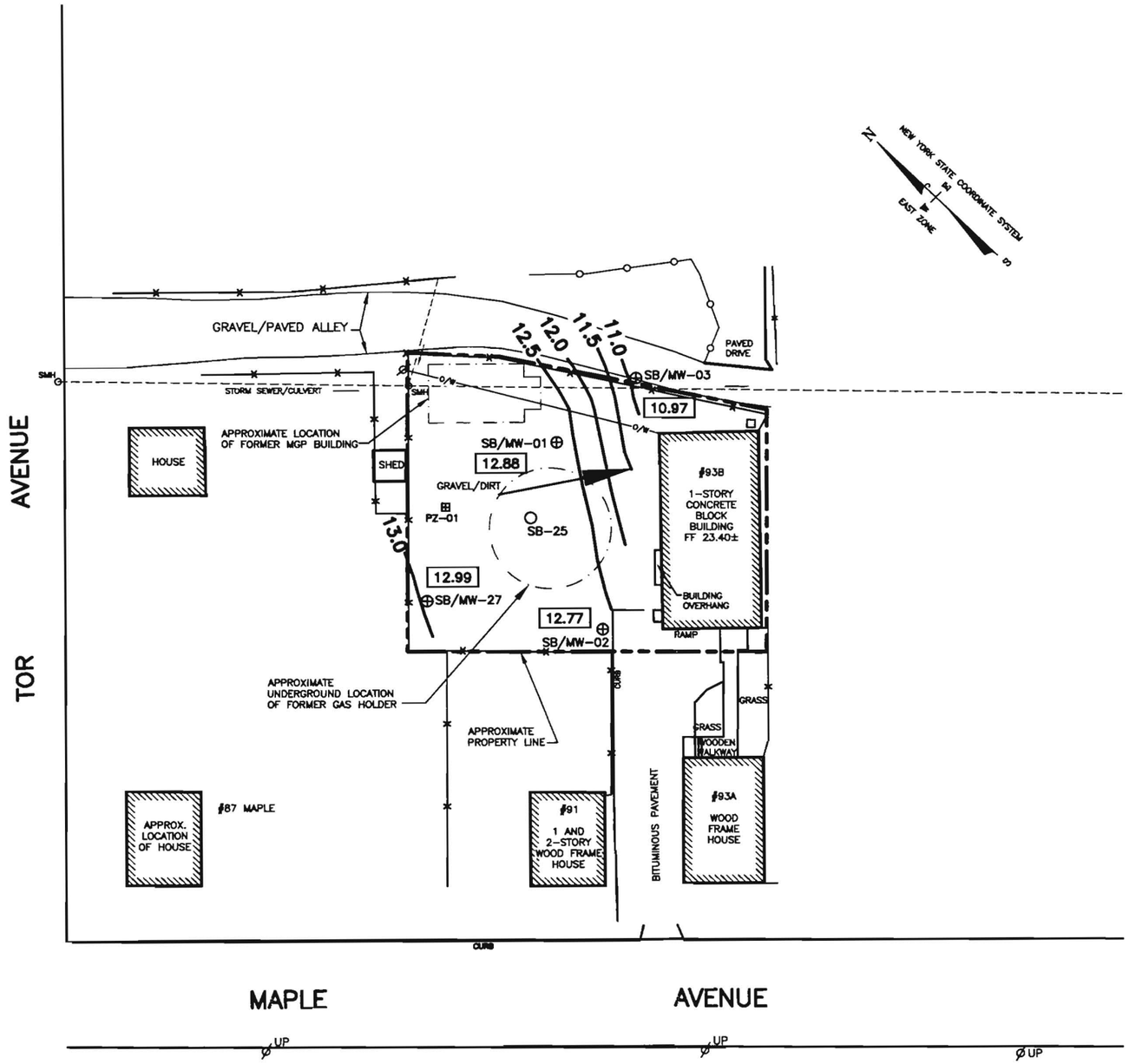
NOTE: VERTICAL EXAGGERATION = 2X

GEI Consultants, Inc.

FIGURE 5
GEOLOGIC CROSS-SECTION
B-B'

REMEDIAL INVESTIGATION
93B MAPLE AVENUE FORMER MGP SITE
HAVERSTRAW, NEW YORK

D&R\HAVR\01082\93B\93B-A&B



LEGEND

⊕ MW-02	MONITORING WELL LOCATION
⊞ PZ-01	PIEZOMETER LOCATION
12.99	POTENTIOMETRIC SURFACE
—11.0—	POTENTIOMETRIC SURFACE CONTOUR (FT NGVD)
◄——	GROUNDWATER FLOW
	HISTORICAL STRUCTURE
—o—o—	WOOD FENCE
—×—×—	CHAIN-LINK FENCE
—o/w—	OVERHEAD WIRE
ø	UTILITY POLE
○ SMH	SEWER MANHOLE
□ CB	CATCH BASIN
— — —	APPROXIMATE PROPERTY LINE

40 20 0 40 80

GRAPHIC SCALE IN FEET

NOTE:

1. WATER ELEVATION WAS NOT MEASURED AT PZ-01 BECAUSE THE WELL WAS INACCESSIBLE.

GEI Consultants, Inc.

FIGURE 6
POTENTIOMETRIC SURFACE MAP
DECEMBER 17, 2001-HIGH TIDE

REMEDIAL INVESTIGATION
93B MAPLE AVENUE FORMER MGP SITE
HAVERSTRAW, NEW YORK

N:\R\HAVR\01082\93B\FIG\93B-POT

Monitor Well ID	MW-01			
Sample Date	6/3/97	2/4/99	11/30/01	12/18/01
Total BTEX	552	70	880	260
Total PAH	54	59	68.8	4
Total CN	404	439	366	403

Monitor Well ID	MW-03	
Sample Date	2/4/99	12/18/01
Total BTEX	ND	ND
Total PAH	4	ND
Total CN	ND	ND

Monitor Well ID	MW-27
Sample Date	12/18/01
Total BTEX	ND
Total PAH	ND
Total CN	ND

Monitor Well ID	MW-02		
Sample Date	2/4/99	11/30/01	12/18/01
Total BTEX	ND	ND	ND
Total PAH	2	22.4	ND
Total CN	13	ND	ND

NEW YORK STATE COORDINATE SYSTEM
EAST ZONE

AVENUE

GRAVEL/PAVED ALLEY

PAVED DRIVE

SB/MW-03

SMH

STORM SEWER/CULVERT

APPROXIMATE LOCATION OF FORMER MGP BUILDING

HOUSE

SHED

SB/MW-01

GRAVEL/DIRT

PZ-01

SB-25

#93B
1-STORY CONCRETE BLOCK BUILDING
FF 23.40±

BUILDING OVERHANG

RAMP

SB/MW-27

SB/MW-02

APPROXIMATE UNDERGROUND LOCATION OF FORMER GAS HOLDER

APPROXIMATE PROPERTY LINE

CURB

GRASS

WOODEN WALKWAY

BITUMINOUS PAVEMENT

#87 MAPLE

APPROX. LOCATION OF HOUSE

#91
1 AND 2-STORY WOOD FRAME HOUSE

#93A
WOOD FRAME HOUSE

TOR

MAPLE AVENUE

LEGEND

⊕ MW-02	MONITORING WELL LOCATION
⊞ PZ-01	PIEZOMETER LOCATION
— · — · —	HISTORICAL STRUCTURE
—o—o—	WOOD FENCE
—×—×—	CHAIN-LINK FENCE
—o/o—	OVERHEAD WIRE
	UTILITY POLE
○ SMH	SEWER MANHOLE
□ CB	CATCH BASIN
— — —	APPROXIMATE PROPERTY LINE

BTEX – BENZENE, TOLUENE, ETHYLBENZENE, XYLENES
PAHs – POLYCYCLIC AROMATIC HYDROCARBONS
CN – CYANIDE
ND – NOT DETECTED
PPB – PARTS PER BILLION

40 20 0 40 80
GRAPHIC SCALE IN FEET

GEI Consultants, Inc.

FIGURE 7
GROUNDWATER ANALYTICAL RESULTS (ppb)

REMEDIAL INVESTIGATION
93B MAPLE AVENUE FORMER MGP SITE
HAVERSTRAW, NEW YORK

D:\HWK\01082\93B\FIG\93B-GWAN

Plates

Appendix A

Test Pit, Monitoring Well, and Boring Logs

REMEDIATION TECHNOLOGIES, INC.

BORING LOG
BORING SG-1

PROJECT NO: 3-2632-300	DRILLING CO.: NORTHSTAR DRILLING	MP ELEVATION: NA
CLIENT: ORANGE & ROCKLAND	DRILLER: JEFF THEW	SURFACE ELEVATION:
LOCATION: HAVERSTRAW, WEST & MAPLE	METHOD: GEOPROBE	WATER LEVEL DURING DRILLING: 8.02
START DATE: 5-8-07	CASING I.D.: NA	PVC STICK-UP: NA
GEOLOGIST: JAMES EDWARDS	TOTAL DEPTH: 16	AUGER O.D./I.D.: NA

DEPTH (feet)	RECOVERY	SAMPLE DEPTH	PID HEADSPACE (ppm)	BLOW COUNTS @	SOIL CLASS	LITHOLOGY	DESCRIPTION
	60	0-4	0.0		FILL		Fill material consisting of: 40% Sand, trace debris. 10% Gravel, angular to subround.
5	40	4-8	0.0				At 3.8' becomes cinders, coal fragments, ash tar-like material in spoon tip, slight odor, moist. Fill material consisting of: 50 % Brown sand 20% Angular gravel, trace coal fragments.
10	20	8-12	1120				Becomes Silty sand, grey, poorly sorted, trace gravel, moist, no odor. 40% gray, fine sand. 30% Clayey silt, grey and brown in mottled pattern. 10% Sand stone and shale fragments, strong hydrocarbon odor, moist to wet.
15	60	12-16	446		CL		Silty clay, gray, firm, moist. 20% Rounded pebbles, strong hydrocarbon odor.
							End of boring.

REMARKS:
Soil gas results- 0.0 ppm/PID.

REMEDIATION TECHNOLOGIES, INC.

BORING LOG
BORING SG-2

PROJECT NO.: 3-2632-300	DRILLING CO.: NORTHSTAR DRILLING	MP ELEVATION: NA
CLIENT: ORANGE & ROCKLAND	DRILLER: JEFF THEW	SURFACE ELEVATION:
LOCATION: HAVERSTRAW, WEST & MAPLE	METHOD: GEOPROBE	WATER LEVEL DURING DRILLING: 7.02
START DATE: 5-8-07	CASING I.D.: NA	PVC STICK-UP: NA
GEOLOGIST: JAMES EDWARDS	TOTAL DEPTH: 16.0	AUGER O.D./I.D.: NA

DEPTH (feet)	RECOVERY	SAMPLE DEPTH	PID HEADSPACE (ppm)	BLOW COUNTS @	SOIL CLASS	LITHOLOGY	DESCRIPTION
	75	0-4	0.0		FILL		Fill material consisting of: 10% Topsoil. 10% Silty sand, brown, loose, moist. 10% Concrete fragments Becomes black at 3.2', no odor.
5	30	4-8	0.0		SP		Sand, grey, coarse, wet, no odor. 10% Gravel, white granitic and grey shale, rounded.
10	100	8-12	0.0		CL		Clay, grey, medium plasticity, uniform, wet, no odor.
15	100	12-16	0.0				Clay, grey, medium, plasticity, uniform, wet, no odor. Trace silt. Becomes stiff at 14.2'
							End of boring.

REMARKS:
Soil gas results ND < 0.0 ppm/PID.

REMEDIATION TECHNOLOGIES, INC.

BORING LOG
BORING SG-3

PROJECT NO.: 3-2632-300	DRILLING CO.: NORTHSTAR DRILLING	MP ELEVATION: NA
CLIENT: ORANGE & ROCKLAND	DRILLER: JEFF THEW	SURFACE ELEVATION:
LOCATION: HAVERSTRAW, WEST & MAPLE	METHOD: GEOPROBE	WATER LEVEL DURING DRILLING: 7.23
START DATE: 5-8-07	CASING I.D.: NA	PVC STICK-UP: NA
GEOLOGIST: JAMES EDWARDS	TOTAL DEPTH: 10.5	AUGER O.D./I.D.: NA

DEPTH (feet)	RECOVERY	SAMPLE DEPTH	PID HEADSPACE (ppm)	BLOW COUNTS @	SOIL CLASS	LITHOLOGY	DESCRIPTION
	55	0-4	0.0		FILL		Fill material consisting of: 70% Ash, cinders, coal fragments. 30% Brick fragments. 10% Gravel, slight odor, moist.
5	80	4-8	0.0				Fill material consisting of: White ash, cinders, slag, chips, slight odor, moist.
	75	8-10.5	0.0				Becomes clayey silt, wet, trace brick fragments Slight hydrocarbon odor, trace hydrocarbon sheen.
10							Brick plug in spoon tip.
							Refusal at 10.5'. End of boring.

REMARKS:
Soil gas results- 0.0 ppm/PID.
Headspace water sample results- ND <0.0 ppm/PID.

REMEDIATION TECHNOLOGIES, INC.

BORING LOG
BORING SG-4

PROJECT NO.: 3-2632-300	DRILLING CO.: NORTHSTAR DRILLING	MP ELEVATION: NA
CLIENT: ORNAGE & ROCKLAND	DRILLER: JEFF THEW	SURFACE ELEVATION:
LOCATION: HAVERSTRAW, WEST & MAPLE	METHOD: GEOPROBE	WATER LEVEL DURING DRILLING: 7.38
START DATE: 5-8-07	CASING I.D.: NA	PVC STICK-UP: NA
GEOLOGIST: JAMES EDWARDS	TOTAL DEPTH: 11.2	AUGER O.D./I.D.: NA

DEPTH (feet)	RECOVERY	SAMPLE DEPTH	PID HEADSPACE (ppm)	BLOW COUNTS @	SOIL CLASS	LITHOLOGY	DESCRIPTION
	60	0-4	0.0		FILL		Fill material consisting of: 80% sand, brown, medium, loose, poorly sorted. 10% Angular rock fragments. 10% Brick fragments, no odor, moist.
5	75	4-8	0.0		CL		Clay, grey and tan in mottled pattern. Trace angular rock fragments, no odor, moist.
10	90	8-11.2	0.0				Clay, grey, soft, uniform, no odor wet.
					SP		Sand, grey, medium, slight hydrocarbon odor.
							Refusal at 11.2' below ground surface. End of boring.

REMARKS:
Soil gas results - ND < 0.0 ppm/PID.

REMEDIATION TECHNOLOGIES, INC.

BORING LOG
BORING SG-5

PROJECT NO.: 3-2832-300	DRILLING CO.: NORTHSTAR DRILLING	MP ELEVATION: NA
CLIENT: ORANGE & ROCKLAND	DRILLER: JEFF THEW	SURFACE ELEVATION:
LOCATION: HAVERSTRAW, WEST & MAPLE	METHOD: GEOPROBE	WATER LEVEL DURING DRILLING: 7.80
START DATE: 5-8-07	CASING I.D.: NA	PVC STICK-UP: NA
GEOLOGIST: JAMES EDWARDS	TOTAL DEPTH: 11.0	AUGER O.D./I.D.: NA

DEPTH (feet)	RECOVERY	SAMPLE DEPTH	PID HEADSPACE (ppm)	BLOW COUNTS @	SOIL CLASS	LITHOLOGY	DESCRIPTION
	30	0-4	0.0		FILL		Fill material consisting of: 30% Sand, brown, loose. 20% Cinder and ash. 10% Angular rock fragments.
5	100	4-8	0.0		CL		Clay, grey, firm, moist, uniform, no odor 0.1' of black silt at 4.8'.
					SP		At 6.8 to 7.3' sand, grey, coarse, no odor.
					CL		Clay, grey, uniform, stiff, no odor, wet.
		8-11					Clay, grey, uniform, stiff, Parts along Horizontal. 1 inch layers, trace orange silt in seams, no odors, wet.
10	100		0.0				Becomes stiff at 11.0'
							Refusal at 11' below ground surface. End of boring.

REMARKS:
Soil gas results- ND < 0.0ppm/ PID>

REMEDIATION TECHNOLOGIES, INC.

BORING LOG
BORING SG-6

PROJECT NO.: 3-2632-300	DRILLING CO.: NORTHSTAR DRILLING	MP ELEVATION: NA
CLIENT: ORANGE & ROCKLAND	DRILLER: JEFF THEW	SURFACE ELEVATION:
LOCATION: HAVERSTRAW, WEST & MAPLE	METHOD: GEOPROBE	WATER LEVEL DURING DRILLING: 8.02
START DATE: 6-8-97	CASING I.D.: NA	PVC STICK-UP: NA
GEOLOGIST: JAMES EDWARDS	TOTAL DEPTH: 12.0	AUGER O.D./I.D.: NA

DEPTH (feet)	RECOVERY	SAMPLE DEPTH	PID HEADSPACE (ppm)	BLOW COUNTS @	SOIL CLASS	LITHOLOGY	DESCRIPTION
	80	0-4	133		FILL		Fill material consisting of : 80% Ash, cinders, brick fragments. 30% Silt, grey stiff, trace angular rock fragments Moist, no odor.
5		4-8	0.0		SP		Sand, brown, medium, moist, no odor.
					CL		At 6.2' Becomes clay, grey, stiff, uniform, slight odor, trace silt.
10		8-12	0.0				Clay, grey, stiff, uniform, slight hydrocarbon odor. Trace silt in laminations. Silt is brown, very fine grained, wet.
15							End of boring.

REMARKS:
Soil gas results- 7.2 ppm PID.
Drager tube results-ND < 0.5 ppm/ benzene.

REMEDIATION TECHNOLOGIES, INC.

BORING LOG
BORING SG-7

PROJECT NO.: 3-2632-300	DRILLING CO.: NORTHSTAR DRILLING	MP ELEVATION: NA
CLIENT: ORANGE & ROCKLAND	DRILLER: JEFF THEW	SURFACE ELEVATION:
LOCATION: HAVERSTRAW, WEST & MAPLE	METHOD: GEOPROBE	WATER LEVEL DURING DRILLING: 7.70
START DATE: 5-8-97	CASING I.D.: NA	PVC STICK-UP: NA
GEOLOGIST: JAMES EDWARDS	TOTAL DEPTH: 12.0	AUGER O.D./I.D.: NA

DEPTH (feet)	RECOVERY	SAMPLE DEPTH	HEADSPACE (ppm)	BLOW COUNTS @	SOIL CLASS	LITHOLOGY	DESCRIPTION
	85	0-4	0.0		FILL		Fill material consisting of: 20% cinders and white ash. 10% coal fragments. 40% Sand, brown, moist, in 3" layers, no odor.
5	33	4-8	0.0				Fill material consisting of: 80% cinders, ash and coal fragments. 20% Silty clay at 7.7' below ground surface Becomes wet, slight hydrocarbon odor.
10	55	8-12	0.0				Fill material consisting of: 80% Cinders, ash and coal fragments. 20% Silty clay. Refusal at 10.5' below ground surface. Brick plug in spoon tip.
							End of boring.

REMARKS:
Soil gas results 10.9 ppm Hnu
Drager tube results- ND < 0.5 ppm/PID benzene.

RETEC

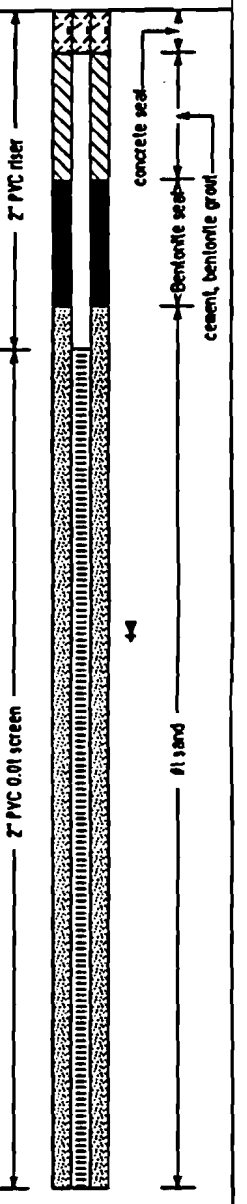
REMEDIATION TECHNOLOGIES, INC.

WELL INSTALLATION LOG
BORING: SB-1/MW-1

PROJECT NO.: 3-2632-300	DRILLING CO.: NORTHSTAR DRILLING	MP ELEVATION: NA
CLIENT: ORANGE & ROCKLAND	DRILLER: JEFF THEW	SURFACE ELEVATION:
LOCATION: HAVERSTRAW, WEST & MAPLE	METHOD: HOLOW STEM AUGER	WATER LEVEL DURING DRILLING: 7.4
START DATE: 5-8-07	CASING I.D.: NA	PVC STICK-UP: NA
GEOLOGIST: JAMES EDWARDS	TOTAL DEPTH: 14.0	AUGER O.D./I.D. NA

DEPTH (feet)	SAMPLE TIME	BLOW COUNTS	RECOVERY	PID Headspace (ppm)	SAMPLE DEPTH	SOIL CLASS	LITHOLOGY	DESCRIPTION
	1018		80	0.0		FILL		Fill material consisting of: 80% Gravel, grey. loose, angular. 20% Brick fragments, no odor.
	1020		80	0.0				Fill material consisting of: 80% Gravel, angular, loose , no odor. 10% White ash and cinders. Fill material consisting of: 50% Gravel, cinders, clayey silt. 50% Brick fragments.
5	1027		80	4.8		CL		Clay, grey, black staining, strong hydrocarbon odor. Clay, grey, black staining, strong odor.
						GP		Gravel, poorly sorted, loose, visible hydrocarbon product, strong odor, liquid.
	1030		100	30.2		CL		Clay, strong hydrocarbon odor, firm, uniform, grey, wet.
						GP		Gravel, grey, rounded, 0.3' thick lens, strong hydrocarbon odor.
	1033		100	41.6		CL		Clay, grey, soft, uniform, strong odor, wet.
10								
	1039		100	11.8				Clay, grey, soft, uniform, wet, trace spots of hydrocarbon sheen, slight odor.
	1100		0	NA				Clay plug in spoon, very soft, poor recovery.
15								End of boring.

WELL CONSTRUCTION



REMARKS:
Sample SB- (8-10) analyzed for VOC, PAHs, cyanide.

REMEDIATION TECHNOLOGIES, INC.	TEST PIT LOG Test Pit TP-1	1001 W. Seneca St. Ithaca, NY 14850-3329 (607)277-5716

PROJECT NO: *3-2632-300*	CONTRACTOR CO.: *CREAMER ENVIRONMENTAL*	MP ELEV.: *' (MSL)*
CLIENT: *ORANGE & ROCKLAND*	CONTRACTOR:	TOTAL DEPTH: *6.0'*
SITE LOCATION: *WEST AND MAPLE*	METHOD: *Backhoe*	SURFACE ELEV.: *' (MSL)*
START DATE: *5-8-97* TIME:	LOGGED BY: *MARK HOFFERBERT*	WATER LEVEL: *NA'*
COMPLETION DATE: *TIME:*		
TEST PIT LOCATION: *WEST AND MAPLE*		

DEPTH (feet)	SAMPLE DEPTH	PID HEADSPACE (ppm)	LITHOLOGY	DESCRIPTION
				Fill material consisting of: 70% Gravelly sand, 20% Brick Fragments, 10% Ashes and cinders Trace Tar-like material in cobble-sized fragments. Material is black, hard, randomly distributed.
5				Silty Clay Grey and brown in mottled pattern, Trace hydrocarbon staining and slight hydrocarbon odor.
				End of boring
10				

REMARKS:

RI Test Pit and Boring Logs

ATLANTIC
ENVIRONMENTAL DIVISION

GEI Consultants, Inc.

188 Norwich Avenue
P.O. Box 297
Colchester, CT 06415

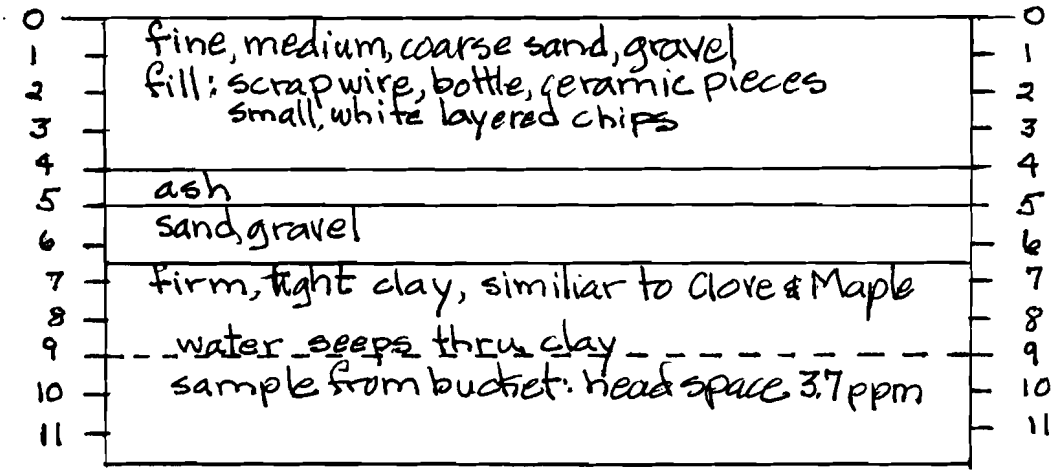
Form 1031
Ph: (860) 537-0751
Fax: (860) 537-6347

TEST PIT DESCRIPTION SHEET

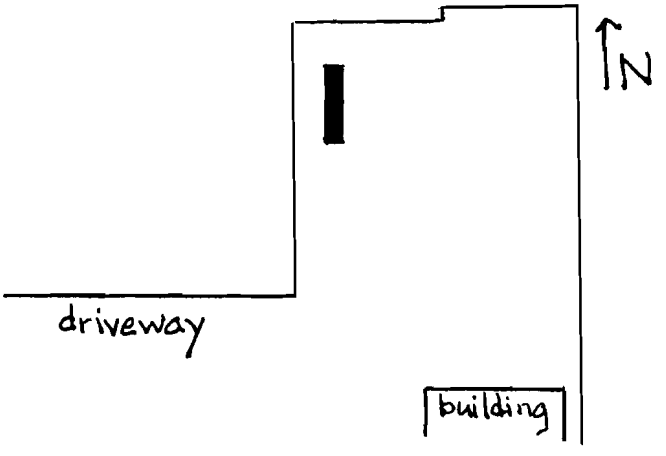
PROJECT NUMBER: 98321.1033
TEST PIT NUMBER: MATP02
GENERAL LOCATION AND/OR PURPOSE: ____
DATE: 10-8-98
TIME OPENED: 1540 **TIME CLOSED:** 1630

LOCAL "CALL BEFORE YOU DIG" CASE NO.: ____
OBSERVER: M. Mayer
ASSISTANT: ____
OTHERS: ____
CONTRACTOR: ____
EQUIPMENT: back-hoe

IN THE SPACE PROVIDED BELOW, NOTE WHAT WAS FOUND IN THE TEST PIT AND SKETCH DIMENSIONS, SOIL TYPES, AND WASTE. NOTE ANY BURIED METAL OBJECTS.



no mgp odor



VIDEO DOCUMENTED: YES ___ NO ___
PHOTOGRAPHED: YES X NO ___
PIEZOMETER NO. USED IN BACKFILL:
DEPTH TO WATER: 9 FT

NAPL SEEPAGE: YES ___ NO ___
BULK SAMPLES: YES ___ NO ___
QUANTITY: ____

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Colchester, CT 06415

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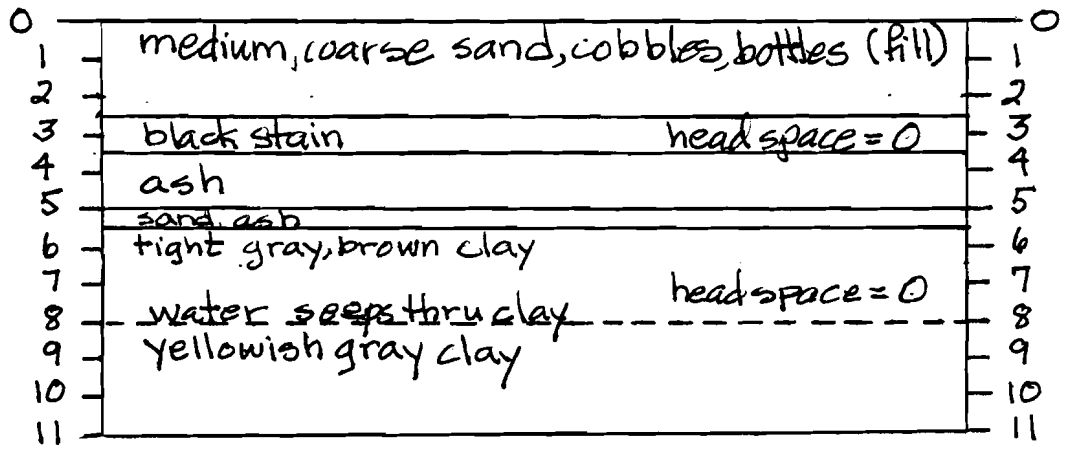
TEST PIT DESCRIPTION SHEET

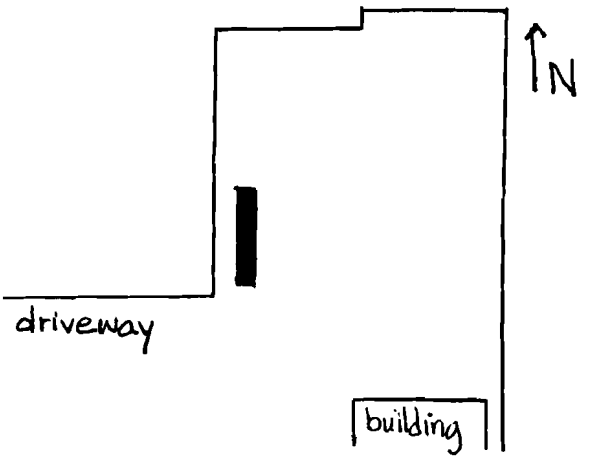
PROJECT NUMBER: 98321.1033
TEST PIT NUMBER: MATP03
GENERAL LOCATION AND/OR PURPOSE:
DATE: 10-8-98
TIME OPENED: 1640 **TIME CLOSED:** 1730

LOCAL "CALL BEFORE YOU DIG" CASE NO.:
OBSERVER: M. Mayer
ASSISTANT:
OTHERS:
CONTRACTOR:
EQUIPMENT: back-hoe

IN THE SPACE PROVIDED BELOW, NOTE WHAT WAS FOUND IN THE TEST PIT AND SKETCH DIMENSIONS, SOIL TYPES, AND WASTE. NOTE ANY BURIED METAL OBJECTS.



no mgp odors



VIDEO DOCUMENTED: YES ___ NO ___
PHOTOGRAPHED: YES X NO ___
PIEZOMETER NO. USED IN BACKFILL:
DEPTH TO WATER: 8 FT

NAPL SEEPAGE: YES ___ NO ___
BULK SAMPLES: YES ___ NO ___
QUANTITY:

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Colchester, CT 06415
Form 1031
Ph: (860) 537-0751
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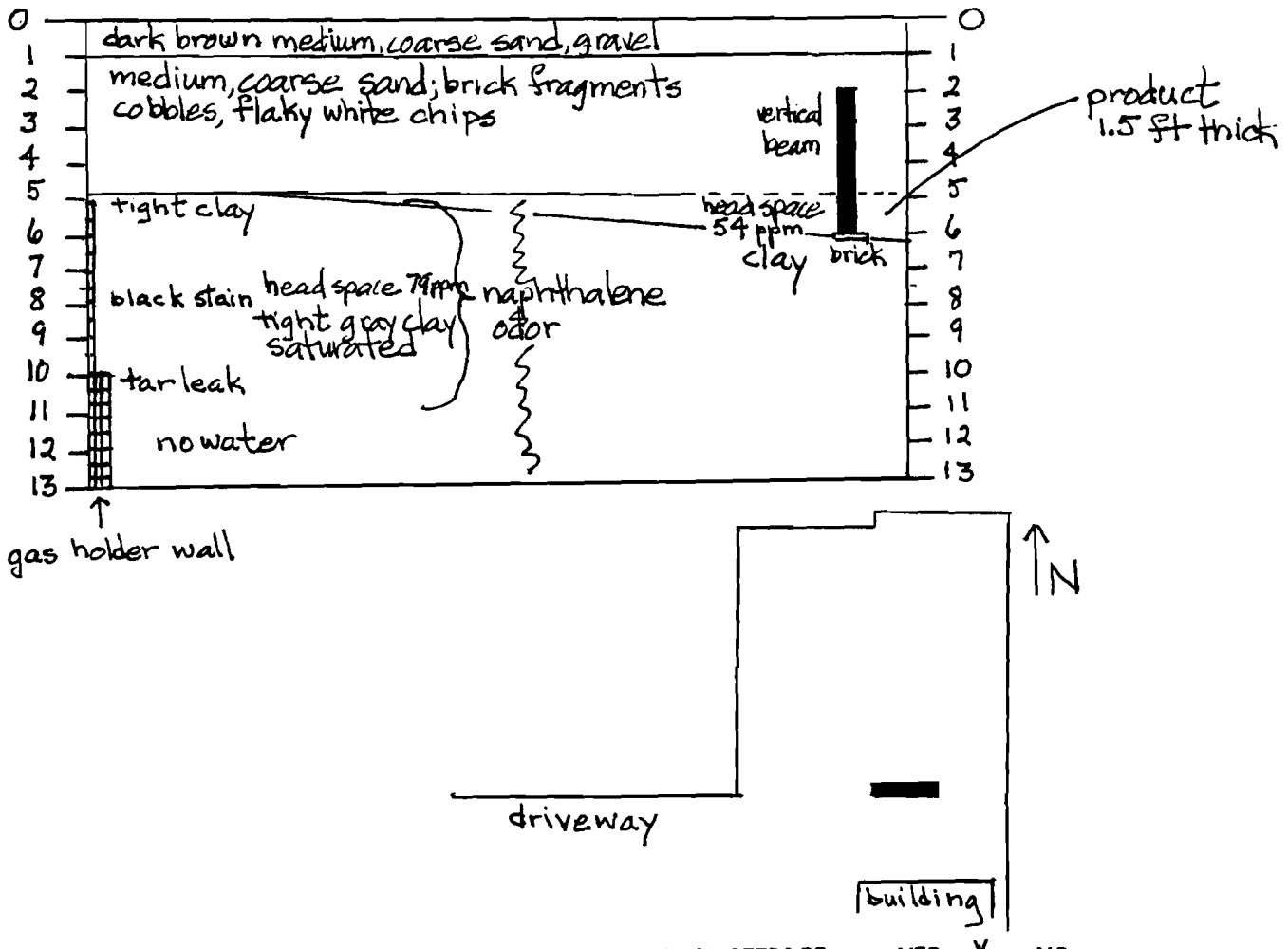
TEST PIT DESCRIPTION SHEET

PROJECT NUMBER: 98321.1033
TEST PIT NUMBER: MATP04
GENERAL LOCATION AND/OR PURPOSE: ____
DATE: 10-9-98
TIME OPENED: 0920 TIME CLOSED: 1040
LOCAL "CALL BEFORE YOU DIG" CASE NO.: ____
OBSERVER: M Mayer
ASSISTANT: ____
OTHERS: ____
CONTRACTOR: ____
EQUIPMENT: back-hoe

IN THE SPACE PROVIDED BELOW, NOTE WHAT WAS FOUND IN THE TEST PIT AND SKETCH DIMENSIONS, SOIL TYPES, AND WASTE. NOTE ANY BURIED METAL OBJECTS.



VIDEO DOCUMENTED: YES ___ NO ___
PHOTOGRAPHED: YES X NO ___
PIEZOMETER NO. USED IN BACKFILL:
DEPTH TO WATER: NA FT

NAPL SEEPAGE: YES X NO ___
BULK SAMPLES: YES X NO ___
QUANTITY: 93BTP04(4.5)-MGP

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Colchester, CT 06415

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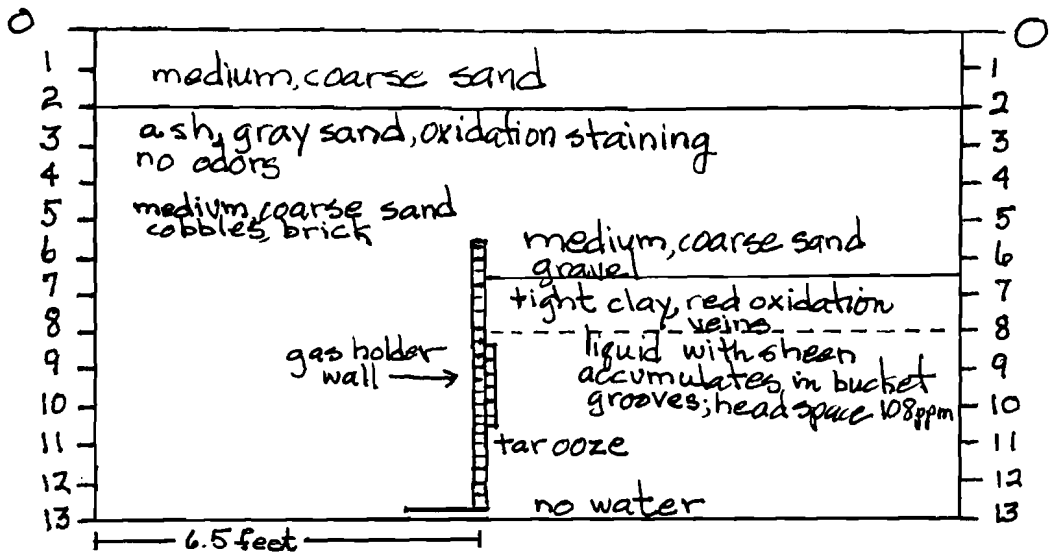
Ph: (860) 537-0751
Fax: (860) 537-6347

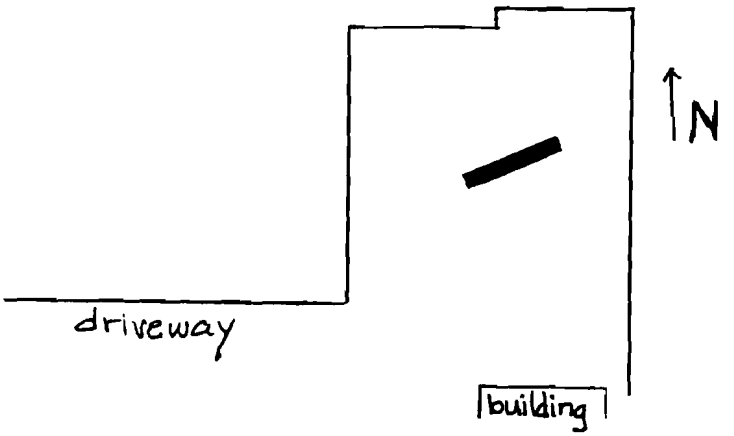
TEST PIT DESCRIPTION SHEET

PROJECT NUMBER: 98321.1033
TEST PIT NUMBER: MATP05
GENERAL LOCATION AND/OR PURPOSE: ____
DATE: 10-9-98
TIME OPENED: 0715 TIME CLOSED: 0900

LOCAL "CALL BEFORE YOU DIG" CASE NO.: ____
OBSERVER: M. Mayer
ASSISTANT: ____
OTHERS: ____
CONTRACTOR: ____
EQUIPMENT: back-hoe

IN THE SPACE PROVIDED BELOW, NOTE WHAT WAS FOUND IN THE TEST PIT AND SKETCH DIMENSIONS, SOIL TYPES, AND WASTE. NOTE ANY BURIED METAL OBJECTS.





VIDEO DOCUMENTED: YES ___ NO ___
PHOTOGRAPHED: YES X NO ___
PIEZOMETER NO. USED IN BACKFILL:
DEPTH TO WATER: NA FT

NAPL SEEPAGE: YES X NO ___
BULK SAMPLES: YES X NO ___
QUANTITY: 93B TP05(6.5)-MGP
93B TP05(10.5)-TCLP

Site Id: PZ-01

ATLANTIC Environmental
a Division of GEI Consultants, Inc.

Location: 938 Maple Avenue Former MGP Site

Township/Range: Haverstraw, NY | Project Number: 98321-1037

Date(s): 10/20/98 - 10/20/98 | Total Depth: 10.50'

Elevation: 20.90' | Datum: Mean Sea Level

X Coordinate: 639909.45 | Y Coordinate: 860359.82

Contractor: Zebra Drilling | Drilling Method: Direct-Push Geoprobe

Logged By: Jerry Zak

Remarks: No sand pack/ native soil collapses around PVC

Blank Casing:
type: PVC dia: 0.75in fm: 0.0' to: 5.00'

Screens:
type: Slotted size: 0.020indi dia: 0.75in fm: 5.00' to: 10.00'

Annular Fill:
type: Grout fm: 0.25' to: 0.75'
type: fm: to:
type: fm: to:
type: fm: to:
type: fm: to:

Sample Depth (ft.)	Blows Per 6"	Recovery (%)	PID	Depth (ft.)	Soil Description	Lithology	Well Construction	Elevation (ft)
0-4					0-2.1 : FILL. Mix of sand, cinders. No Odors. Some white/gray purifier waste at 0.6'-0.8'.		MP. EL. 20.50	
					2.1-6.0 : ALLUVIUM. Mix of brown sand, silt, and gravel. No Odors.			
4-8								
					6.0-10.5 : ALLUVIUM. Gray, silty clay. No Odors.			
8-10.5								
				10	10.5 : End of Boring.			
				20				

20
10
0

Site Id: MW-02

ATLANTIC Environmental
a Division of GEI Consultants, Inc.

Location: 93B Maple Ave MGP Site

Township/Range: Haverstraw, NY | Project Number: 98321-1037

Date(s): 12/18/98 - 12/21/98 | Total Depth: 18.00'

Elevation: 20.66' | Datum: Mean Sea Level

X Coordinate: 639923.82 | Y Coordinate: 860301.17

Contractor: ADT, Trenton, NJ | Drilling Method: Hollow Stem Auger

Logged By: Andrew Brey

Remarks: OVM malfunctioning between 8' and 12'

Blank Casing:
type: PVC dia: 2.00in fm: 0.0' to: 5.00'

Screens:
type: Slotted size: 0.020india: 2.00in fm: 5.00' to: 15.00'

Annular Fill:
type: Grout fm: 0.50' to: 1.00'
type: Bentonite fm: 1.00' to: 3.00'
type: Sand Filter fm: 3.00' to: 18.00'
type: fm: to:
type: fm: to:

Sample Depth (ft.)	Blows Per 6"	Recovery (%)	PID	Depth (ft.)	Soil Description
0-2	10 20 13 70		0.0 ppm		0.0-4.1 : FILL. Mix of brown/light brown loam with some c.g. sand, pebbles, metal shavings and wood chips. Dry. No odors.
2-4	9 8 8 14		0.0 ppm		
4-6	9 7 6 5		0.0 ppm		4.1-7.0 : ALLUVIUM. Mix of brown and gray sands, silts and gravels. Dry. No odors.
6-8	6 5 5 5		1.5 ppm		7.0-8.2 : ALLUVIUM. Brown and gray sands, silts and gravels. Moist. Light solvent/gas and MGP odors. Light sheen from 8' to 8.5'.
8-10	2 3 4 3				8.2-16.7 : ALLUVIUM. Gray clay with f.g. red sand lenses (mm scale). Light MGP odor to 12'. No sheen or product. Moist to 10'; Saturated below 10'.
10-12	2 2 2 2			10	
12-14	2 3 3 4		0.0 ppm		
14-16	2 2 2 3		0.0 ppm		
16-18	2 3 2 2		0.0 ppm		16.7-18.0 : ALLUVIUM. Red, compact, dense f.g. sand with some clay. Moist; not saturated. No sheen or odors. 18.0 : End of Boring.
				20	

Well Construction

MP. EL. 20.15

Elevation (ft): 20, 10, 0

Site Id: MW-03

ATLANTIC Environmental
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Location: 93B Maple Avenue Former MGP Site

Township/Range: Haverstraw, NY | Project Number: 98321-1037

Date(s): 12/21/98 - 12/21/98 | Total Depth: 14.00'

Elevation: 20.85' | Datum: Mean Sea Level

X Coordinate: 639979.35 | Y Coordinate: 860355.45

Contractor: ADT, Trenton, NJ | Drilling Method: Hollow Stem Auger

Logged By: Andrew Brey

Remarks:

Blank Casing:
type: PVC dia: 2.00in fm: 0.0' to: 8.50'

Screens:
type: Slotted size: 0.020india: 2.00in fm: 8.50' to: 13.50'

Annulor Fill:
type: Grout fm: 0.25' to: 4.00'
type: Bentonite fm: 4.00' to: 6.00'
type: Sand Filter fm: 6.00' to: 14.00'
type: fm: to:
type: fm: to:

Sample Depth (ft.)	Blows Per 6"	Recovery (%)	PID	Depth (ft.)	Soil Description
0-2	27 13 13 19		1.7 ppm		0-8.0 : FILL. Mix of gray/brown f.g. and m.g. sand with some pebbles. Trace ash/coal cinders. Dry. Slight gasoline odor from 0'-1'
2-4	13 12 9 8		0.0 ppm		
4-6	3 3 3 3		0.0 ppm		
6-8	3 17 7 10		0.0 ppm		
8-10	1 1 1 1		0.0 ppm		8.0-10.5 : ALLUVIUM. Grayish brown clay with trace pebbles and trace c.g. sands. Moist. No Odors.
10-12	WOH 1 2 3		0.0 ppm	10	10.5-13.5 : ALLUVIUM. Gray clay with trace red, f.g. sand stringers. Very moist to saturated at 12.8'. No Odors.
12-14	3 7 68 28		0.0 ppm		13.5-14.0 : ALLUVIUM. Red, very dense silt and f.g. sand with some clay and trace arkasic pebbles. No odors. Moist at 13.5' grading to dry at 14'. 14.0 : End of Boring.
				20	

Lithology

Well Construction
MP. EL. 20.32

Elevation (ft): 20, 10, 0

Site Id: SG-08

ATLANTIC Environmental
a Division of GEI Consultants, Inc.

Location: 938 Maple Avenue Former MGP Site	
Township/Range: Haverstraw, NY	Project Number: 98321-1037
Date(s): 10/20/98 - 10/20/98	Total Depth: 12.00'
Elevation: 20.98'	Datum: Mean Sea Level
X Coordinate: 639970.15	Y Coordinate: 860360.89
Contractor: Zebra Drilling	Drilling Method: Direct-Push Geoprobe
Logged By: Jerry Zak	
Remarks: PID Malfunctioning; bad pump.	

Sample Depth (ft.)	Recovery (%)	PID	Depth (ft.)	Soil Description	Lithology	Elevation (ft)
0-4				0-4.8 : FILL. Mix of black loamy sand, gray silts and brick fragments. No odors.		20
4-8				4.8-5.2 : ALLUVIUM. Silty gray clay. No odors. 5.2-5.7 : ALLUVIUM. F.g. to m.g. brown sand. No odors. 5.7-6.0 : ALLUVIUM. Silty gray clay. No odors. 6.0-12.0 : ALLUVIUM. F.g. to c.g. brown sand. No odors.		
8-12			10			10
				12.0 : End of Boring.		
			20			0

Site Id: SG-09

ATLANTIC Environmental
a Division of GEI Consultants, Inc.

Location: 93B Maple Avenue Former MGP Site	
Township/Ronge: Haverstraw, NY	Project Number: 98321-1037
Date(s): 10/20/98 - 10/20/98	Total Depth: 14.00'
Elevation: 21.07'	Datum: Mean Sea Level
X Coordinate: 639953.55	Y Coordinate: 860381.61
Contractor: Zebra Drilling	Drilling Method: Direct-Push Geoprobe
Logged By: Andrew Brey	
Remarks: PID malfunctioning with bad pump	

Sample Depth (ft.)	Recovery (%)	PID	Depth (ft.)	Soil Description	Lithology	Elevation (ft)
0-4				0.0-4.4 : FILL. Mix of sand, silt, brick and cinders. No odors.		20
4-8				4.4-5.4 : ALLUVIUM. Brown silt with c.g. sand and grovel. Faint MGP odors. 5.4-9.3 : ALLUVIUM. Moist, silty gray clay. No odors.		
8-10				9.3-10.0 : ALLUVIUM. Moist, silty gray clay with reddish silt and f.g. sand lenses. No odors.		
10-12			10	10.0-14.0 : ALLUVIUM. Red, f.g. silty sand. No odors. Moist above 12'; saturated below 12'.		10
12-14				14.0 : End of Boring.		
			20			0

GEI Consultants, Inc.

BORING LOG (GP-01)

Boring/Well ID:	GP-01	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/28/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/28/01	**Driller:**	S. Folcher
Total Depth:	20 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.89 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.1	0.0	0' – 4': Dark brown fine to coarse-grained SAND. Trace silts. Trace brick and clinker fragments. FILL. Dry. Loose. Non-cohesive.
4 - 8	NA	3.5	0.0	4' – 7.5': As above (FILL). Loose. Dry. No odors or visual impacts.
			0.0	7.5' – 8': Light brown, fine to medium-grained SAND. Uniform. Trace coarse-grained sand. Wet at 7.5' bgs. *(Sample Collected: GP01-4'-8')*
8 - 12	NA	4.0	0.0	8' – 9.0': As above (SAND). Wet.
			230	9.0' – 9.3': As above but with an orange-greenish NAPL on top of the underlying clay surface (0.3'-thick). Light solvent/paint thinner-type odor is apparent. *(Sample Collected: GP01-8'-9.3')*
			0.0	9.3' – 12': Gray CLAY. Fat. Wet. Pliable. Very dense. Uniform. No odors or visual impacts apparent.
12 - 16	NA	4.0	0.0	12' – 16': As above (CLAY). With several mm-scale, red, very fine-grained sand lenses/seams. No odors or impacts within the clay. Although the discrete sampling device was used, some sheen smears were apparent on the outside of the clay (not within) for top 1' of sample. 33 ppm at smears. 0.0 ppm within the clay. *(Sample Collected: GP01-12'-16')*
16 - 20	NA	4.0	0.0	16' – 20': As above (CLAY). With many fine laminations/seams of red, very fine-grained sand. No odors or visual impacts. *(Sample Collected: GP01-16'-20')* EOB at 20' bgs.

GEI Consultants, Inc.

BORING LOG (GP-02)

Boring/Well ID:	**GP-02**	**Client:**	**Orange & Rockland Utilities, Inc.**
Project Number:	**01082-1012**	**Project Name:**	**Haverstraw Supplemental RI**
Logged By:	**Andrew Brey**	**Location:**	**93B Maple Avenue Parcel**
Date Started:	**6/28/01**	**Contractor:**	**Enviroprobe, Inc.**
Date Completed:	**6/28/01**	**Driller:**	**S. Folcher**
Total Depth:	**20 feet**	**Drilling Method:**	**Direct Push - GeoProbe®**

Ground Surface Elevation:	**20.58 feet (MSL)**	**Well Construction: NA**	**Notes:**
Measuring Point Elevation:	**NA**		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	2.5	0.0	0' - 4': Brown to light brown fine to coarse-grained SAND and SILT FILL. Trace glass shards, brick fragments and rootlets. Dry. Loose. No odors or visual impacts.
4 - 8	NA	3.0	0.0	4' - 7': FILL as above. Dry. Loose. No odors or visual impacts.
			2.0	7' - 8': Gray fine to medium-grained SAND. Trace coarse-grained sand. Trace silts. Wet. No odors or visual impacts. *(Sample Collected: GP02-4'-8')*
8 - 12	NA	4.0	0.0	8' - 9.2': As above. Wet. No odors or visual impacts.
			0.0	9.2' - 12': Brown, grading to gray, CLAY. Pliable. Fat. Many very fine-grained sand and silt (red) lenses throughout. No odors or visual impacts. *(Sample Collected: GP02-8'-12')*
12 - 16	NA	4.0	0.0	12' - 16': As above (gray CLAY). Wet. No odors or visual impacts. *(Sample Collected: GP02-12'-16')*
16 - 20	NA	4.0	0.0	16' - 20': As above (gray CLAY). Wet. No odors or visual impacts. (Sample Collected: GP02-16'-20') EOB.

GEI Consultants, Inc.

BORING LOG (GP-03)

Boring/Well ID:	GP-03	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/28/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/28/01	**Driller:**	S. Folcher
Total Depth:	19.5 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.78 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	2.5	20 0.0	0' - 4': Brown LOAM with trace roots, coal and brick fragments. Dry. Loose. Non-cohesive. No apparent odors or visual impacts. 20 ppm PID @ 0.5', 0.0 ppm PID rest of sample. *(Sample Collected: GP03-0'-4')*
4 - 8	NA	3.0	0.0	Brown fine to coarse-grained SAND FILL with trace brick and coal fragments throughout. Dry. Loose. No odors or visual impacts. *(Sample Collected: GP03-4'-8')*
8 - 12	NA	2.3	0.0	4' - 4.9': As above. No odors or visual impacts. 4.9' - 12': Gray SILTY CLAY. Dense. Cohesive. Trace very-fine-grained sand lenses (< 1mm thick) and oriented horizontally. Wet. No odors or impacts.
12 - 16	NA	4.0	0.0	12' - 16': SILTY CLAY as above. Wet. No odors or visual impacts. *(Sample Collected: GP03-12'-16')*
16 - 19.5	NA	3.5	0.0	16' - 19.5': Brown and light reddish very fine-grained SAND and SILT. Wet. Cohesive. Dense. Firm. Dark brown peaty lens at 17' bgs. No odors or visual impacts. *(Sample Collected: GP03-16'-18')* EOB at 19.5' bgs; no penetration past 19.5' bgs.

GEI Consultants, Inc.

BORING LOG (GP-04)

Boring/Well ID:	GP-04	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/28/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/28/01	**Driller:**	S. Folcher
Total Depth:	16 feet	**Drilling Method:**	Direct Push – GeoProbe®

Ground Surface Elevation:	21.47 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.0	0.0	0' – 4': Light to dark brown LOAM and FILL. Trace roots. Trace brick fragments. Slightly moist. Non-cohesive. No odors or visual impacts. *(Sample Collected: GP04-0'-4')*
4 - 8	NA	1.9	22	4' – 8': Various colored fine to coarse-grained SAND FILL. Trace clays. Trace black-stained timber pieces and trace brick. Non-cohesive. Slightly moist. Slight mixed fuel/tar-like odors from stained timbers. *(Sample Collected: GP04-4'-8')*
8 – 11.7	NA	3.4	0.0 0.0	8' – 10': Gray fine to medium-grained SAND FILL. Trace brick fragments. Moist. Slightly cohesive. Firm. No odors or visual impacts. *(Sample Collected: GP04-8'-10')* 10' – 11.7': Gray to light brown SILTY CLAY with trace very fine-grained sands. Cohesive. Pliable. Moist. No odors or visual impacts. Refused on rock at 11.7'; broke through with blind point.
12 - 16	NA	3.8	0.0	12' – 16': Light brown SILTY CLAY. Wet. Pliable. Very cohesive. Dense. No odors or visual impacts. *(Sample Collected: GP04-12'-16', GP64-12'-16')* EOB based on proximity to MW-27 and penetration difficulty.

GEI Consultants, Inc.

BORING LOG (GP-05)

Boring/Well ID:	GP-05	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/28/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/28/01	**Driller:**	S. Folcher
Total Depth:	20 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.87 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.3	0.0	0' - 3.9': Dry, loose, fine to coarse-grained SAND FILL with little brick fragments. Trace bark/mulch pieces. No odors or visual impacts.
			3.0	3.9' - 4': Asphalt pieces and dark brown sand. Moist. Light asphalt-type odor (old paving patch?).
4 - 8	NA	2.9	6.0	4' - 8': FILL as above with some asphalt pieces from 4'-4.5' bgs (6 ppm at asphalt pieces). Dry. Loose. No odors or visual impacts. 0 ppm PID below asphalt pieces.
			0.0	*(Sample Collected: GP05-4'-8')*
8 - 12	NA	4.0	0.0	8' - 9.5': Wet, FILL as above. No odors or visual impacts.
			7.0	9.5' - 10': Black-stained fine to medium-grained SAND. Wet. Uniform. Loose. Light fuel/petroleum-like odor.
				(Sample Collected: GP05-10')
			0.0	10' - 12': Gray CLAY. Wet. Fat. Pliable. Trace red very fine-grained sand seams/laminations throughout. No odors or impacts within the clay.
12 - 16	NA	4.0	49 - 5	12' - 16': Gray CLAY as above. Wet. No odors or visible impacts.
				(Sample Collected: GP05-12'-16')
16 - 20	NA	4.0	20	16' - 16.7': Gray and black-stained fine to medium-grained SAND. Trace silts. Trace coarse-grained sands. Wet. Appears to be a sand stringer within the clay unit. Light sheens. Few micro-scale tar blebs. Light tar-like odor to no odors. *(Sample Collected: GP05-16'-16.5')*
			4.0	16.7' - 20': Gray CLAY as above (12'-16'). Although the discrete sampling device was employed, some minor sheens are smeared on outside of clay from above impacted interval. No odors or visual impacts.
				(Sample Collected: GP05-19'-20')
				EOB at 20' bgs.

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BORING LOG (GP-06)

Boring/Well ID:	GP-06	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/28/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/28/01	**Driller:**	S. Folcher
Total Depth:	11 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.74 feet (MSL)	**Well Construction:** NA	**Notes:** Located within the limits of the Gas Holder.
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.0	0.0	0' - 4': Brown to dark brown and light yellow FILL consisting of fine to coarse-grained SAND and brick, cinder, ash mixture. Loose. Dry. No odors or visual impacts. *(Sample Collected: GP06-0'-4', GP56-0'-4')*
4 - 8	NA	2.5	0.0	4' - 8': FILL as above. No odors or visual impacts. *(Sample Collected: GP06-4'-8')*
8 - 11	NA	1.0	0.0	8' - 11': Gray fine to coarse-grained SAND and CLAY FILL. Slightly cohesive and firm. Wet. Light sheens towards and at bottom of sample. No odors. Collected second sample from 8'-11' bgs from adjacent hole. *(Sample Collected: GP06-8'-11')* Two refusals at 11' bgs indicating the floor of the holder, which could not be penetrated. EOB at 11' bgs.

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BORING LOG (GP-07)

Boring/Well ID:	GP-07	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/28/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/28/01	**Driller:**	S. Folcher
Total Depth:	12 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	21.09 feet (MSL)	**Well Construction:** NA	**Notes:** Refusal at 12' bgs with blind point; see GP07A for lithology to 20' bgs at this location.
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.0	0.0	0' - 4': Various shades of brown fine to coarse-grained SAND and SILT FILL. Trace brick fragments. Dry. Loose. No odors or visual impacts.
4 - 8	NA	3.7	0.0	4' - 8': Brown to gray mix of SAND and CLAY. Little silts. Dry. Slightly cohesive. Appears to be reworked native material. Moist at 8' bgs. No odors or visual impacts. *(Sample Collected: GP07-4'-8')*
8 - 12	NA	4.0	28 - 9	8' - 12': Various shades of gray CLAY. Moist. Fat. Trace seams/laminations of red very fine-grained sand. Native material. Very slight petroleum-like odors throughout. No visual impacts. *(Sample collected: GP07-8'-12')* Refusal at 12' bgs; see GP07A log for lithology to 20' bgs.

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BORING LOG (GP-07A)

Boring/Well ID:	GP-07A	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/28/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/28/01	**Driller:**	S. Folcher
Total Depth:	20 feet	**Drilling Method:**	Direct Push – GeoProbe®

Ground Surface Elevation:	21.04 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.0	0.0	0' – 4': Brown to light brown fine to coarse-grained SAND FILL. Trace coal and brick fragments. Loose. Dry. No odors or visual impacts.
4 - 8	NA	3.8	0.0	4' – 5.2': FILL as above. Dry. No odors or visual impacts.
			0.0	5.2' – 7.2': Gray CLAY with trace coarse to fine-grained sands. Dense. Cohesive. Dry. Appears to be reworked native material. No odors or visual impacts.
			0.0	7.2' – 8': Gray CLAY. Moist. One-piece. Very dense. Fat. Appears to be un-reworked and native. No odors or visual impacts.
8 - 12	NA	2.8	11 - 24	8' – 12': Gray CLAY. Moist. Fat. Pliable. Horizontal, mm-scale, fine laminations throughout (red very fine-grained sand lenses). Very cohesive. Dense. Very faint petroleum-like odors. No visual impacts.
12 - 16	NA	4.0	20	12' – 13': Gray CLAY as above. Moist. Very faint petroleum-like odors. No odors or visual impacts.
			15 - 179	13' – 16': Reddish-gray very fine-grained SAND and SILT. Few fine to coarse-grained arkosic gravels. Very, very dense. Moist. Likely to be a Native alluvial deposit. Very faint petroleum-like/MGP-like odor throughout. No visual impacts. *(Sample Collected: GP07A-13')*
16 - 20	NA	3.5	2 – 35	16' – 20': Reddish-gray as above. Wet. Very, very dense. Very faint hydrocarbon odor throughout. No visual impacts. *(Sample Collected: GP07A-16'-20')* EOB at 20' bgs.

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BORING LOG (GP-08)

Boring/Well ID:	GP-08	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/29/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/29/01	**Driller:**	S. Folcher
Total Depth:	14 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.86 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.4	4 - 6	0' - 4': FILL. Mix of loose fine to coarse-grained SAND, brick fragments, and coal pieces. Dry. No odors.
			64	3'-3.4': layer of dense, weathered tarry material with a strong tar odor (64 ppm PID reading).
				(Sample Collected: GP08-0'-4')
4 - 8	NA	2.5	0.0	4' - 8': Light brown to dark brown mix of fine to coarse-grained SAND FILL. Some fine gravels. Loose. Moist. No odors or visual impacts.
				(Sample Collected: GP08-4'-8')
8 - 12	NA	4.0	0.0	8' - 8.7': FILL as above. Wet. No odors or visual impacts.
			0.0	8.7' - 11': Gray CLAY. Pliable. Fat. Cohesive. Dense. Wet. Trace red very fine-grained sand seams/laminations (mm-scale). No odors or visual impacts.
			0.0	11' - 12': Red very fine-grained SAND and SILT. Moist. Very dense. Cohesive. No odors or visual impacts.
				(Sample Collected: GP08-8'-12', GP48-8'-12')
12 - 14	NA	2.0	0.0	Slow penetration; very dense material.
				12' - 14': Red and gray gravelly very fine-grained SAND and SILT. Very dense. Tight. Moist. No odors or visual impacts.
				(Sample Collected: GP08-12'-14')
				Large rock in bottom of sample barrel.
				EOB due to penetration problems.

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BORING LOG (GP-09)

Boring/Well ID:	GP-09	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/29/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/29/01	**Driller:**	S. Folcher
Total Depth:	19 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	21.08 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.3	0.0	0' - 4': Brown and various-colored (rusty) to gray FILL. Comprised of poorly sorted SAND trace coal and cinder fragments. Dry. No odors or impacts. (Coal zone at 2.3' with 2 ppm on PID.) *(Sample Collected: GP09-0'-4')*
4 - 8	NA	4.0	0.0 73	4' - 7.5': FILL as above. Moist. No odors or visual impacts. 7.5' - 8': Gray to dark gray very fine to fine-grained SAND. Moderate hydrocarbon-like/solvent-like odor. No visual impacts. *(Sample Collected: GP09-8')*
8 - 12	NA	3.4	76 26	8' - 8.1': As above with light black staining. Moderate hydrocarbon-like/solvent-like odor. Wet. 8.1' - 12': Gray CLAY. Wet. Dense. Pliable. Cohesive. Fat. No odors or visual impacts. *(Sample Collected: GP09-8'-12')*
12 - 16	NA	4.0	19 12' 2 16'	12' - 16': Gray Clay as above with frequent red, very fine-grained sand seams/laminations throughout. Wet. No odors or visual impacts. *(Sample Collected: GP09-12'-16')*
16 - 19	NA	3.0	0.0 1.4 0.0	16' - 17.9': Gray CLAY with laminations as above. No odors or visual impacts. 17.9 - 19': Reddish-gray very fine-grained SAND and SILT with few fine to coarse gravels (arkosic) throughout. Very dense. Wet. Firm. Tight. Slightly cohesive. No odors or visual impacts. *(Sample Collected: GP09-18'-19')* EOB at 19' bgs due to refusal/penetration problems.

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BORING LOG (GP-10)

Boring/Well ID:	GP-10	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/29/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/29/01	**Driller:**	S. Folcher
Total Depth:	11 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.93 feet (MSL)	**Well Construction:** NA	**Notes:** Located within the limits of the Gas Holder.
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.0	0.0	0' – 4': FILL. Mix of various shades of brown fine to coarse-grained SAND. Some rusty mottling. Few cinders, coal fragments and brick fragments. Dry. Loose. No odors or visual impacts. *(Sample Collected: GP10-0'-4')*
4 - 8	NA	2.0	0.0	4' – 8': FILL as above with large brick piece contributing to 50% recovery. Dry. No odors of visual impacts. *(Sample Collected: GP10-4'-8')*
8 - 11	NA	1.3	0.0	8' – 11': FILL. Wet, black to dark brown fine-grained sand and silt with brick pieces and trace timber fragments. Sloppy wet. Brick plug in barrel shoe which indicates likely refusal to penetration on holder bottom at 11' bgs. Very faint hydrocarbon/petroleum-like odor. Black staining throughout. No sheens or any NAPL. *(Sample Collected: GP10-8'-11')* EOB at 11' bgs; refusal to penetration on holder structure bottom.

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BORING LOG (GP-11)

Boring/Well ID:	GP-11	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/29/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/29/01	**Driller:**	S. Folcher
Total Depth:	16 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	**20.58 feet (MSL)**	**Well Construction: NA**	**Notes:**
Measuring Point Elevation:	**NA**		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	2.8	0.0	0' - 4': FILL. Brown to light brown fine to coarse-grained SAND. Trace gravels. Trace brick and coal fragments. Loose. Dry. No odors or visual impacts. *(Sample Collected: GP11-0'-4')*
4 - 8	NA	2.1	0.0	4' - 8': FILL as above. Dry. Slightly cohesive. No odors or visual impacts. *(Sample Collected: GP11-4'-8')*
8 - 12	NA	4.0	12	8' - 11.7': Gray CLAY. Dense. Pliable. Fat. Wet. No odors or visual impacts.
			25	11.7' - 12': Reddish-gray CLAYEY SILT with few gravels. Firm. Very dense. Moist. No odors or visual impacts. *(Sample Collected: GP11-8'-12')*
12 - 16	NA	0.0	NA	Sampler refusal at 12.2' within gravelly silt. No recovery. EOB at 12.2'.

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BORING LOG (GP-12)

Boring/Well ID:	GP-12	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/29/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/29/01	**Driller:**	S. Folcher
Total Depth:	11 feet	**Drilling Method:**	Direct Push – GeoProbe®

Ground Surface Elevation: **Measuring Point Elevation:**	**20.80 feet (MSL)** **NA**	**Well Construction: NA**	**Notes:** **Located within the limits of the Gas Holder.**

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.8	0.0	0' – 4': FILL. Brown to black fine to coarse-grained SAND. Brick pieces throughout. Trace clinker, coal, and cinder fragments. Loose. Dry. No odors or visual impacts. *(Sample Collected: GP12-0'-4')*
4 - 8	NA	2.1	0.0	4' – 8': FILL as above with trace glass shards. Moist to wet at approximately 7.5' bgs. No odors or visual impacts. *(Sample Collected: GP12-4'-8')*
8 - 11	NA	0.8	45	8' – 11': FILL as above. Wet. Brick plug in core barrel shoe. Sharp tar-like odor. Bottom 0.3' of sample contains sheens. No tar or NAPL present. Refusal at 11' bgs on holder floor; EOB at 11' bgs. *(Sample Collected: GP12-11')*

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BORING LOG (GP-13)

Boring/Well ID:	GP-13	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/29/01	**Contractor:**	Enviroprobe, Inc.
Date Completed:	6/29/01	**Driller:**	S. Folcher
Total Depth:	14.2 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.62 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.1	0.0	0' - 2': Brown and dark brown fine to coarse-grained SAND and GRAVEL FILL. Dry. Loose. No odors or visual impacts.
			4.0	2' - 4': Fine-grained SAND FILL with fragments of coal, cinders, and black-stained wood. One gravel-size piece of coal at bottom of sample. Light fuel-like/hydrocarbon odor on wood fragments. *(Sample Collected: GP13-0'-4')*
4 - 8	NA	3.6	0.0	4' - 6.7': Gray and brown FILL consisting of fine to coarse-grained sand and some fine gravels. Trace coal fragments. Loose. Dry. No odors or visual impacts.
			12	6.7' - 7': Moist, Black-stained fine-grained SAND and SILT. Light hydrocarbon/fuel-type odor. This 0.3' thick layer directly overlies the clay below. *(Sample Collected: GP13-7')*
				7' - 8': Gray CLAY. Wet. Very dense. Pliable. Trace red very fine-grained sand seams/laminations throughout (mm-scale). No odors or visual impacts.
8 -12	NA	3.8	0.0	8' - 12': Gray CLAY as above. Wet. No odors or visual impacts. *(Sample Collected: GP13-8'-12')*
12 - 14.2	NA	2.0	0.0	12' - 14.2': Gray gravelly CLAY. Very cohesive. Firm. Very dense. Wet. Red, arkosic gravels throughout. No odors or visual impacts. *(Sample Collected: GP13-12'-14.2')* Penetration stops at 14.2' bgs; refusal. EOB at 14.2' bgs.

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BORING LOG (GP-14/14A)

Boring/Well ID:	**GP-14/14A**	**Client:**	**Orange & Rockland Utilities, Inc.**
Project Number:	**01082-1012**	**Project Name:**	**Haverstraw Supplemental RI**
Logged By:	**Andrew Brey**	**Location:**	**93B Maple Avenue Parcel**
Date Started:	**6/29/01**	**Contractor:**	**Enviroprobe, Inc.**
Date Completed:	**6/29/01**	**Driller:**	**S. Folcher**
Total Depth:	**15.5 feet**	**Drilling Method:**	**Direct Push - GeoProbe® Macro-Core**

Ground Surface Elevation:	**20.90 feet (MSL)**	**Well Construction: NA**	**Notes:**
Measuring Point Elevation:	**NA**		**GP14A started due to poor recovery in original GP14. GP14A located 3 feet from GP14.**

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.0	1.0	0' - 4': Dark brown fine to coarse-grained SAND FILL. Trace brick. Trace fine gravels. Trace clays. Moist. Slightly cohesive. Light hydrocarbon/fuel-type odor. No visual impacts. *(Sample Collected: GP14-0'-4')*
4 - 8	NA	3.2	0.0	4' - 6.1': FILL as above. Moist. No odors or visual impacts.
			6.0	6.1' - 7': Dark gray to black very fine to fine-grained SAND. Trace silts. Moist. Very slight hydrocarbon/petroleum-type odor. No visual impacts. 6ppm at clay-sand interface; 0ppm above. *(Sample Collected: GP14A-7')*
			0.0	7' - 8': Gray CLAY. Moist. Fat. Cohesive. Pliable. Frequent red, very fine-grained sand seams/laminations throughout. No odors or visual impacts.
8 - 12	NA	3.7	0.0	8' - 12': Gray CLAY as above. Moist. No odors or visual impacts. *(Sample Collected: GP14A-8'-12')*
12 - 15.5	NA	3.5	0.0	12' - 15.5': Red-gray very fine-grained SAND and SILT. Some fine to coarse-grained gravels. Very dense. Wet. Compact. Firm. Slightly Cohesive. No odors or visual impacts. *(Sample Collected: GP14A-12'-15.5')* EOB at 15.5' bgs due to refusal/penetration difficulty within gravelly silt.

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BORING LOG (GP-15)

Boring/Well ID:	**GP-15**	**Client:**	**Orange & Rockland Utilities, Inc.**
Project Number:	**01082-1012**	**Project Name:**	**Haverstraw Supplemental RI**
Logged By:	**Andrew Brey**	**Location:**	**93B Maple Avenue Parcel**
Date Started:	**6/29/01**	**Contractor:**	**Enviroprobe, Inc.**
Date Completed:	**6/29/01**	**Driller:**	**S. Folcher**
Total Depth:	**14 feet**	**Drilling Method:**	**Direct Push - GeoProbe®**

Ground Surface Elevation: **Measuring Point Elevation:**	**20.89 feet (MSL)** **NA**	**Well Construction: NA**	**Notes:**

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.3	0.0	0' – 4': FILL. Dark brown fine to medium-grained SAND with trace brick and coal fragments. Dry to moist at 1'. Slightly cohesive. No odors or visual impacts. *(Sample Collected: GP15-0'-4')*
4 - 8	NA	3.5	0.0	4' – 8': FILL as above. Moist. No odors or visual impacts. *(Sample Collected: GP15-4'-8')*
8 - 12	NA	3.9	0.0	8' – 8.3': FILL as above. Wet. No odors or visual impacts.
			0.0	8.3' – 10.9': Gray CLAY. Wet. Pliable. Dense. Trace red very fine-grained sand seams/laminations throughout. No odors or visual impacts.
			2.0	10.9' – 12': Dark gray very fine-grained SAND and SILT. Few fine to coarse-grained gravels. Few coarse-grained sands. Moist. Dense. Tight. Very faint hydrocarbon-like odor. No visual impacts. *(Sample Collected: GP15-8'-12')*
12 - 14	NA	2.0	0.0	12' – 14': SAND and SILT as above. Very dense. Very gravelly. Moist. No odors or visual impacts. *(Sample Collected: GP15-12'-14')* Barrel will not penetrate past 14' bgs; refusal on gravels and cobbles likely. EOB.

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BORING LOG (GP-16)

Boring/Well ID:	**GP-16**	**Client:**	**Orange & Rockland Utilities, Inc.**
Project Number:	**01082-1012**	**Project Name:**	**Haverstraw Supplemental RI**
Logged By:	**Andrew Brey**	**Location:**	**93B Maple Avenue Parcel**
Date Started:	**11/05/01**	**Contractor:**	**TerraProbe, Inc.**
Date Completed:	**11/05/01**	**Driller:**	**C. Fendler**
Total Depth:	**16 feet**	**Drilling Method:**	**Direct Push – GeoProbe®**

Ground Surface Elevation: **Measuring Point Elevation:**	**20.95 feet (MSL)** **NA**	**Well Construction: NA**	**Notes:**

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	2.8	0.0	0.0'-3.1': Dry, medium-brown fine- to medium-grained SAND. Trace glass fragments. Trace coal fragments. No odors or impacts. 3.1'-4': Light brown, slightly cohesive fine-grained SAND and SILT. Trace coarse-grained sand and fine gravels. Dry. No odors or impacts. *(Sample Collected: GP-16-0'-4')*
4 - 8	NA	2.3	0.0	4'-8': As Above. Moist. Trace coal fragments. No odors or impacts. *(Sample Collected: GP-16-4'-8')*
8 - 12	NA	3.0	0.0 2.7	8'-11.4': As Above. Moist. Slight Fuel odor. No visual impacts. 11.4'-12': Dark brown-black fine-grained GRAVEL and medium to coarse-grained SAND. Wet. Loose. Black-stained. Slight sheen. Asphaltic-fuel odor. *(Sample Collected: GP-16-8'-12')*
12 - 16	NA	4.0	5.0 0.0	12' – 12.3': As above. Wet. Trace tar blebs. Micro-blebs in water. Slight tar odor. 12.3'-16.0': Gray CLAY with red, inter-bedded fine-grained sand lenses. Very cohesive. Moist. Pliable. No odors or visual impacts. *(Sample Collected: GP-16-12'-16') from clay interval only.* End of Boring.

GEI Consultants, Inc.

BORING LOG (GP-17)

Boring/Well ID:	GP-17	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	11/05/01	**Contractor:**	TerraProbe, Inc.
Date Completed:	11/05/01	**Driller:**	C. Fendler
Total Depth:	12 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	21.07 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.1	0.0 0.0	0.0'- 1.5': Dark gray and brown fine- to coarse-grained SAND. Loose. Trace silt. Trace glass fragments. Dry. No odors. 1.5' - 4.0': Brown-orange fine-grained SAND and SILT. Compact. Cohesive. Moist. Trace fine gravel and coarse sand. No odors or visual impacts. *(Sample Collected: GP-17-0'-4')*
4 - 8	NA	3.3	0.0	4.0' - 8.0': As Above. Moist. No odors or impacts. *(Sample Collected: GP-17-4'-8')*
8 - 12	NA	4.0	0.0	8.0' - 12.0': Gray CLAY with inter-bedded red fine-grained sand and silt. Pliable. Cohesive. Moist. No odors or visual impacts. *(Sample Collected: GP-17-8'-12')* End of Boring.

GEI Consultants, Inc.

BORING LOG (GP-18)

Boring/Well ID:	**GP-18**	**Client:**	**Orange & Rockland Utilities, Inc.**
Project Number:	**01082-1012**	**Project Name:**	**Haverstraw Supplemental RI**
Logged By:	**Andrew Brey**	**Location:**	**93B Maple Avenue Parcel**
Date Started:	**11/05/01**	**Contractor:**	**TerraProbe, Inc.**
Date Completed:	**11/05/01**	**Driller:**	**C. Fendler**
Total Depth:	**12 feet**	**Drilling Method:**	**Direct Push - GeoProbe®**

Ground Surface Elevation:	**21.42 feet (MSL)**	**Well Construction: NA**	**Notes:**
Measuring Point Elevation:	**NA**		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.0	0.0	0.0'- 4.0': Loamy, brown soil. Trace fine-grained gravels. Dry. Loose. No odors or visual impacts. *(Sample Collected: GP-18-0'-4')*
4 - 8	NA	3.4	0.0	4.0' – 8.0': As above. With brick fragments. No odors or visual impacts. *(Sample Collected: GP-18-4'-8')*
8 - 12	NA	4.0	0.0	8.0' – 8.3': As above. No odors or visual impacts. 8.3' – 12.0': Dark gray CLAY. Tight. Cohesive. Moist. No odors or visual impacts. *(Sample Collected: GP-18-8'-12') from clay unit only.* End of Boring.

GEI Consultants, Inc.

BORING LOG (GP-19)

Boring/Well ID:	GP-19	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	11/05/01	**Contractor:**	TerraProbe, Inc.
Date Completed:	11/05/01	**Driller:**	C. Fendler
Total Depth:	12 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	**20.44 feet (MSL)**	**Well Construction: NA**	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.1	0.0	0.0'- 4.0': Brown LOAM. Trace bricks and trace coal fragments. Dry. Loose. No odors or visual impacts. *(Sample Collected: GP-19-0'-4')*
4 - 8	NA	2.3	0.0	4.0' – 8.0': Brown and dark brown fine- to coarse-grained SAND fill. Trace bricks. Some coal fragments. No odors or visual impacts. *(Sample Collected: GP-19-4'-8')*
8 - 12	NA	4.0	0.0	8.0' – 8.5': As above. Wet. No brick. Trace coal fragments. No odors or visual impacts.
			0.0	8.5' – 12.0': Dark gray CLAY. Inter-bedded red fine sand and silt lenses. Dense. Very Cohesive. Moist. No odors or visual impacts. *(Sample Collected: GP-19-8'-12') from clay unit only.*
				End of Boring.

GEI Consultants, Inc.

BORING LOG (GP-20)

Boring/Well ID:	GP-20	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	11/05/01	**Contractor:**	TerraProbe, Inc.
Date Completed:	11/05/01	**Driller:**	C. Fendler
Total Depth:	12 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.97 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	2.8	0.0	0.0' - 4.0': Brown to dark brown fine- to coarse-grained SAND with few gravels. Some coal fragments. Moist. No odors or visual impacts. *(Sample Collected: GP-20-0'-4')*
4 - 8	NA	2.1	0.0	4.0' - 8.0': As above. No odors or visual impacts. *(Sample Collected: GP-20-4'-8')*
8 - 12	NA	3.0	18	8.0' - 11.0': As above. Wet. Light tar odor. 0.2'-thick lens of NAPL-coated gravels and coarse sand on top of clay unit. Light tar odor. Not saturated. *(Sample Collected: GP-20-8'-11')*
			0.0	11.0' - 12.0': Dark gray CLAY. Dense. Very cohesive. Slightly moist. No odors or visual impacts. End of Boring.

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BORING LOG (GP-21)

Boring/Well ID:	GP-21	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	11/05/01	**Contractor:**	TerraProbe, Inc.
Date Completed:	11/05/01	**Driller:**	C. Fendler
Total Depth:	12 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.97 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.1	0.0	0.0' - 4.0': Light brown fine- to coarse-grained SAND. Few gravels. Few coal fragments. Slightly moist. Slightly cohesive. No odors or visual impacts. *(Sample Collected: GP-21-0'-4')*
4 - 8	NA	3.7	0.0	4.0' - 8.0': As above. Slightly moist. No odors or visual impacts. *(Sample Collected: GP-21-4'-8')*
8 - 12	NA	4.0	0.0	8.0' - 10.5': As above. Wet. No odors or visual impacts. *(Sample Collected: GP-21-8'-10.5')*
			0.0	10.5' - 12.0': Brown grading to gray CLAY with inter-bedded red silt lenses. Dense. Pliable. Fat. Slightly moist. No odors or visual impacts. End of Boring.

GEI Consultants, Inc.

BORING LOG (GP-22)

Boring/Well ID:	GP-22	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	11/05/01	**Contractor:**	TerraProbe, Inc.
Date Completed:	11/05/01	**Driller:**	C. Fendler
Total Depth:	12 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.87 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.1	0.0	0.0' - 4.0': Light brown LOAM. Trace coarse-grained sands. Dry. Loose. No odors or visual impacts. *(Sample Collected: GP-22-0'-4')*
4 - 8	NA	3.5	0.0	4.0' - 8.0': As above. Slightly moist to moist at 8' bgs. Trace coal fragments. No odors or visual impacts. *(Sample Collected: GP-22-4'-8')*
8 - 12	NA	4.0	0.0	8.0' - 9.1': As above. Wet. No odors or visual impacts.
			0.0	9.1' - 12.0': Red-brown dense SILT and CLAY. Native alluvium. Trace coarse-grained sand and fine gravel. Moist. No odors or visual impacts. *(Sample Collected: GP-22-9'-12')* End of Boring.

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BORING LOG (GP-23)

Boring/Well ID:	GP-23	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	11/05/01	**Contractor:**	TerraProbe, Inc.
Date Completed:	11/05/01	**Driller:**	C. Fendler
Total Depth:	12 feet	**Drilling Method:**	Direct Push – GeoProbe®

Ground Surface Elevation:	**20.88 feet (MSL)**	**Well Construction: NA**	**Notes:**
Measuring Point Elevation:	**NA**		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.6	0.0	0.0' – 4.0': Light brown, trace red, LOAM. Trace coarse-grained sand and find gravels. Dry. Loose. Trace rootlets. No odors or visual impacts. *(Sample Collected: GP-23-0'-4')*
4 - 8	NA	3.2	0.0	4.0' – 8.0': Dark brown and gray, fine- to coarse-grained SAND. Loose. Trace rootlets. Dry. Slightly moist at 8' bgs. *(Sample Collected: GP-23-4'-8')*
8 - 12	NA	3.9	0.0	8.0' – 9.2': As above. Gray. Wet from 9'-9.2' bgs. No odors or visual impacts.
			0.0	9.2' – 12.0': Red-brown dense SILT and CLAY. Native alluvium. Trace coarse-grained sand and fine gravel. Very cohesive. Slightly moist. No odors or visual impacts. *(Sample Collected: GP-23-8'-12')* End of Boring.

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BORING LOG (GP-24)

Boring/Well ID:	GP-24	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	11/05/01	**Contractor:**	TerraProbe, Inc.
Date Completed:	11/05/01	**Driller:**	C. Fendler
Total Depth:	12 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	21.96 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	2.1	0.0	0.0' - 4.0': Brown and gray LOAM with trace brick and clinker. Dry. Loose. No odors or visual impacts. *(Sample Collected: GP-24-0'-4')*
4 - 8	NA	3.7	0.0	4.0' - 6.2': As above. Dry. No odors or visual impacts. *(Sample Collected: GP-24-4'-8')*
				6.2' - 8.0': Gray CLAY. Slightly moist. Dense. Very cohesive. No odors or visual impacts.
8 - 12	NA	4.0	0.0	8.0' - 12.0': CLAY as above. Very dense. Very cohesive. *(Sample Collected: GP-24-8'-12')* End of Boring.

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BORING LOG (GP-25)

Boring/Well ID:	**GP-25**	**Client:**	**Orange & Rockland Utilities, Inc.**
Project Number:	**01082-1012**	**Project Name:**	**Haverstraw Supplemental RI**
Logged By:	**Andrew Brey**	**Location:**	**93B Maple Avenue Parcel**
Date Started:	**11/05/01**	**Contractor:**	**TerraProbe, Inc.**
Date Completed:	**11/05/01**	**Driller:**	**C. Fendler**
Total Depth:	**12 feet**	**Drilling Method:**	**Direct Push - GeoProbe®**

Ground Surface Elevation:	**21.60 feet (MSL)**	**Well Construction: NA**	**Notes:**
Measuring Point Elevation:	**NA**		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.3	0.0	0.0' - 4.0': Fill. Gray and dark brown fine- to coarse-grained SAND. Trace fine- to coarse-grained gravels. Loose. Dry. Trace rootlets. No odors or visual impacts. *(Sample Collected: GP-25-0'-4')*
4 - 8	NA	4.0	0.0	4.0' - 7.5': As above. Loose. Dry. Trace brick. No odors or visual impacts. *(Sample Collected: GP-25-4'-8')*
			0.0	7.5' - 8.0': Gray CLAY. Dense. Cohesive. Slightly moist. No odors or visual impacts.
8 - 12	NA	4.0	0.0	8.0' - 12.0': Gray CLAY as above. Few red silt inter-beds. Slightly moist. No odors or visual impacts. *(Sample Collected: GP-25-8'-12')* End of Boring.

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BORING LOG (GP-26)

Boring/Well ID:	GP-26	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	11/05/01	**Contractor:**	TerraProbe, Inc.
Date Completed:	11/05/01	**Driller:**	C. Fendler
Total Depth:	12 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	20.78 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.0	0.0	0.0' - 4.0': Brown to dark brown LOAM with trace gravels. Dry. Loose. Fill. Trace brick and cinder. No odors or visual impacts. *(Sample Collected: GP-26-0'-4')*
4 - 8	NA	2.7	0.0	4.0' - 8.0': As above. Trace brick. Trace coal fragments. No odors or visual impacts. *(Sample Collected: GP-26-4'-8')*
8 - 12	NA	4.0	0.0	8.0' - 10.5': As above. Moist. No odors or visual impacts.
			22	10.5' - 11.0': As above. Wet. Tar-coated gravels and coarse sand. Moderate tar odor. Some black staining. *(Sample Collected: GP-26-8'-11')*
			0.0	11.0' - 12.0': Gray CLAY. Dense. Very cohesive. Slightly moist. No odors or visual impacts.
				End of Boring.

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BORING LOG (GP-27)

Boring/Well ID:	GP-27	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	11/05/01	**Contractor:**	TerraProbe, Inc.
Date Completed:	11/05/01	**Driller:**	C. Fendler
Total Depth:	12 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	21.12 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	2.8	0.0	0.0' - 4.0': Brown loamy fill. Trace brick and cinder. Dry. Loose. No odors or visual impacts. *(Sample Collected: GP-27-0'-4')*
4 - 8	NA	3.0	0.0	4.0' - 8.0': As above. Dry. No odors or visual impacts. *(Sample Collected: GP-27-4'-8')*
8 - 12	NA	4.0	16	8.0' - 10.2': Layered fill as above. 2-inch layers of tar-coated gravels and coarse-grained sand with fibrous/wooly material. Moist throughout. *(Sample Collected: GP-27-8'-10')*
			0.0	10.2' - 12.0': Gray CLAY. Dense. Slightly moist. No odors or visual impacts. End of Boring.

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BORING LOG (GP-28)

Boring/Well ID:	**GP-28**	**Client:**	**Orange & Rockland Utilities, Inc.**
Project Number:	**01082-1012**	**Project Name:**	**Haverstraw Supplemental RI**
Logged By:	**Andrew Brey**	**Location:**	**93B Maple Avenue Parcel**
Date Started:	**11/05/01**	**Contractor:**	**TerraProbe, Inc.**
Date Completed:	**11/05/01**	**Driller:**	**C. Fendler**
Total Depth:	**12 feet**	**Drilling Method:**	**Direct Push - GeoProbe®**

Ground Surface Elevation:	**20.90 feet (MSL)**	**Well Construction: NA**	**Notes:**
Measuring Point Elevation:	**NA**		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	2.5	0.0	0.0' - 4.0': Dry, loamy brown SAND. Trace gravels. Loose. No odors or visual impacts. *(Sample Collected: GP-28-0'-4')*
4 - 8	NA	3.0	0.0	4.0' - 8.0': As above. Dry. Loose. No odors or visual impacts. *(Sample Collected: GP-28-4'-8')*
8 - 12	NA	4.0	0.0	8.0' - 8.2': As above. No odors or visual impacts.
			0.0	8.2' - 12.0': Tan grading into gray CLAY. Trace inter-beds of red silt. Fat. Dense. Cohesive. Slightly moist. No odors or visual impacts. *(Sample Collected: GP-28-8'-12')* End of Boring.

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BORING LOG (GP-29)

Boring/Well ID:	GP-29	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	11/05/01	**Contractor:**	TerraProbe, Inc.
Date Completed:	11/05/01	**Driller:**	C. Fendler
Total Depth:	12 feet	**Drilling Method:**	Direct Push - GeoProbe®

Ground Surface Elevation:	21.26 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 4	NA	3.7	0.0	0.0' - 4.0': Brown to dark brown fine- to coarse-grained SAND. Trace brick. Trace fine gravels. Dry. Loose. *(Sample Collected: GP-29-0'-4')*
4 - 8	NA	3.1	0.0	4.0' - 8.0': As above. Trace brick and clinker. Dry. Loose. No odors or visual impacts. *(Sample Collected: GP-29-4'-8')*
8 - 12	NA	4.0	0.0	8.0' - 12.0': Tan grading into gray CLAY. Dense. Very cohesive. Slightly moist. No odors or visual impacts. *(Sample Collected: GP-29-8'-12')* End of Boring.

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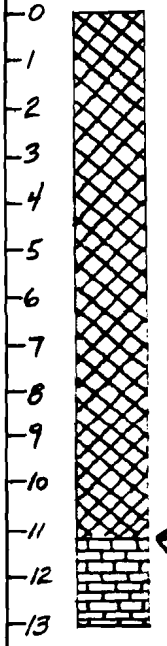
BORING LOG (SB-25)

Boring/Well ID:	SB-25	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/21/01	**Contractor:**	Aquifer Drilling and Testing, Albany, NY
Date Completed:	6/21/01	**Driller:**	R. Cabel
Total Depth:	35 feet	**Drilling Method:**	3.25" H.S.A. x 2" split spoons

Ground Surface Elevation: **Measuring Point Elevation:**	20.83 feet (MSL) NA	**Well Construction:** Borehole was tremie grout abandoned.	**Notes:** Located within the limits of the Gas Holder.

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description	Lithology (not to scale)	Well Construction
0 - 2	8 10 11 8	1.9	0.0 0.0	0' - 1.6': Dark brown LOAM. Gravels on top. Dry. Loose. No odors or visual impacts. 1.6' - 2.0': Black fine to coarse-grained SAND. FILL. Few coal pieces. Dry. Loose. No odors or visual impacts.		
2 - 4	17 11 7 4	1.6	0.0	2.0' - 4.0': FILL as above. Dry. Loose. No odors or visual impacts.		
4 - 6	2 1 1 1	1.1	0.0	4.0' - 6.0': FILL as above. Dry. Loose. No odors or visual impacts.		
6 - 8	1 3 1 2	0.5	0.0	6.0' - 8.0': Orange-rust-black fine-grained SAND and SILT FILL. Trace glass fragments. Slightly cohesive. Wet. No odors or visual impacts.		
8 - 10	4 1 2 1	0.5	0.0	8.0' - 10.0': Wet, brown, sloppy brick, fine-grained SAND and SILT FILL. Few coarse-grained sands and gravel-size bricks. Trace sheens. Very faint hydrocarbon-like odors.		
10 - 11.2	4 5 50/0.2'	0.7	10	10.0' - 11.2': FILL as above. Black-stained with light tar-like odors. Moderate sheens. Refusal with split spoon at 11.2' bgs; Augers turn hard to 13' bgs which is assumed to be the gas holder floor.		

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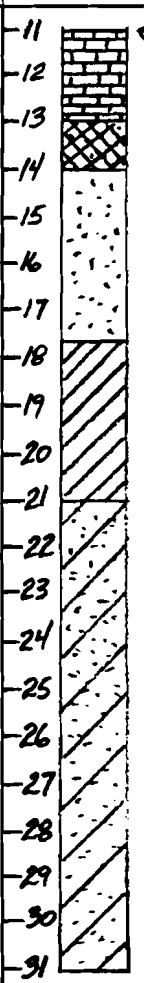
BORING LOG (SB-25)

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description	Lithology (not to scale)	Well Construction
13 - 15	12 14 14 50/0.4'	0.8	4400	13.0' - 14': Black-stained fine SAND and SILT with trace brick. FILL under holder floor. Wet. Runny tar streaks present, but NOT tar saturation. Strong tar odor. *(Sample Collected: SB25-13')*		HOLDER FLOOR
			20	14' - 14.4': Gray SILT. Moist. Very dense. Firm. Moist. No visual impacts (no tar, NAPL or sheens). Light tar-like odor.		
15 - 17	50/0.4'	0.4	133	15' - 15.4': Brown and gray fine-grained SAND and SILT. Wet. Slightly Cohesive. Trace tar microblebs and streaks. Light tar-like odor.		
17 - 19	19 17 15 13	1.3	9 - 0.9	17' - 17.8': Gray very fine-grained SAND and SILT. Trace black staining. Wet. Firm. Very slight tar-like odor.		
			0.0	17.8' - 19': Medium brown SILTY CLAY. Wet. Uniform. Pliable. Cohesive. No odors or visual impacts.		
19 - 21	4 3 2 7	1.0	0.0	19' - 21': SILTY CLAY as above. Wet. No odors or visual impacts.		
21 - 23	4 7 2 7	1.3	0.0	21' - 23': Medium brown SILT and CLAY. Several fine laminations of clay. Very cohesive. Wet. Medium dense. No odors or visual impacts. *(Sample Collected: SB25-21')*		
23 - 25	1 1 3 5	1.6	0.0	23' - 25': SILT and CLAY as above. No odors or visual impacts.		
25 - 27	1 1 2 4	1.0	0.0	25' - 27': SILT and CLAY as above. No odors or visual impacts.		
27 - 29	5 5 6 9	1.1	0.0	27' - 29': SILT and CLAY as above. No odors or visual impacts.		
29 - 31	1 1 1 3	0.8	0.0	29' - 31': SILT and CLAY as above. No odors or visual impacts.		

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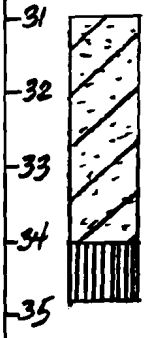
BORING LOG (SB-25)

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description	Lithology (not to scale)	Well Construction
31 - 33	5 6 8 10	1.5	0.0	31' – 33': SILT and CLAY as above. No odors or visual impacts.		
33 - 35	5 12 25 50/0.3'	1.5	0.0	33' – 34': SILT and CLAY as above. No odors or visual impacts.		
			0.0	34' – 34.8': Red-brown SILT and CLAY. Trace fine gravels. Few coarse-grained sands. TILL. Moist. Very dense. Very cohesive. No odors or visual impacts. EOB at 34.8' due to Till unit being encountered and refusal.		

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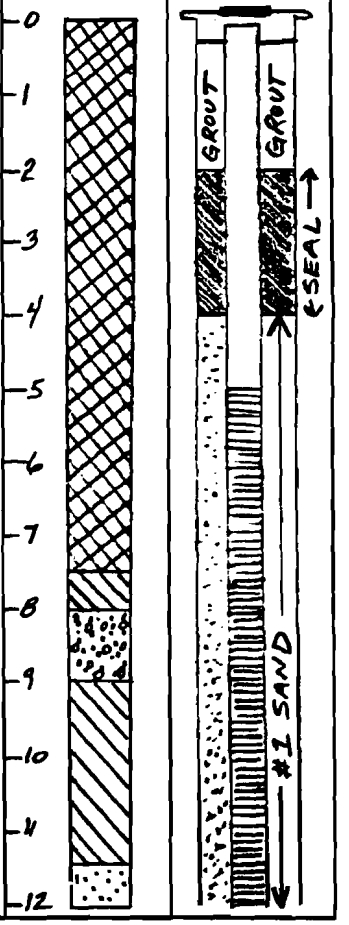
MONITORING WELL LOG (MW-27)

Boring/Well ID:	MW-27	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	01082-1012	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue Parcel
Date Started:	6/21/01	**Contractor:**	Aquifer Drilling and Testing, Albany, NY
Date Completed:	6/21/01	**Driller:**	R. Cabel
Total Depth:	20 feet	**Drilling Method:**	4.25" H.S.A. x 2" split spoons

Ground Surface Elevation: **Measuring Point Elevation:**	21.28 feet (MSL) 20.96 feet (MSL)	**Well Construction:** Bentonite backfill: 15'-20' bgs 10-slot PVC Screen: 15'-5' bgs #1 Well Gravel Pack: 15'-4' bgs Bentonite Seal: 4'-2' bgs Concrete Pad, Flushmount Manhole	**Notes:** Located upgradient of the former Gas Holder Structure.

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 2	0.5 0.5 1 5	1.3	0.0	0' - 2': Brown to dark brown mix of fine-grained SAND and SILT, coarse-grained sand and Brick. FILL. Moist. Slightly cohesive. No odors or impacts.
2 - 4	1 1 3 9	1.6	0.0	2' - 4': FILL as above. Moist. No odors or visual impacts.
4 - 6	7 8 2 1	1.3	0.0	4' - 6': FILL as above. Moist. No odors or visual impacts.
6 - 8	3 5 8 10	1.6	0.0	6' - 7.5': FILL as above. No odors or visual impacts. 7.5' - 8': Brown CLAY with trace rootlets. Firm. Very cohesive. Moist. No odors or visual impacts.
8 - 10	4 8 9 9	1.8	0.0	8' - 9': Gray and various colored medium to coarse-grained SAND with few gravels. Dense. Non-cohesive. Wet. No odors or visual impacts. 9' - 10': Light brown CLAY. Pliable. Moist. Fat. No odors or visual impacts.
10 - 12	8 9 20 50/0.3'	1.7	0.0	10' - 11.4': CLAY as above grading into gray colored. Very cohesive. Wet. Fat. No odors or visual impacts. 11.4' - 11.8': Brown-reddish fine-grained SAND and SILT. Arkosic gravel at end of sample causing ref'l. Wet. Firm. Slightly cohesive. No odors or visual impacts.



Lithology (not to scale) / Well Construction

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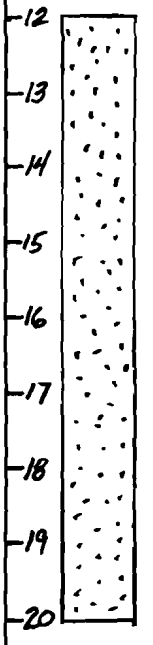
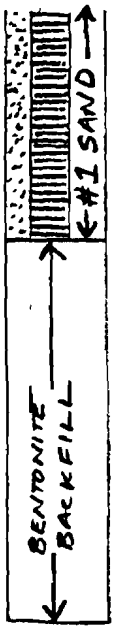
MONITORING WELL LOG (MW-27)

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description	Lithology (not to scale)	Well Construction
12 - 14	39 61 62 49	1.6	0.0	12' – 14': SAND and SILT as above. Few gravels and arkosic sandstone fragments. Very dense. Wet. No odors or visual impacts.		
14 - 16	30 38 36 35	2.0	0.0	14' – 16': SAND and SILT as above. Very dense. Wet. No odors or visual impacts.		
16 - 18	35 29 37 39	1.7	0.0	16' – 18': SAND and SILT as above. Very dense. Wet. No odors or visual impacts.		
18 - 20	40 29 41 47	1.9	0.0	18' – 20': SAND and SILT as above. Very dense. Wet. No odors or visual impacts. *(Sample Collected: HA-MW27-18')* EOB at 20' bgs. Set bottom of PVC well at 15' bgs to straddle water table which was measured at 10' bgs in open augers.		

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BORING LOG (GTB-1)

Boring/Well ID:	**GTB-1**	**Client:**	**Orange & Rockland Utilities, Inc.**
Project Number:	**013790-1001**	**Project Name:**	**Haverstraw Supplemental RI**
Logged By:	**Andrew Brey**	**Location:**	**93B Maple Avenue, adjacent to building**
Date Started:	**11/26/2001**	**Contractor:**	**ADT, Albany**
Date Completed:	**11/26/2001**	**Driller:**	**L. Darrow**
Total Depth:	**36 feet**	**Drilling Method:**	**4-1/4" Auger, 2" spoons, 140-lb hammer**

Ground Surface Elevation: **Measuring Point Elevation:**	**20.75 feet (MSL)** **NA**	**Well Construction: NA**	**Notes:** **Shelby Tube: 10'-12' bgs** **Vane Shear: 12'-14' bgs** **Shelby Tube: 30'-32' bgs**

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 2	5 5 5 6	0.6	0.0	0.0' - 2.0': Moist, brown-dark gray fine-grained SAND and SILT. Few coal fragments. Trace brick and gravels. Loose. Non-cohesive. No odors or visual impacts.
2 - 4	7 17 12 5	1.0	0.0	2.0' - 4.0': Fill As Above. Some coal pieces. Moist. No odors or visual impacts.
4 - 6	2 3 3 6	1.3	0.0	4.0' - 6.0': Fill As Above. Moist. Loose. Non-cohesive. No odors or visual impacts.
6 - 8	8 8 8 3	1.7	0.0 0.7 0.0	6.0' - 7.7': Fill As Above. Moist. Loose. Non-cohesive. Wet at 7.7' bgs. 0.7 ppm at fill-clay contact. Very slight oil-like odor. 7.7' - 8.0': Gray CLAY. Fat. Pliable. Very cohesive. Very slight oil-like odor. No visual impacts.
8 - 10	1 2 2 4	1.6	0.0	8.0' - 10.0': Moist, Gray CLAY. Frequent mm-scale silt beds/laminations (varved). Soft. Pliable. No odors or visual impacts.
10 - 12	NA	NA	NA	10.0' - 12.0': Collected thin-walled Shelby tube sample.
12 - 14	NA	NA	NA	12.0' - 14.0': Vane Shear analysis performed ft-lbs$_{initial}$=110 1st 90°=200 ft-lbs, 2nd 90°=75 ft-lbs 3rd 90°=75 ft-lbs, 4th 90°=65 ft-lbs

BORING LOG (GTB-1)

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
14 - 16	woh woh 2 1	2.0	0.0	14.0' – 16.0': Moist, gray CLAY as above, with silt varves. Soft. Cohesive. Pliable. No odors or visual impacts.
16 - 18	4 11 16 18	2.0	0.0 0.0	16.0' – 17.5': Moist, gray CLAY as above, with silt varves. Soft. Cohesive. Pliable. No odors or visual impacts. 17.5' – 18.0': Brown SILT. Wet. Uniform. Dense. Firm. Non-cohesive. No odors or visual impacts. Distinct contact with upper clay unit.
18 - 20	7 8 14 15	1.2	0.0	18.0' – 20.0': Brown SILT. Trace coarse-grained sand and fine gravel. Dense. Firm. Non-cohesive. Wet. No odors or visual impacts.
20 - 22	7 7 11 12	1.3	0.0	20.0' – 22.0': Brown and red SILT. Trace coarse-grained sand. Wet. Dense. Firm. Non-cohesive. No odors or visual impacts.
22 - 24	7 9 14 14	2.0	0.0	22.0' – 24.0': Brown SILT. Trace coarse-grained sand and fine gravel. Wet. Very dense. Firm. Non-cohesive. No odors or visual impacts.
24 - 26	wor wor 1 3	0.5	0.0	24.0' – 26.0': Brown SILT and very fine-grained sand. Trace coarse-grained sand. Wet. Very dense. Firm. No odors or visual impacts.
26 - 28	4 7 8 10	1.1	0.0	26.0' – 28.0': Brown SILT and very fine-grained sand. Uniform. Wet. Dense. Non-cohesive. No odors or visual impacts.
28 - 30	12 8 10 13	1.1	0.0	28.0' – 30.0': Light brown to brown SILT and very fine-grained sand. Dense. Wet. Firm. No odors or visual impacts.
30 - 32	NA	NA	NA	30.0' – 32.0': Collected thin-walled Shelby tube sample.
32 - 34	woh 2 7 12	1.1	0.0	* vane shear analysis; no shear with +600 ft-lbs of torque. 32.0' – 34.0': Light brown SILT and very fine-grained sand. Trace clay lense. Dense. Wet. Very firm. Non-cohesive. No odors or visual impacts.

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BORING LOG (GTB-1)

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
34 - 36	3 2 3 4	1.3	0.0	34.0' - 36.0': Brown to light brown SILT and CLAY. Banded, layered, ½" beds. Few very fine-grained sand and silt lenses. Wet. Firm. Medium dense. Non-cohesive. No odors or visual impacts. End of boring. Grouted upon completion.

GEI Consultants, Inc.

BORING LOG (GTB-2)

Boring/Well ID:	GTB-2	**Client:**	Orange & Rockland Utilities, Inc.
Project Number:	013790-1001	**Project Name:**	Haverstraw Supplemental RI
Logged By:	Andrew Brey	**Location:**	93B Maple Avenue, adjacent to building
Date Started:	11/27/2001	**Contractor:**	ADT, Albany
Date Completed:	11/27/2001	**Driller:**	L. Darrow
Total Depth:	35 feet	**Drilling Method:**	4-1/4" Auger, 2" spoons, 140-lb hammer

Ground Surface Elevation:	21.09 feet (MSL)	**Well Construction:** NA	**Notes:**
Measuring Point Elevation:	NA		**Shelby Tube: 16' - 18' bgs**
			Vane Shear: 18' - 20' bgs
			Shelby Tube: 33' - 35' bgs

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
0 - 2	7 7 4 3	1.5	0.0	0.0' - 2.0': Brown and gray SILT and fine to coarse-grained sand FILL. Trace brick. Trace wood pieces. Loose. Dry. No odors or visual impacts.
2 - 4	3 4 10 14	0.7	0.0	2.0' - 4.0': FILL as above. Dry. Loose. Gravel stuck in spoon shoe. No odors or visual impacts.
4 - 6	11 11 9 8	1.3	0.0	4.0' - 6.0': Brown and gray SILT and fine to coarse-grained sand FILL. Trace brick. Few geavles. Dry. Loose. No odors or visual impacts.
6 - 8	10 6 7 6	1.5	0.0	6.0' - 8.0': Gray fine- to medium-grained SAND and SILT. FILL. Dry. Loose. Non-cohesive. No odors or visual impacts.
8 - 10	4 3 5 3	1.1	3.0	8.0' - 10.0': Wet, gray fine- to medium-grained SAND and SILT. Loose. Non-cohesive. Very slight sheen. No odors.
10 - 12	woh 1 2 1	1.5	14 0.3-0.9	10.0' - 11.5': Wet, as above. Black-stained with a hydrocarbon sheen from 11.2' - 11.5' bgs. Slight fuel-like odor. 11.5' - 12.0': Tan CLAY. Wet. Very cohesive. Pliable. Soft. Uniform. No odors or visual impacts.
12 - 14	woh 2 1 1	1.4	0.6 - 4.0	12.0' - 14.0': Gray CLAY. Soft. Very cohesive. Pliable. Trace fine lamination of red silt throughout; varved. No odors or visual impacts.

BORING LOG (GTB-2)

Depth (feet)	Blow Counts	Recovery (feet)	PID (ppm)	Soil Description
14 - 16	1 1 1 1	2.0	0.0-0.6	14.0' - 16.0': Gray CLAY. Soft. Pliable. Very cohesive. Red varves (silt) throughout. No odors or visual impacts.
16 - 18	NA	NA	NA	16.0' - 18.0': Collect thin-walled Shelby tube sample.
18 - 20	NA	NA	NA	18.0' - 20.0': Vane Shear analysis performed $ft\text{-}lbs_{initial}=40$ 1^{st} 90°=25 ft-lbs, 2^{nd} 90°=10 ft-lbs 3^{rd} 90°=10 ft-lbs, 4^{th} 90°=10 ft-lbs
20 - 22	3 2 6 8	1.4	0.0	20.0' - 22.0': Brown and gray interbedded SILT and very fine-grained SAND. Firm. Wet. Non-cohesive. No odors or visual impacts.
22 - 24	5 8 8 7	1.0	0.0	22.0' - 24.0': Brown and gray SILT and very fine-grained SAND. Trace clays. Wet. Firm. Non-cohesive. No odors or visual impacts.
24 - 26	wor 3 6 3	1.1	0.0	24.0' - 26.0': As above. Wet. Firm. Non-cohesive. No odors or visual impacts.
26 - 28	3 7 3 6	1.2	0.0	26.0' - 28.0': Brown, gray and tan SILT and very fine-grained SAND. Trace mm-scale clay lenses. Wet. Firm. Non-cohesive, except clay lenses. No odors or visual impacts.
29 - 31	Wor 4 3 5	0.8	0.0	29.0' - 31.0': Wet, as above. No odors or visual impacts. *driller inadvertently went to 29' with augers/center plug.
31 - 33	5 3 1 3	1.1	0.0	31.0' - 33.0': Brown and tan SILT and CLAY. Firm. Wet. Coarse-grained sand bed at 32' bgs (0.15' thick). Non-cohesive. No odors or visual impacts.
33 - 35	NA	NA	NA	33.0' - 35.0': Collect thin-walled Shelby tube sample. End of Boring. Grouted upon completion.

Appendix B

Data Usability Reports, Chains-of-Custody, and Validated Analytical Results

Appendix B is Included in Volume 2

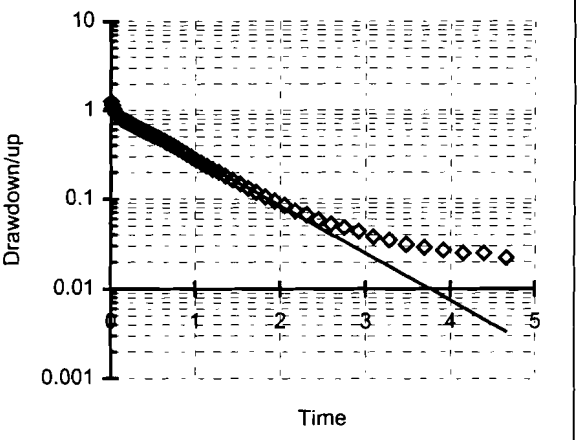
Appendix C

Hydraulic Conductivity Calculations

Bouwer & Rice Method for Calculating Hydraulic Conductivity

Project Name: 93B Maple MGP Site
Project No.: 101082
Client Name: Orange & Rockland
Identification: MW-01
Analysis By: A. Brey
Run Date:

Riser Pipe Diameter:	0.1666	feet
Intake Diameter:	0.5	feet
Intake Length:	12	feet
Saturated Column Length:	6.42	feet
Water Table Depth:	7.18	feet
Aquifer Thickness:	35	feet
Line Fit Starting No.:	25	Min 1 to
Line Fit Ending No.:	60	Max 80
Specify Output Units:	7	1 to 9
Hyd. Cond., K(h):	3.98E-04	cm./sec.
Error of Fit:	0.007	



Meas. #	Time minutes	Field Meas. feet	Drawdown/up feet		Line Fit To LN(Yt)	Regression On LN(Yt)
1)	0.01	8.43	1.25		0.225	-0.067
2)	0.01	8.24	1.06		0.056	-0.073
3)	0.02	8.34	1.16		0.146	-0.079
4)	0.02	8.33	1.15		0.137	-0.085
5)	0.03	8.23	1.05		0.053	-0.091
6)	0.03	8.22	1.04		0.038	-0.097
7)	0.04	8.21	1.03		0.031	-0.103
8)	0.04	8.17	0.98		-0.015	-0.109
9)	0.05	8.15	0.97		-0.027	-0.115
10)	0.05	8.14	0.96		-0.045	-0.121
11)	0.06	8.11	0.93		-0.073	-0.127
12)	0.06	8.10	0.92		-0.088	-0.133
13)	0.07	8.08	0.90		-0.105	-0.139
14)	0.07	8.07	0.89		-0.120	-0.146
15)	0.08	8.05	0.87		-0.143	-0.154
16)	0.08	8.04	0.86		-0.157	-0.162
17)	0.09	8.02	0.84		-0.171	-0.170
18)	0.10	8.01	0.83		-0.188	-0.179
19)	0.11	8.00	0.82		-0.205	-0.189
20)	0.11	7.98	0.80		-0.218	-0.199
21)	0.12	7.97	0.79		-0.233	-0.209
22)	0.13	7.97	0.79		-0.237	-0.220
23)	0.14	7.96	0.78		-0.245	-0.233
24)	0.15	7.95	0.77		-0.263	-0.245

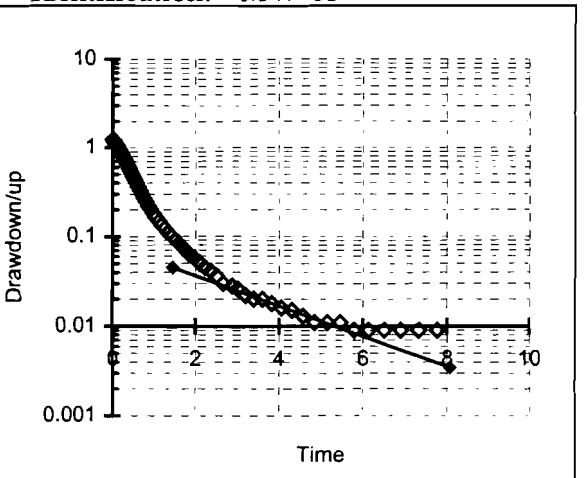
25)	0.16	7.94	0.76		-0.273	-0.259
26)	0.18	7.93	0.75		-0.286	-0.273
27)	0.19	7.92	0.74		-0.301	-0.288
28)	0.20	7.91	0.73		-0.317	-0.304
29)	0.21	7.90	0.72		-0.331	-0.321
30)	0.23	7.89	0.71		-0.345	-0.339
31)	0.25	7.87	0.69		-0.365	-0.357
32)	0.26	7.86	0.68		-0.389	-0.378
33)	0.28	7.85	0.67		-0.406	-0.399
34)	0.30	7.83	0.65		-0.431	-0.422
35)	0.32	7.82	0.64		-0.451	-0.446
36)	0.34	7.80	0.62		-0.476	-0.471
37)	0.36	7.79	0.61		-0.499	-0.498
38)	0.38	7.77	0.59		-0.526	-0.526
39)	0.41	7.76	0.58		-0.552	-0.556
40)	0.43	7.74	0.56		-0.582	-0.586
41)	0.46	7.72	0.54		-0.609	-0.619
42)	0.49	7.71	0.53		-0.642	-0.653
43)	0.52	7.69	0.51		-0.677	-0.689
44)	0.55	7.67	0.49		-0.709	-0.727
45)	0.59	7.65	0.47		-0.749	-0.770
46)	0.63	7.63	0.45		-0.792	-0.821
47)	0.66	7.61	0.43		-0.837	-0.860
48)	0.70	7.59	0.41		-0.884	-0.911
49)	0.75	7.57	0.39		-0.944	-0.963
50)	0.79	7.55	0.37		-1.000	-1.020
51)	0.84	7.52	0.34		-1.067	-1.078
52)	0.89	7.50	0.32		-1.133	-1.141
53)	0.95	7.48	0.30		-1.211	-1.207
54)	1.01	7.46	0.28		-1.291	-1.278
55)	1.07	7.44	0.26		-1.366	-1.352
56)	1.13	7.41	0.23		-1.457	-1.431
57)	1.20	7.40	0.22		-1.537	-1.515
58)	1.28	7.38	0.20		-1.609	-1.604
59)	1.35	7.36	0.18		-1.704	-1.699
60)	1.44	7.34	0.16		-1.808	-1.800
61)	1.53	7.33	0.15		-1.911	-1.906
62)	1.62	7.31	0.13		-2.025	-2.019
63)	1.72	7.30	0.12		-2.137	-2.138
64)	1.82	7.29	0.11		-2.254	-2.265
65)	1.93	7.28	0.10		-2.354	-2.398

66)	2.05	7.27	0.09		-2.465	-2.539
67)	2.17	7.25	0.07		-2.617	-2.690
68)	2.31	7.25	0.07		-2.703	-2.849
69)	2.45	7.24	0.06		-2.830	-3.019
70)	2.59	7.23	0.05		-2.937	-3.198
71)	2.75	7.23	0.05		-3.037	-3.387
72)	2.92	7.22	0.04		-3.124	-3.589
73)	3.09	7.22	0.04		-3.270	-3.803
74)	3.28	7.22	0.04		-3.352	-4.028
75)	3.48	7.21	0.03		-3.474	-4.268
76)	3.69	7.21	0.03		-3.540	-4.522
77)	3.91	7.21	0.03		-3.612	-4.790
78)	4.15	7.21	0.03		-3.689	-5.074
79)	4.39	7.21	0.03		-3.689	-5.374
80)	4.66	7.20	0.02		-3.817	-5.693

Bouwer & Rice Method for Calculating Hydraulic Conductivity

Project Name: 93B Maple MGP Site
Project No.: 101082
Client Name: Orange & Rockland
Identification: MW-03
Analysis By: A. Brey
Run Date:

Riser Pipe Diameter:	0.1666	feet
Intake Diameter:	0.5	feet
Intake Length:	8	feet
Saturated Column Length:	7.6	feet
Water Table Depth:	6.393	feet
Aquifer Thickness:	35	feet
Line Fit Starting No.:	35	Min 1 to
Line Fit Ending No.:	60	Max 72
Specify Output Units:	7	1 to 9
Hyd. Cond., K(h):	1.87E-04	cm./sec.
Error of Fit:	14.978	



Meas. #	Time minutes	Field Meas. feet	Drawdown/up feet		Line Fit To LN(Yt)	Regression On LN(Yt)
1)	0.01	7.64	1.25		0.223	-2.551
2)	0.02	7.62	1.23		0.206	-2.555
3)	0.02	7.60	1.21		0.191	-2.558
4)	0.03	7.58	1.19		0.173	-2.561
5)	0.04	7.56	1.17		0.155	-2.565
6)	0.05	7.54	1.15		0.138	-2.569
7)	0.06	7.52	1.13		0.121	-2.573
8)	0.07	7.50	1.11		0.101	-2.577
9)	0.08	7.48	1.08		0.080	-2.581
10)	0.10	7.45	1.06		0.059	-2.586
11)	0.11	7.43	1.04		0.037	-2.591
12)	0.12	7.41	1.01		0.013	-2.597
13)	0.14	7.38	0.98		-0.016	-2.602
14)	0.15	7.35	0.96		-0.042	-2.608
15)	0.17	7.32	0.93		-0.075	-2.615
16)	0.19	7.29	0.90		-0.109	-2.622
17)	0.21	7.26	0.86		-0.147	-2.629
18)	0.23	7.22	0.83		-0.186	-2.637
19)	0.25	7.19	0.80		-0.229	-2.645
20)	0.27	7.16	0.76		-0.272	-2.653
21)	0.29	7.12	0.73		-0.319	-2.662
22)	0.32	7.08	0.69		-0.373	-2.672
23)	0.34	7.05	0.66		-0.420	-2.682
24)	0.37	7.01	0.62		-0.480	-2.692

25)	0.40	6.98	0.58		-0.541	-2.703
26)	0.43	6.94	0.54		-0.609	-2.714
27)	0.46	6.90	0.51		-0.679	-2.727
28)	0.50	6.86	0.47		-0.759	-2.740
29)	0.53	6.83	0.43		-0.839	-2.754
30)	0.57	6.79	0.40		-0.919	-2.769
31)	0.61	6.76	0.36		-1.011	-2.785
32)	0.66	6.72	0.33		-1.106	-2.802
33)	0.70	6.69	0.30		-1.204	-2.820
34)	0.75	6.66	0.27		-1.306	-2.839
35)	0.80	6.64	0.25		-1.402	-2.859
36)	0.86	6.61	0.22		-1.510	-2.880
37)	0.92	6.60	0.20		-1.595	-2.902
38)	0.98	6.58	0.18		-1.704	-2.926
39)	1.04	6.56	0.17		-1.802	-2.951
40)	1.11	6.54	0.15		-1.904	-2.978
41)	1.19	6.53	0.13		-2.010	-3.006
42)	1.26	6.52	0.12		-2.104	-3.037
43)	1.35	6.50	0.11		-2.216	-3.069
44)	1.44	6.49	0.10		-2.313	-3.103
45)	1.53	6.48	0.09		-2.419	-3.139
46)	1.63	6.47	0.08		-2.526	-3.177
47)	1.73	6.47	0.07		-2.631	-3.218
48)	1.84	6.46	0.06		-2.765	-3.260
49)	1.96	6.45	0.06		-2.865	-3.305
50)	2.08	6.44	0.05		-2.976	-3.353
51)	2.22	6.44	0.04		-3.101	-3.404
52)	2.36	6.43	0.04		-3.194	-3.458
53)	2.50	6.43	0.04		-3.324	-3.515
54)	2.66	6.42	0.03		-3.507	-3.576
55)	2.87	6.42	0.03		-3.576	-3.658
56)	3.00	6.42	0.03		-3.650	-3.709
57)	3.19	6.42	0.02		-3.817	-3.781
58)	3.39	6.41	0.02		-3.912	-3.857
59)	3.60	6.41	0.02		-3.912	-3.938
60)	3.82	6.41	0.02		-4.017	-4.024
61)	4.06	6.41	0.02		-4.135	-4.115
62)	4.30	6.41	0.02		-4.200	-4.210
63)	4.57	6.41	0.01		-4.343	-4.312
64)	4.85	6.40	0.01		-4.510	-4.420
65)	5.14	6.40	0.01		-4.510	-4.535

66)	5.46	6.40	0.01		-4.510	-4.656
67)	5.79	6.40	0.01		-4.711	-4.784
68)	6.14	6.40	0.01		-4.711	-4.920
69)	6.51	6.40	0.01		-4.711	-5.064
70)	6.91	6.40	0.01		-4.711	-5.216
71)	7.33	6.40	0.01		-4.711	-5.378
72)	7.77	6.40	0.01		-4.711	-5.549

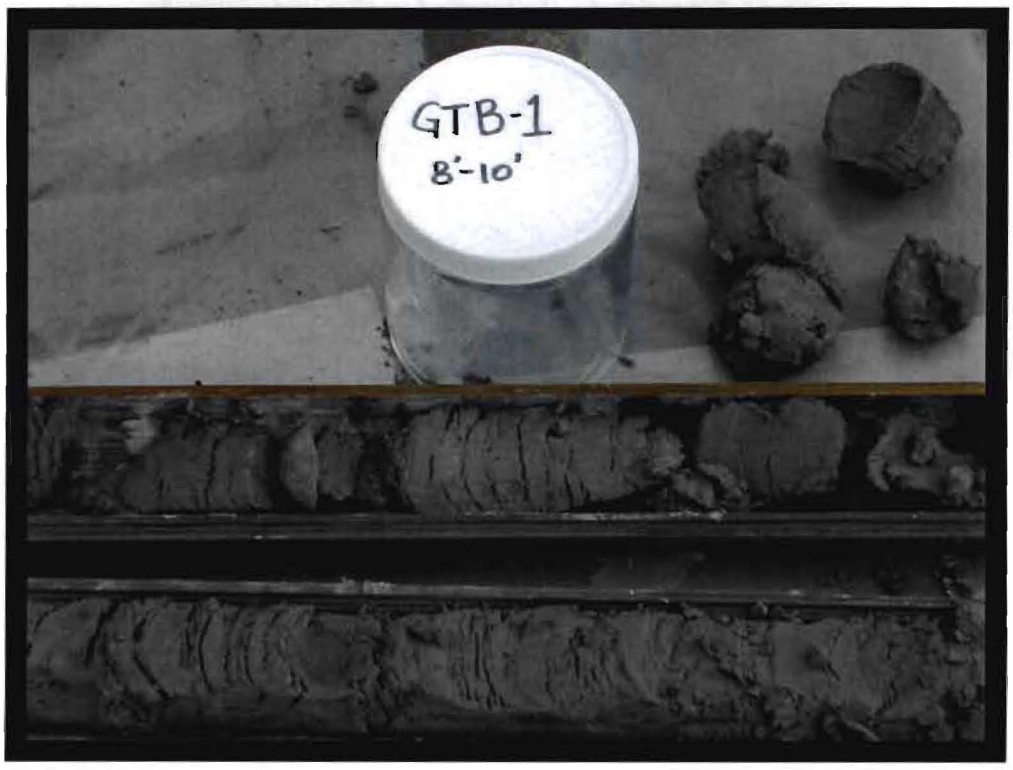
Appendix D

Photographic Documentation

Test Pit GT-TP1, Located At Alley-end Of The Building.
Note The Small (4-inch Wide) Ledge Of Overpour From The Forms.
Fill Material Is Present Under The "footer".

Test Pit GT-TP2, Located At Midpoint Of Building.
Note The Small Footing Underneath The Formed Wall.

Test Pit GT-TP3, Located At Driveway End Of The Building.
Note Rubble And Fill Under The Formed Walls;
No Apparent Or Existing Footer At This Location.



Soil Boring GTB-1, 8-10 Feet Below Ground Surface.
Grey Clay With Frequent mm Scale Silt Beds.
No Visual Impacts Noted at Water Table.

O&RHAVR\010820\938\FIG\938-PHOTO.CDR

Soil Boring GTB-1, 34-36 Feet Below Ground Surface.
Brown to Light-Brown Silt and Clay.
No Visual Impacts Noted at End of Boring.

O&RI\HAVR\01082013938\FIG\938-PHOTO.CDR

DRAFT
Remedial Investigation Report
93B Maple Avenue
Former MGP Site
Haverstraw, New York

Orange and Rockland Utilities, Inc.
Volume 2
Appendix B

GEI Consultants, Inc.

188 Norwich Avenue
Colchester, CT 06415
(860) 537-0751

SUBMITTED TO

Orange and Rockland Utilities, Inc.
500 Route 208
Monroe, New York 10965

David B. Terry
Project Manager

March 29, 2002
010820-1008

Appendix B

Data Usability Reports, Chains of Custody, and Validated Analysis Results

DATA USABILITY REPORTS

Site: Haverstraw, NY
Laboratory: Severn Trent Laboratories, Shelton, CT
Report No.: 200260
Reviewer: Lorie MacKinnon/GEI Consultants
Date: February 8, 2002

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
MW-21	200260-01	Total/WAD CN
MW-20	200260-02	Total/WAD CN
MW-29	200260-03	Total/WAD CN
MW-28	200260-04	Total/WAD CN
MW-03-93B	200260-05	Total/WAD CN
MW-02-93B	200260-06	Total/WAD CN
MW-27	200260-07	Total/WAD CN
MW-06	200260-09	Total/WAD CN
MW-07	200260-10	Total/WAD CN
MW-08	200260-11	Total/WAD CN
MW-01-CM	200260-12	Total/WAD CN
MW-24	200260-13	Total/WAD CN
MW-01-93B	200260-14	Total/WAD CN
MW-11	200260-15	Total/WAD CN
MW-05	200260-16	Total/WAD CN
MW-44	200260-17	Total/WAD CN
MW-04	200260-18	Total/WAD CN
MW-03-CM	200260-19	Total/WAD CN

ASSOCIATED QC SAMPLE(S): Field Blanks: None associated
Field Duplicate pair: MW-04/MW-44

The above listed samples were analyzed for total cyanide by CLP method 4.0 and weak acid dissociable cyanide by standard method 4500CM. It should be noted that the associated rinsate blank ER-GW-12-01 was located in the data package 200260 and evaluated with this sample group. The data validation was performed in accordance with the National Functional Guidelines for Evaluating Inorganic Analyses, dated February 1994.

The inorganic data were evaluated based on the following parameters:

* Holding Times and Sample Preservation
* Instrument Calibration
NA Contract Required Detection Limit (CRDL) Standard Analysis
* Blank Analysis Results

NA Inductively Coupled Plasma (ICP) Interference Check Sample Results
Matrix Spike (MS) Results
* Laboratory Duplicate Results
* Field Duplicate Results
* Laboratory Control Sample (LCS) Results
NA ICP Serial Dilution Results
Detection Limit Results
* Reported Quantitation Limits
Sample Quantitation

* All criteria were met for this parameter.

NA - Not evaluated as ICP analysis was not utilized.

All results were found to be usable.

The validation recommendations listed above were based on the following information.

Matrix Spike Results

A matrix spike analysis was performed on sample MW-05 for the total and WAD cyanide analysis. The following table lists the analyte recoveries found outside of control limits of 75-125% and the resultant actions.

Analyte	Recovery	Actions
WAD cyanide	68%	Estimate (J/UJ8) the positive and nondetect results for WAD cyanide in all samples; possible low bias.

Detection Limit Results

Although no a requirement of National Functional Validation Guidelines, positive results which were ≤2x the MDL were qualified as estimated (J5) due to uncertainty at the low end of calibration. The following results were affected by this qualification: total cyanide in samples MW-08 and MW-03-CM and WAD cyanide in samples MW-24 and MW-11.

Sample Quantitation

The total cyanide result for sample MW-01-93B was qualified as estimated (J13) as the result was above the calibration range. The direction of the bias cannot be determined from this nonconformance.

Site: Haverstraw, NY
Laboratory: Severn Trent Laboratories, Shelton, CT
Job No.: 200260
Reviewer: Lisa McDonagh/GEI Consultants
Date: February 14, 2002

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
MW21	200260-1	VOC, SVOC
MW20	200260-2	VOC, SVOC
MW29	200260-3	VOC, SVOC
MW28	200260-4	VOC, SVOC
MW-03-93B	200260-5	VOC, SVOC
MW-02-93B	200260-6	VOC, SVOC
MW27	200260-7	VOC, SVOC
Trip Blank	200260-8	VOC
MW06	200260-9	VOC, SVOC
MW07	200260-10	VOC, SVOC
MW08	200260-11	VOC, SVOC
MW-01-CM	200260-12	VOC, SVOC
MW24	200260-13	VOC, SVOC
MW-01-93B	200260-14	VOC, SVOC
MW11	200260-15	VOC, SVOC
MW05	200260-16	VOC, SVOC
MW44	200260-17	VOC, SVOC
MW04	200260-18	VOC, SVOC
MW-03-CM	200260-19	VOC, SVOC
Trip Blank	200260-20	VOC

ASSOCIATED QC SAMPLE(S): Trip Blanks: Trip Blank, Trip Blank
Field Duplicate pair: MW04/MW44

The above listed samples were analyzed for volatile organic compounds (VOCs) by NYSDEC CLP Protocols and semivolatile organic compounds (SVOCs) by NYSDEC 95/USEPA CLP OLM4.2. The data validation was performed in accordance with the National Functional Guidelines for Evaluating Organic Analyses, EPA 540/R-94/012, dated February 1993.

The organic data were evaluated based on the following parameters:

*	•	Holding Times and Sample Preservation
*	•	Gas Chromatography/Mass Spectrometry (GC/MS) Tunes
	•	Initial and Continuing Calibrations
	•	Blanks
	•	Surrogate Recoveries
*	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
*	•	Internal Standards
	•	Laboratory Control Sample (LCS) Results
	•	Field Duplicate Results
	•	Sample Quantitation and Reported Quantitation Limits
*	•	Target Compound Identification

* - All criteria were met.

All results were found to be usable.

The validation recommendations listed above were based on the following information.

Initial and Continuing Calibrations

Compounds that did not meet criteria in the VOC and SVOC initial and continuing calibrations are summarized in the following table.

Instrument ID MST Compound	IC 12/19/01	CC 12/21/01	CC 12/26/01
chloromethane			XX (47.7%)
bromomethane	X (39.4%)		
chloroethane	X (35.6%)	XX (77.2%)	
acetone		XX (28.6%)	
2-butanone			XX (28.8%)
4-methyl-2-pentanone		XX (31.6%)	XX (32.2%)
2-hexanone		XX (34.6%)	XX (39.2%)

Haverstraw, NY Project 01082

Instrument ID MST Compound	IC 12/19/01	CC 12/21/01	CC 12/26/01
Samples Affected	All listed	Trip Blank(-8), MW21, MW20, MW29, MW28, MW-03-93B, MW-02-93B, MW27	MW05, MW06, MW07, MW08, MW-01-CM, MW24, MW11, MW44, MW04

Instrument ID MSQ Compound	IC 12/26/01	CC 1/8/02	CC 1/9/02	CC 1/11/02
hexachlorocyclopentadiene			XX (30.2%)	
4-nitrophenol			XX (38.3%)	XX (30.7%)
chrysene		XX (26.6%)		
indeno(123cd)pyrene		XX (25.2%)		
benzo(ghi)perylene		XX (28.7%)		
benzaldehyde	X (52.2%)			
Samples Affected	All listed	MW21, MW29, MW28, MW03-93B, MW02-93B	MW20, MW27, MW06, MW07, MW08, MW01-CM, MW24, MW01-93B, MW11, MW05	MW44, MW04, MW03-CM

X = Initial calibration (IC) relative standard deviation (%RSD) > 30; estimate (J) positive and (UJ) blank-qualified nondetect results.

XX = Continuing calibration (CC) percent difference (%D) > 25; estimate (J/UJ) positive and nondetect results.

+ = Response factor (RRF) < 0.05; Estimate (J) positive results and reject (R) nondetect results.

The positive and/or blank qualified results for bromomethane and chloroethane in the aqueous samples Trip Blank(-8), MW21, MW20, MW29, MW28, MW-03-03B, MW-02-03B, MW27, MW05, MW06, MW07, MW08, MW-01-CM, MW24, MW11, MW44 and MW04, benzaldehyde in samples MW21, MW29, MW28, MW-03-93B, MW-02-93B, MW20, MW27, MW06, MW07, MW08, MW-01-CM, MW24, MW-01-93B, MW11, MW05, MW44, MW04 and MW-03-CM were qualified as estimated (J3/UJ3) due to initial nonconformances. The positive, blank qualified results and/or nondetect results for the following samples were qualified as estimated (J4/UJ4) due to continuing nonconformances; chloroethane, acetone, 4-methyl-2-pentanone and 2-hexanone in samples Trip Blank(-8), MW21, MW20, MW29, MW28, MW-03-03B, MW-02-03B and MW27 ; chloromethane, 2-butanone, 4-methyl-2-pentanone and 2-hexanone in samples MW05, MW06, MW07, MW08, MW-01-CM, MW24, MW11, MW44 and MW04; chrysene, indeno(123cd)pyrene and benzo(ghi)perylene in samples MW21, MW29, MW28, MW-03-93B and MW-02-93B; hexachlorocyclopentadiene and 4-nitrophenol in samples MW20, MW27, MW06, MW07, MW08, MW-01-CM, MW24, MW-01-93B, MW11 and MW05; 4-nitrophenol in samples MW44, MW04 and MW-03-CM. The direction of the bias cannot be determined from these nonconformances.

Blanks

The following table summarizes the method blank contamination in the VOC and SVOC analyses.

Compound	Type of Blank	Maximum Concentration (ug/L)	Blank Action Level (ug/L)
methylene chloride	Trip Blank	2	20
acetone	Low Level Method	7.9	79

QL - Quantitation Limit

Blank Actions

If the sample concentration $\leq$ QL and $\leq$ blank action level, qualify the result as not detected (U6) at the QL.
If the sample concentration > QL and $\leq$ blank action level, qualify the result as not detected (U6) at the reported value.
If the sample concentration > blank action level, report the value unqualified.

The following tables lists the compound results which were qualified as nondetect (U6) at the reported value or quantitation limit due to method blank contamination.

Compound	MW21	MW20	MW29	MW28	MW03-93B	MW02-93B	MW27
methylene chloride	U6	U6	U6	U6	U6	U6	U6
acetone	-	-	-	-	-	-	-

Compound	MW07	MW08	MW01-CM	MW24	MW01-93B	MW11	MW05
methylene chloride	U6	U6	U6	U6	U6	U6	U6
acetone	-	-	-	-	-	-	-

Compound	MW44	MW04	MW03-CM
methylene chloride	U6	U6	U6
acetone	-	-	U6

- No actions required.

Surrogate Recoveries

The following table summarizes the surrogate recoveries that failed to meet the acceptance criteria in the VOC analyses:

Sample ID	Percent Recovery			Action
	DCE 70-121	TOL 84-138	BFB 59-113	
MW-03-CM	-	-	121%	Qualify positive results (J7) associated with the surrogate.

The following table summarizes the surrogate recoveries that failed to meet the acceptance criteria in the SVOC analyses:

Sample ID	Percent Recovery						Action
	2-FP 26-68	Phenol-d5 10-47	TBP 58-129	NBZ 68-114	2-FBP 22-121	TP-d14 79-123	
MW04	-	-	-	-	-	23	No qualifications required.

LCS Results

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS -batch 1738 associated with aqueous samples MW21, MW20, MW29, MW28, MW-03-93B, MW-02-93B and MW27 and the resultant actions.

Compound	Recovery	Actions
hexachlorocyclopentadiene	52%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
pentachlorophenol	147%	Estimate (J9) positive results for the aqueous samples; possible high bias.
indeno(123cd)pyrene	152%	Estimate (J9) positive results for the aqueous samples; possible high bias.
dibenz(ah)anthracene	148%	Estimate (J9) positive results for the aqueous samples; possible high bias.
benzo(ghi)perylene	167%	Estimate (J9) positive results for the aqueous samples; possible high bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS -batch 1874 associated with aqueous samples MW06, MW07, MW08, MW01-CM, MW24, MW01-93B, MW11, MW05, MW04, MW18 and MW03-CM and the resultant actions.

Compound	Recovery	Actions
2-methylphenol	54%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
4-methylphenol	54%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
2,4-dimethylphenol	27%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
indeno(123cd)pyrene	141%	Estimate (J9) positive results for the aqueous samples; possible high bias.
benzo(ghi)perylene	155%	Estimate (J9) positive results for the aqueous samples; possible high bias.

Field Duplicate Results

Samples MW04 and MW44 were submitted as a field duplicate pair with this sample group. The following table lists the RPDs which were outside of control limits in the comparison of field duplicate results and the resulting validation actions.

Compound	Sample conc. (µg/L)	Duplicate conc. (µg/L)	RPD (%)	Control Limits	Action
naphthalene	3100	2200	34	RPD <30	Estimate (J10) positive results in field duplicate pair.

Sample Quantitation and Data Assessment

Results were reported which were below the lowest calibration standard level and quantitation limit in the VOC and SVOC analyses. These results were qualified as estimated (J5).

The following table lists the sample dilutions performed and reported. Quantitation limits were elevated accordingly.

Sample	Analyses	Dilution Reported
MW20	SVOC	2-fold
MW44	SVOC	50-fold
MW04	SVOC	40-fold
MW03-CM	SVOC	200-fold
MW01-93B	VOC	2-fold
MW03-CM	VOC	10-fold

Site: Haverstraw, NY
Laboratory: Severn Trent Laboratories, Shelton, CT
Report No.: 7001-2778A
Reviewer: Lorie MacKinnon/GEI Consultants
Date: February 11, 2002

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
GP-16-0'-4'	012778A-01	VOC, SVOC, CN
GP-16-4'-8'	012778A-02	VOC, SVOC, CN
GP-16-8'-12'	012778A-03	VOC, SVOC, CN
GP-16-12'-16'	012778A-04	VOC, SVOC, CN
GP-17-0'-4'	012778A-05	VOC, SVOC, CN
GP-17-4'-8'	012778A-06	VOC, SVOC, CN
GP-17-8'-12'	012778A-07	VOC, SVOC, CN
GP-18-0'-4'	012778A-08	VOC, SVOC, CN
GP-18-4'-8'	012778A-09	VOC, SVOC, CN
GP-18-8'-12'	012778A-10	VOC, SVOC, CN
GP-19-0'-4'	012778A-11	VOC, SVOC, CN
GP-19-4'-8'	012778A-12	VOC, SVOC, CN
GP-19-8'-12'	012778A-13	VOC, SVOC, CN
GP-20-0'-4'	012778A-14	VOC, SVOC, CN
GP-20-4'-8'	012778A-15	VOC, SVOC, CN
GP-20-8'-11'	012778A-16	VOC, SVOC, CN
GP-21-0'-4'	012778A-17	VOC, SVOC, CN
GP-21-4'-8'	012778A-18	VOC, SVOC, CN
GP-21-8'-10.5'	012778A-19	VOC, SVOC, CN
GP-22-0'-4'	012778A-20	VOC, SVOC, CN

ASSOCIATED QC SAMPLE(S): Field Blanks: None associated
Field Duplicate pair: None associated

It should be noted that metals analysis was requested on the chain-of-custody, but was not performed.

The above listed samples were analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) by CLP SOW OLM04.2. The data validation was performed in accordance with the National Functional Guidelines for Evaluating Inorganic Analyses, EPA 540/R-99/008, dated October 1993 and the National Functional Guidelines for Evaluating Organic Analyses, EPA 540/R-94/012, dated February 1994.

The organic data were evaluated based on the following parameters:

*	•	Holding Times and Sample Preservation
*	•	Gas Chromatography/Mass Spectrometry (GC/MS) Tunes
	•	Initial and Continuing Calibrations
	•	Blanks
	•	Surrogate Recoveries
*	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
	•	Internal Standards
	•	Laboratory Control Sample (LCS) Results
NA	•	Field Duplicate Results
	•	Sample Quantitation and Reported Quantitation Limits
*	•	Target Compound Identification

* - All criteria were met.

NA - A field duplicate pair was not associated with this sample group.

All results were found to be usable.

The validation recommendations listed above were based on the following information.

Initial and Continuing Calibrations

Compounds that did not meet criteria in the VOC and SVOC initial and continuing calibrations are summarized in the following table.

Instrument ID HP5970K Compound	IC 11/06/01
acetone	X (57.3%)
Samples Affected	20-8'-11', 16-8'-12'

Instrument ID HP5971O Compound	IC 11/02/01	CC 11/07/01	CC 11/08/01	CC 11/09/01	CC 11/13/01
acetone	X (53.4%)			XX (51.7%)	
bromomethane		XX (29.2%)	XX (25.3%)		
1,1,2-trichloro-1,2,2-trifluoromethane		XX (33.3%)	XX (37.4%)	XX (35.6%)	XX (32.4%)
methyl tert-butyl ether		XX (42.1%)	XX (50.4%)	XX (38.0%)	XX (36.1%)
1,2-dichloroethane		XX (25.2%)			

Instrument ID HP5971O Compound	IC 11/02/01	CC 11/07/01	CC 11/08/01	CC 11/09/01	CC 11/13/01
Samples Affected	All listed	17-0'-4', 17-8'-12', 18-8'-12', 19-0'-4'	17-4'-8', 18-0'4', 18-4'-8', 18-8'-12'RE, 19-4'-8', 19-8'-12', 22-0'-4', 16-12'-16', 19-0'-4'RE	21-0'-4', 21-4'-8', 21-8'-10.5'	16-0'-4', 16-4'-8', 16-12'-16'RE, 20-0'-4', 20-4'-8'

Instrument ID HP5971P Compound	IC 11/20/01	CC 11/20/01	CC 11/21/01	CC 11/24/01
benzaldehyde	X (50.4%)	XX (38.9%)	XX (36.3%)	XX (40.4%)
atrazine		XX (30.9%)	XX (33.8%)	XX (26.6%)
Samples Affected	All listed	16-12'-16', 18-8'-12', 17-8'-12', 19-8'-12', 21-4'-8', 21-8'-10.5', 16-4'-8', 17-0'-4', 22-0'-4', 21-0'-4'	20-4'-8', 16-0'-4', 19-0'-4', 20-8'-11', 16-8'-12', 19-4'-8', 20-0'-4'	18-0'-4', 18-4'-8', 17-4'-8'

X = Initial calibration (IC) relative standard deviation (%RSD) > 30; estimate (J) positive and (UJ) blank-qualified nondetect results.

XX = Continuing calibration (CC) percent difference (%D) > 25; estimate (J/UJ) positive and nondetect results.

+ = Response factor (RRF) < 0.05; Estimate (J) positive results and reject (R) nondetect results.

The positive and blank-qualified nondetect results for acetone in all samples were qualified as estimated (J/UJ3) due to initial calibration nonconformances. The positive and nondetect results for the following samples were qualified as estimated (J/UJ4) due to continuing calibration nonconformances; bromomethane, 1,1,2-trichloro-1,2,2-trifluoromethane, methyl tert-butyl ether, and 1,2-dichloroethane in samples 17-0'-4', 17-8'-12', and 18-8'-12'; bromomethane, 1,1,2-trichloro-1,2,2-trifluoromethane, and methyl tert-butyl ether in samples 17-4'-8', 18-0-4', 18-4'-8', 19-0'-4'RE, 19-4'-8', 19-8'-12', and 22-0'-4'; acetone, 1,1,2-trichloro-1,2,2-trifluoromethane, and methyl tert-butyl ether in samples 21-0'-4', 21-4'-8', and 21-8'-10.5'; and 1,1,2-trichloro-1,2,2-trifluoromethane and methyl tert-butyl ether in samples 16-0'-4', 16-4'-8', 16-12'-16'RE, 20-0'-4', and 20-4'-8'. No actions were required for samples 19-0'-4', 18-8-12'RE, and 16-12'-16' as alternate analyses were reported. The direction of the bias cannot be determined from these nonconformances.

The positive and blank-qualified nondetect results for benzaldehyde in samples 16-0'-4', 16-4'-8', 16-12'-16', 17-0'-4', 17-4'-8', 17-8'-12', 18-8'-12', 19-0'-4', 19-4'-8', 19-8'-12', 20-0'-4', 20-4'-8', 21-0'-4', 21-4'-8', 21-8'-10.5', and 22-0'-4' were qualified as estimated (J/UJ3) due to initial calibration nonconformances. The positive and nondetect results for benzaldehyde and atrazine were qualified as estimated (J/UJ4) due to continuing calibration nonconformances. The direction of the bias cannot be determined from these nonconformances.

Blanks

The following table summarizes the method blank contamination in the VOC and SVOC analyses.

Compound	Type of Blank	Maximum Concentration (ug/Kg)	Blank Action Level (ug/Kg)
methylene chloride	Medium Level Method	110	1100
acetone	Method	12	120
methylene chloride	Method	6	60
2-hexanone	Method	6	30
carbon disulfide	Method	0.2	1.0
2-butanone	Method	5	50
toluene	Method	0.3	30
styrene	Method	0.8	4.0
1,3-dichlorobenzene	Method	0.4	2.0
1,4-dichlorobenzene	Method	0.5	2.5
1,2,4-trichlorobenzene	Method	0.9	4.5
benzaldehyde	Method	980	4900
phenol	Method	18	90
acetophenone	Method	30	150
1,1'-biphenyl	Method	4	20
diethylphthalate	Method	4	40
di-n-butylphthalate	Method	4	40
bis(2-ethylhexyl)phthalate	Method	42	420

QL - Quantitation Limit

Blank Actions

If the sample concentration $\leq$ QL and $\leq$ blank action level, qualify the result as not detected (U6) at the QL.
If the sample concentration > QL and $\leq$ blank action level, qualify the result as not detected (U6) at the reported value.
If the sample concentration > blank action level, report the value unqualified.

The following tables lists the compound results which were qualified as nondetect (U6) at the reported value or quantitation limit due to method blank contamination.

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Compound	16-0'-4'	16-4'-8'	16-8'-12'	16-12'-16'	17-0'-4'	17-4'-8'	17-8'-12'
bromomethane	-	-	-	-	-	U6	-
acetone	U6	U6	-	U6	U6	U6	U6
methylene chloride	U6	U6	U6	U6	U6	U6	U6
carbon disulfide	-	-	-	-	-	U6	-
2-butanone	-	-	-	-	-	-	U6
toluene	U6	U6	-	-	-	U6	-
benzaldehyde	U6	U6	-	U6	U6	U6	U6
phenol	-	U6	-	U6	U6	U6	U6
acetophenone	U6	U6	-	U6	U6	U6	U6
1,1'-biphenyl	U6	U6	-	U6	U6	U6	U6
diethylphthalate	U6	U6	-	U6	U6	U6	U6
di-n-butylphthalate	U6	U6	-	-	-	-	U6
bis(2-ethylhexyl)phthalate	U6	U6	-	U6	U6	U6	U6

Compound	18-0'-4'	18-4'-8'	18-8'-12'	19-0'-4'	19-4'-8'	19-8'-12'	20-0'-4'	20-4'-8'
bromomethane	-	-	-	U6	U6	U6	-	-
acetone	U6	U6	U6	U6	U6	U6	U6	U6
methylene chloride	U6	U6	U6	U6	U6	U6	U6	U6
carbon disulfide	U6	-	-	-	-	-	-	-
2-butanone	U6	U6	-	U6	U6	U6	-	-
toluene	U6	U6	-	-	-	U6	-	U6
benzaldehyde	-	-	U6	U6	U6	U6	U6	U6
phenol	-	-	U6	U6	U6	U6	U6	-
acetophenone	-	-	U6	U6	U6	U6	U6	U6
1,1'-biphenyl	U6	U6	-	U6	U6	U6	U6	U6
diethylphthalate	-	-	U6	U6	-	U6	-	-
di-n-butylphthalate	-	-	U6	U6	-	U6	U6	U6
bis(2-ethylhexyl)phthalate	-	U6	-	U6	U6	U6	U6	U6

Compound	20-8'-11'	21-0'-4'	21-4'-8'	21-8'-10.5'	22-0'-4'
bromomethane	-	U6	-	U6	U6
acetone	-	U6	U6	U6	U6
methylene chloride	U6	U6	U6	U6	U6
2-butanone	-	U6	U6	U6	U6
toluene	-	U6	U6	U6	U6
benzaldehyde	-	U6	U6	U6	U6
phenol	-	U6	-	-	U6
acetophenone	-	U6	U6	U6	U6
1,1'-biphenyl	-	U6	U6	U6	U6
diethylphthalate	-	U6	U6	U6	U6
di-n-butylphthalate	-	U6	U6	U6	U6
bis(2-ethylhexyl)phthalate	-	U6	U6	U6	U6

- No actions required.

* - Analysis not reported.

Surrogate Recoveries

The following table summarizes the surrogate recoveries that failed to meet the acceptance criteria in the VOC analyses:

Sample ID	Percent Recovery			Action
	DCE 70-121	TOL 84-138	BFB 59-113	
GP-16-12'-16'	67%	-	54%	No action, reanalysis reported.
GP-16-12'-16'RE	-	-	55%	Estimate (J/UJ7) positive and nondetect results; possible low bias.
GP-19-0'-4'	68%	-	125%	No action, reanalysis reported
GP-19-0'-4'RE	69%	-	-	Estimate (J/UJ7) positive and nondetect results; possible low bias.
GP18-8-12RE	66%	-	-	No action, original analysis reported

- within control limits

DCE - 1,2-Dichloroethane-d4

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TOL - Toluene-d8
BFB - 4-Bromofluorobenzene

MS/MSD Results

Sample GP-16-4'-8' was designated for MS/MSD VOC and SVOC analyses with this sample set. All criteria were met. A comparison of the results for the unspiked compounds in the sample/MS/MSD was performed. Compound %RSDs were <50%.

Internal Standards

The following table lists the internal standard areas found outside of control limits and the resultant actions.

Sample	Internal Standard	IS Area	Acceptable Range	Actions
SVOC GP19-0'-4'	Chrysene-d12	1060408	1086388-4345550	Qualify positive and nondetect (J/UJ11) results quantitated from the IS.
SVOC GP19-4'-8'	Chrysene-d12 Perylene-d12	875801 740539	1086388-4345550 755424-3021696	Qualify positive and nondetect (J/UJ11) results quantitated from the internal standards.
SVOC GP20-0'-4'	Chrysene-d12	874957	1086388-4345550	Qualify positive and nondetect (J/UJ11) results quantitated from the IS.
SVOC GP18-0'-4'	Phenanthrene-d10 Chrysene-d12 Perylene-d12	1277936 591172 378263	1290440-5161760 620346-2481384 404270-1617078	Qualify positive and nondetect (J/UJ11) results quantitated from the internal standards.
VOC GP18-8'-12'	1,4-difluorobenzene	873600	1016834-4067334	Qualify positive and nondetect (J/UJ11) results quantitated from the IS.
VOC GP19-0'-4'	bromochloromethane 1,4-difluorobenzene chlorobenzene-d5	145549 652386 804432	157750-631000 1016834-4067334 847143-3388572	No action taken, reanalysis reported.
VOC GP16-12'-16'	1,4-difluorobenzene chlorobenzene-d5	740066 499072	933870-3735482 812450-3249802	No action taken, original analysis reported.
VOC GP16-12'-16're	chlorobenzene-d5	668835	703420-2813682	Qualify positive and nondetect (J/UJ11) results quantitated from the IS.
VOC GP18-8'-12're	1,4-difluorobenzene	726653	933870-3735482	No action taken, original analysis reported.

Sample	Internal Standard	IS Area	Acceptable Range	Actions
VOC GP19-0'-4' RE	bromochloromethane 1,4-difluorobenzene chlorobenzene-d5	143212 648946 683157	145216-580864 933870-3735482 812450-3249802	Qualify positive and nondetect (J/UJ11) results quantitated from the IS.

- Within control limits

LCS Results

The following table lists the VOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS 020 ppbQCS associated with all soil samples and the resultant actions.

Compound	Recovery	Actions
acetone	165%	Estimate (J/UJ9) positive and blank-qualified nondetect values greater than the CRQL for samples GP16-0'-4', GP16-8'-12', GP16-12'-16', GP17-0'-4', GP17-8'-12', GP18-4'-8', GP18-8'-12', GP19-0'-4', GP19-4'-8', GP19-8'-12', and GP20-8'-11'; possible high bias.
2-butanone	155%	No action required; all results nondetect and high bias indicated.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKWP associated with all soil samples and the resultant actions.

Compound	Recovery	Actions
2-methylphenol	57%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
4-methylphenol	59%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
4-chloroaniline	58%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
hexachlorocyclopentadiene	52%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
2,4,5-trichlorophenol	57%	Estimate (J/UJ9) positive and nondetect results for all soil; possible low bias s.
3,3'-dichlorobenzidine	37%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
benzo(ghi)perylene	58%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.

Field Duplicate Results

A field duplicate pair was not associated with this sample group.

Sample Quantitation and Data Assessment

Results were reported which were below the lowest calibration standard level and quantitation limit in the VOC and SVOC analyses. These results were qualified as estimated (J5) by the laboratory.

VOC sample GP16-12'-16' was reanalyzed due to surrogates and internal standards outside of control limits. GP16-12'-16'RE was reported. VOC sample GP19-0'-4' was reanalyzed due to surrogates and internal standards outside of control limits. GP19-0'-4'RE was reported. VOC sample GP18-8'-12' was reanalyzed due to surrogates and internal standards outside of control limits. The original analysis was reported.

The following table lists the sample dilutions performed due to high levels of target compounds. Quantitation limits were elevated accordingly.

Sample	Analyses	Dilution Reported
GP16-8'-12'	SVOC	20-fold
GP18-0'-4'	SVOC	20-fold
GP18-4'-8'	SVOC	20-fold
GP19-0'-4'	SVOC	2-fold
GP19-4'-8'	SVOC	4-fold
GP20-0'-4'	SVOC	4-fold
GP20-8'-11'	SVOC	100-fold
GP16-8'-12'	VOC	Medium Level
GP20-8'-11'	VOC	Medium Level

The inorganic data were evaluated based on the following parameters:

* Holding Times and Sample Preservation
* Instrument Calibration
NA Contract Required Detection Limit (CRDL) Standard Analysis
* Blank Analysis Results
NA Inductively Coupled Plasma (ICP) Interference Check Sample Results
* Matrix Spike (MS) Results

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* Laboratory Duplicate Results
NA Field Duplicate Results
* Laboratory Control Sample (LCS) Results
NA ICP Serial Dilution Results
* Detection Limit Results
* Sample Quantitation

* All criteria were met for this parameter.

NA - Not applicable as ICP analysis was not utilized and a field duplicate pair was not associated with this sample group.

All results were found to be usable.

All criteria were met. No qualifications were required.

Site: Haverstraw, NY
Laboratory: Severn Trent Laboratories, Shelton, CT
Report No.: 7001-2778B
Reviewer: Lorie MacKinnon/GEI Consultants
Date: February 12, 2002

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
GP-22-4'-8'	012778B-01	VOC, SVOC, CN
GP-22-9'-12'	012778B-02	VOC, SVOC, CN
GP-23-0'-4'	012778B-03	VOC, SVOC, CN
GP-23-4'-8'	012778B-04	VOC, SVOC, CN
GP-23-8'-12'	012778B-05	VOC, SVOC, CN
GP-24-0'-4'	012778B-06	VOC, SVOC, CN
GP-24-4'-8'	012778B-07	VOC, SVOC, CN
GP-24-8'-12'	012778B-08	VOC, SVOC, CN
GP-25-4'-8'	012778B-09	VOC, SVOC, CN
GP-25-0'-4'	012778B-10	VOC, SVOC, CN
GP-25-8'-12'	012778B-11	VOC, SVOC, CN
GP-26-0'-4'	012778B-12	VOC, SVOC, CN
GP-26-4'-8'	012778B-13	VOC, SVOC, CN
GP-26-8'-11'	012778B-14	VOC, SVOC, CN
GP-27-0'-4'	012778B-15	VOC, SVOC, CN
GP-27-4'-8'	012778B-16	VOC, SVOC, CN
GP-27-8'-10'	012778B-17	VOC, SVOC, CN
GP-28-0'-4'	012778B-18	VOC, SVOC, CN
GP-28-4'-8'	012778B-19	VOC, SVOC, CN
GP-28-8'-12'	012778B-20	VOC, SVOC, CN

ASSOCIATED QC SAMPLE(S): Field Blanks: None associated
Field Duplicate pair: None associated

The above listed samples were analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) by CLP SOW OLM04.2, and cyanide by method CLP 4.0. It should be noted that the associated rinsate blank HA-ER110501 was found in 2778C and evaluated with this sample group. The data validation was performed in accordance with the National Functional Guidelines for Evaluating Organic Analyses, EPA 540/R-99/008, dated October 1993 and the National Functional Guidelines for Evaluating Inorganic Analyses, EPA 540/R-94/012, dated February 1994.

The organic data were evaluated based on the following parameters:

*	•	Holding Times and Sample Preservation
*	•	Gas Chromatography/Mass Spectrometry (GC/MS) Tunes
	•	Initial and Continuing Calibrations
	•	Blanks
	•	Surrogate Recoveries
	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
	•	Internal Standards
	•	Laboratory Control Sample (LCS) Results
NA	•	Field Duplicate Results
	•	Sample Quantitation and Reported Quantitation Limits
*	•	Target Compound Identification

* - All criteria were met.

NA - A field duplicate pair was not associated with this sample group.

The validation recommendations listed above were based on the following information.

Initial and Continuing Calibrations

Compounds that did not meet criteria in the VOC and SVOC initial and continuing calibrations are summarized in the following table.

Instrument ID HP5970K Compound	IC 11/06/01
acetone	X (57.3%)
Samples Affected	27-8'-10', 26-8'-11'

Instrument ID HP5971O Compound	IC 11/02/01	CC 11/09/01	CC 11/11/01	CC 11/13/01
acetone	X (53.4%)	XX (51.7%)		
2-butanone			XX (29.8%)	
1,1,2-trichloro-1,2,2-trifluoromethane		XX (35.6%)	XX (37.2%)	XX (32.4%)
methyl tert-butyl ether		XX (38.0%)	XX (42.9%)	XX (36.1%)
Samples Affected	All listed	22-4'-8', 22-9'-12', 23-0'-4', 24-4'-8', 23-4'-8', 24-8'-12' (NR), 23-8'-12', 25-0'-4', 24-0'-4', 25-8'-12'	26-4'-8', 27-0'-4', 27-4'-8', 28-0'-4', 28-4'-8', 28-8'-12'	24-8'-12'RE, 25-4'-8', 25-8'-12'RE (NR), 26-0'-4'

Instrument ID HP5971Q Compound	IC 11/13/01	CC 11/21/01	CC 11/24/01	CC 11/25/01
benzaldehyde	X (51.1%)	XX (41.6%)	XX (31.0%)	
2,4-dinitrophenol		XX (33.2%)		XX (30.0%)
hexachlorocyclopentadiene				XX (37.4%)
Samples Affected	All listed	22-9'-12', 23-0'-4', 24-8'-12', 23-8'-12', 25-8'-12', 28-4'-8', 28-8'12', 24-4'-8'	27-8'10', 26-8'-11', 28-0'-4', 27-0'-4', 27-4'-8', 22-4'-8', 25-0'-4', 26-4'-8'	24-0'-4', 25-4'-8', 26-0'-4', 23-4'-8'

NR = Analysis not reported.
X = Initial calibration (IC) relative standard deviation (%RSD) > 30; estimate (J) positive and (UJ) blank-qualified nondetect results.
XX = Continuing calibration (CC) percent difference (%D) > 25; estimate (J/UJ) positive and nondetect results.
+ = Response factor (RRF) < 0.05; Estimate (J) positive results and reject (R) nondetect results.

The positive and blank-qualified nondetect results for acetone in all samples with the exception of GP28-4'-8' were qualified as estimated (J/UJ3) due to initial calibration nonconformances. The following results were qualified as estimated (J/UJ4) due to continuing calibration nonconformances: acetone, 1,1,2-trichloro-1,2,2-trifluoromethane, and methyl tert-butyl ether in samples 22-4'-8', 22-9'-12', 23-0'-4', 24-4'-8', 23-4'-8', 23-8'-12', 25-0'-4', 24-0'-4', and 25-8'-12'; 2-butanone, 1,1,2-trichloro-1,2,2-trifluoromethane, and methyl tert-butyl ether in samples 26-4'-8', 27-0'-4', 27-4'-8', 28-0'-4', 28-4'-8', and 28-8'-12'; and 1,1,2-trichloro-1,2,2-trifluoromethane, and methyl tert-butyl ether in samples 24-8'-12'RE, 25-4'-8', and 26-0'-4'. The direction of the bias cannot be determined from these nonconformances.

The positive result for benzaldehyde in sample GP28-8'-12' was qualified as estimated (J3) due to initial calibration nonconformances. The following results were qualified as estimated (J/UJ4) due to continuing calibration nonconformances: benzaldehyde and 2,4-dinitrophenol in samples 22-9'-12', 23-0'-4', 24-8'-12', 23-8'-12', 25-8'-12', 28-4'-8', 28-8'12', and 24-4'-8'; benzaldehyde in samples 27-8'-10', 26-8'-11', 28-0'-4', 27-0'-4', 27-4'-8', 22-4'-8', 25-0'-4', and 26-4'-8', and 2,4-dinitrophenol and hexachlorocyclopentadiene in samples 24-0'-4', 25-4'-8', 26-0'-4', and 23-4'-8'. The direction of the bias cannot be determined from these nonconformances.

Blanks

The following table summarizes the method blank contamination in the VOC and SVOC analyses.

Haverstraw, NY Project 01082

Compound	Type of Blank	Maximum Concentration (ug/Kg)	Blank Action Level (ug/Kg)
methylene chloride	Medium Level Method	110	1100
acetone	Method	9	90
methylene chloride	Method	13	130
2-hexanone	Method	6	30
bromomethane	Method	1	5
2-butanone	Method	4	40
toluene	Method	0.3	30
styrene	Method	0.8	4.0
1,3-dichlorobenzene	Method	0.3	1.5
1,4-dichlorobenzene	Method	0.4	2.0
1,2,4-trichlorobenzene	Method	0.9	4.5
diethylphthalate	Field blank ER110501	66	660
acetophenone	Method	13	65
bis(2-ethylhexyl)phthalate	Method	17	170

Blank Actions

If the sample concentration ≤ QL and ≤ blank action level, qualify the result as not detected (U6) at the QL.
If the sample concentration > QL and ≤ blank action level, qualify the result as not detected (U6) at the reported value.
If the sample concentration > blank action level, report the value unqualified.

The following tables lists the compound results which were qualified as nondetect (U6) at the reported value or quantitation limit due to method blank contamination.

Compound	22-4'-8'	22-9'-12'	23-0'-4'	23-4'-8'	23-8'-12'	24-0'-4'	24-4'-8'
bromomethane	U6	U6	U6	U6	-	-	-
acetone	U6	U6	U6	U6	U6	U6	U6
methylene chloride	U6	U6	U6	U6	U6	U6	U6
carbon disulfide	-	-	-	-	-	-	-
2-butanone	U6	U6	-	-	U6	-	-
toluene	-	U6	U6	U6	-	U6	U6
styrene	-	U6	-	-	-	-	-
acetophenone	U6	U6	U6	U6	U6	-	U6
bis(2-ethylhexyl)phthalate	U6	U6	U6	U6	U6	U6	U6

Compound	24-8'-12'	25-4'-8'	25-0'-4'	25-8'-12'	26-0'-4'	26-4'-8'	26-8'-11'	27-0'-4'
bromomethane	-	-	U6	U6	-	-	-	-
acetone	U6	U6	U6	U6	U6	U6	-	U6
methylene chloride	U6	U6	U6	U6	U6	U6	U6	U6
2-butanone	U6	U6	U6	U6	U6	U6	-	-
toluene	-	-	U6	-	U6	U6	-	-
acetophenone	U6	U6	U6	U6	-	U6	-	-
bis(2-ethylhexyl)phthalate	U6	-	U6	U6	U6	-	-	U6

Compound	27-4'-8'	27-8'-10'	28-0'-4'	28-4'-8'	28-8'-12'
acetone	U6	-	U6		U6
methylene chloride	U6	-	U6	U6	U6
toluene	-	-	U6	-	-
acetophenone	-	-	U6	U6	U6
bis(2-ethylhexyl)phthalate	U6	-	U6	U6	-

- No actions required.

Surrogate Recoveries

The following table summarizes the surrogate recoveries that failed to meet the acceptance criteria in the VOC analyses:

Sample ID	Percent Recovery			Action
	DCE 70-121	TOL 84-138	BFB 59-113	
GP-24-8'-12'	62%	-	-	No action, reanalysis reported.
GP-24-8'-12'RE	-	-	54%	Estimate (J/UJ7) positive and nondetect results; possible low bias.
GP-25-8'-12'	62%	-	-	Estimate (J/UJ7) positive and nondetect results; possible low bias.
GP-25-8'-12'RE	59%	-	-	No action, original analysis reported.

- within control limits

DCE - 1,2-Dichloroethane-d4
TOL - Toluene-d8
BFB - 4-Bromofluorobenzene

All surrogate recovery criteria were met for SVOC samples which were not analyzed at a dilution.

The following table summarizes the surrogate recoveries that failed to meet the acceptance criteria in the SVOC analyses:

Sample ID	Percent Recovery						Action
	2-FP 26-68	Phenol-d5 10-47	TBP 58-129	NBZ 68-114	2-FBP 22-121	TP-d14 18-137	
GP27-8'10' 100x	0D	0D	0D	0D	0D	0D	No action required, surrogates diluted out.
GP26-8'-11' 100x	0D	0D	0D	0D	0D	0D	No action required, surrogates diluted out.
GP28-0'-4' 5x	-	-	-	-	-	138D	No action required, one surrogate out.

2-FP - 2-Fluorophenol
TBP - 2,4,6-Tribromophenol
NBZ - Nitrobenzene-d5
2-FBP - 2-Fluorobiphenyl
TP-d14 - Terphenyl-d14

MS/MSD Results

Sample GP-25-4'-8' was designated for MS/MSD VOC analyses with this sample set. All criteria were met. A comparison of the results for the unspiked compounds in the sample/MS/MSD was performed. Compound %RSDs were <50%.

The laboratory performed an MS/MSD on sample GP-22-4'-8' for the SVOC analyses. The following table lists the compound recoveries found outside of control limits and the resultant actions.

Compound	Recovery	RPD	Control Limits	Actions
pyrene	200%, 533%	91%	35-142/36	Estimate (J8) the positive result for pyrene in sample GP22-4'-8'; possible high bias.

- Within control limits

A comparison of the results for the unspiked compounds in the sample/MS/MSD was performed. The %RSDs for anthracene (56.8%), fluoranthene (52.9%), benzo(a)anthracene (59.2%), chrysene (57.4%), and benzo(b)fluoranthene (61.7%) were found above the control limit of 50. The positive results for anthracene, fluoranthene, benzo(a)anthracene, chrysene, and benzo(b)fluoranthene were qualified as estimated (J12) in sample GP-22-4'-8'. The direction of the bias cannot be determined from this nonconformance.

Internal Standards

The following table lists the internal standard areas found outside of control limits and the resultant actions.

Sample	Internal Standard	IS Area	Acceptable Range	Actions
VOC GP24-8'-12'	1,4-difluorobenzene chlorobenzene-d5	615833 479531	785948-3143794 695076-2780306	No action taken, reanalysis reported.
VOC GP25-8'-12'	1,4-difluorobenzene chlorobenzene-d5	642065 552940	785948-3143794 695076-2780306	Qualify positive and nondetect (J/UJ11) results quantitated from the IS.
VOC GP24-8'-12'RE	chlorobenzene-d5	561738	703420-2813682	Qualify positive and nondetect (J/UJ11) results quantitated from the IS.
VOC GP25-8'-12'RE	1,4-difluorobenzene chlorobenzene-d5	628351 473038	776307-3105228 703420-2813682	No action taken, analysis reported.

LCS Results

The following table lists the VOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS 020 ppbQCS associated with all soil samples and the resultant actions.

Compound	Recovery	Actions
acetone	165%	Estimate (J/UJ9) positive and blank-qualified nondetect values greater than the CRQL for samples GP24-8'-12'RE, GP26-8'-11', and GP27-8'-10'; possible high bias.
2-butanone	155%	Estimate (J9) positive result for 2-butanone in sample GP27(8-10); possible high bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKYQ associated with all soil samples and the resultant actions.

Compound	Recovery	Actions
2-methylphenol	46%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
2,2'-oxybis(1-chloropropane)	59%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
4-methylphenol	52%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
hexachloroethane	51%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
2-nitrophenol	56%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
4-chloroaniline	58%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
3,3'-dichlorobenzidine	52%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.

Field Duplicate Results

A field duplicate pair was not associated with this sample group.

Sample Quantitation and Data Assessment

Results were reported which were below the lowest calibration standard level and quantitation limit in the VOC and SVOC analyses. These results were qualified as estimated (J5) by the laboratory.

VOC sample GP24-8'-12' was reanalyzed due to surrogates and internal standards outside of control limits. GP24-8'-12'RE was reported. VOC sample GP25-8'-12' was reanalyzed due to surrogates and internal standards outside of control limits. The original analysis of GP25-8'-12' was reported.

The following table lists the sample dilutions performed and reported. Quantitation limits were elevated accordingly.

Sample	Analyses	Dilution Reported
GP22-4'-8'	SVOC	2-fold
GP23-4'-8'	SVOC	2-fold
GP24-0'-4'	SVOC	4-fold
GP25-4'-8'	SVOC	4-fold
GP26-0'-4'	SVOC	2-fold

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Sample	Analyses	Dilution Reported
GP26-8'11'	SVOC	100-fold
GP27-0'-4'	SVOC	5-fold
GP27-4'-8'	SVOC	2-fold
GP27-8'-10'	SVOC	100-fold
GP28-0'-4'	SVOC	5-fold
GP26-8'-11'	VOC	Medium Level
GP27-8'-10'	VOC	Medium Level

The inorganic data were evaluated based on the following parameters:

* Holding Times and Sample Preservation
* Instrument Calibration
NA Contract Required Detection Limit (CRDL) Standard Analysis
* Blank Analysis Results
NA Inductively Coupled Plasma (ICP) Interference Check Sample Results
* Matrix Spike (MS) Results
* Laboratory Duplicate Results
NA Field Duplicate Results
* Laboratory Control Sample (LCS) Results
NA ICP Serial Dilution Results
* Detection Limit Results
* Sample Quantitation

* All criteria were met for this parameter.

NA - Not applicable as ICP analysis was not utilized and a field duplicate pair was not associated with this sample group.

All results were found to be usable.

All criteria were met. No qualifications were required.

Site: Haverstraw, NY
Laboratory: Severn Trent Laboratories, Shelton, CT
Report No.: 7001-2778C
Reviewer: Lorie MacKinnon/GEI Consultants
Date: February 18, 2002

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
GP-29-0'-4'	012778C-01	VOC, SVOC, CN
GP-29-4'-8'	012778C-02	VOC, SVOC, CN
GP-29-8'-12'	012778C-03	VOC, SVOC, CN
HA-ER110501	012778C-04	VOC, SVOC, CN
HA-SS-87A	012778C-05	BTEX, SVOC, CN, WAD CN
HA-SS-87B	012778C-06	BTEX, SVOC, CN, WAD CN
HA-SS-6TA	012778C-07	BTEX, SVOC, CN, WAD CN
HA-SS-6TB	012778C-08	BTEX, SVOC, CN, WAD CN
HA-SS-6TC	012778C-09	BTEX, SVOC, CN, WAD CN
HA-SS-91F	012778C-10	BTEX, SVOC, CN, WAD CN
HA-SS-91B	012778C-11	BTEX, SVOC, CN, WAD CN

ASSOCIATED QC SAMPLE(S): Field Blanks: HA-ER110501
Field Duplicate pair: HA-SS-6TB/HA-SS-6TC

The above listed samples were analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) by CLP SOW OLM04.2, cyanide by method CLP 4.0, and weak acid dissociable cyanide by method 4500CM. The data validation was performed in accordance with the National Functional Guidelines for Evaluating Organic Analyses, EPA 540/R-99/008, dated October 1993 and the National Functional Guidelines for Evaluating Inorganic Analyses, EPA 540/R-94/012, dated February 1994.

The organic data were evaluated based on the following parameters:

* • Holding Times and Sample Preservation
* • Gas Chromatography/Mass Spectrometry (GC/MS) Tunes
• Initial and Continuing Calibrations
• Blanks
* • Surrogate Recoveries
* • Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
* • Internal Standards
• Laboratory Control Sample (LCS) Results
* • Field Duplicate Results
• Sample Quantitation and Reported Quantitation Limits

* • Target Compound Identification

* - All criteria were met.

NA - A field duplicate pair was not associated with this sample group.

All results were found to be usable.

The validation recommendations listed above were based on the following information.

Initial and Continuing Calibrations

Compounds that did not meet criteria in the VOC and SVOC initial and continuing calibrations are summarized in the following table.

Instrument ID HP5970K Compound	IC 11/06/01
acetone	X (57.3%)
Samples Affected	ER110501

Instrument ID HP5971O Compound	IC 11/02/01	CC 11/12/01
acetone	X (53.4%)	
1,1,2-trichloro-1,2,2-trifluoromethane		XX (28.7%)
methyl tert-butyl ether		XX (41.9%)
Samples Affected	All listed	29-0'-4', 29-4'-8', 29-8'-12', HA-SS-87A, HA-SS-87B, HA-SS-6TA, HA-SS-6TB, HA-SS-6TC, HA-SS-91F, and HA-SS-91B

The blank-qualified nondetect results for acetone in samples GP-29-0'-4', GP-29-4'-8', and GP-29-8'-12' were qualified as estimated (UJ3) due to initial calibration nonconformances. The following results were qualified as estimated (J/UJ4) due to continuing calibration nonconformances: 1,1,2-trichloro-1,2,2-trifluoromethane and methyl tert-butyl ether in samples GP-29-0'-4', GP-29-4'-8', GP-29-8'-12', HA-SS-87A, HA-SS-87B, HA-SS-6TA, HA-SS-6TB, HA-SS-6TC, HA-SS-91F, and HA-SS-91B. The direction of the bias cannot be determined from these nonconformances.

No actions were required for acetone due to initial calibration nonconformances in the remaining samples as the results were nondetect. No actions were required for1,1,2-trichloro-1,2,2-

trifluoromethane and methyl tert-butyl ether in samples HA-SS-87A, HA-SS-87B, HA-SS-6TA, HA-SS-6TB, HA-SS-6TC, HA-SS-91F, and HA-SS-91B due to continuing calibration nonconformances as BTEX compounds only were reported.

Instrument ID HP5971Q Compound	IC 11/13/01	CC 11/14/01	CC 11/15/01	CC 11/19/01	CC 11/20/01
benzaldehyde	X (51.1%)	XX (54.1%)	XX (45.0%)		
2,4-dinitrophenol		XX (44.8%)			
benzo(ghi)perylene		XX (25.7%)	XX (26.0%)		
hexachlorocyclopentadiene		XX (46.4%)	XX (33.6%)		
atrazine				XX (33.5%)	XX (25.9%)
Samples Affected	All listed	GP29-8'-12', HA-SS-87B, HA-SS-91B	GP29-0'-4', HA-SS-87A, HA-SS-6TC	HA-SS-91F	GP29-4'-8', HA-SS-6TA, HA-SS-6TB

Instrument ID HP5972S Compound	IC 10/29/01	CC 11/20/01
benzaldehyde	X (40.4%)	XX (36.2%)
indeno(123-cd)pyrene	X (31.4%)	XX (32.7%)
benzo(ghi)perylene	X (36.0%)	XX (37.9%)
dibenz(ah)anthracene		XX (30.8%)
Samples Affected	All listed	HA-ER-110501

X = Initial calibration (IC) relative standard deviation (%RSD) > 30; estimate (J) positive and (UJ) blank-qualified nondetect results.

XX = Continuing calibration (CC) percent difference (%D) > 25; estimate (J/UJ) positive and nondetect results.

+ = Response factor (RRF) < 0.05; Estimate (J) positive results and reject (R) nondetect results.

No actions were required for benzaldehyde, indeno(123-cd)pyrene, and benzo(ghi)perylene due to initial calibration nonconformances as all results were nondetect. The following results were qualified as estimated (J/UJ4) due to continuing calibration nonconformances: benzaldehyde, indeno(123-cd)pyrene, dibenz(ah)anthracene, and benzo(ghi)perylene in sample HA-ER110501; benzaldehyde, hexachlorocyclopentadiene, 2,4-dinitrophenol, and benzo(ghi)perylene in samples GP29-8'-12', HA-SS-87B, and HA-SS-91B; benzaldehyde, hexachlorocyclopentadiene, and benzo(ghi)perylene in samples GP29-0'-4', HA-SS-87A, and HA-SS-6TC; and atrazine in samples HA-SS-91F, GP29-4'-8', HA-SS-6TA, and HA-SS-6TB. The direction of the bias cannot be

determined from these nonconformances.

Blanks

The following table summarizes the method blank contamination in the VOC and SVOC analyses.

Compound	Type of Blank	Maximum Concentration (ug/Kg)	Blank Action Level (ug/Kg)
acetone	Method	11	110
methylene chloride	Method	7	70
bromomethane	Method	2	10
carbon disulfide	Method	0.3	1.5
toluene	Method	0.2	2.0
acetophenone	Method	32	160
benzaldehyde	Method	59	295
diethylphthalate	Field Blank	66	660
phenanthrene	Method	8	40
anthracene	Method	6	30
carbazole	Method	6	30
di-n-butylphthalate	Method	7	70
fluoranthene	Method	6	30
pyrene	Method	9	45
benzo(a)anthracene	Method	6	30
chrysene	Method	6	30
di-n-octylphthalate	Method	8	80
benzo(a)pyrene	Method	14	70
indeno(123-cd)pyrene	Method	8	40
benzo(ghi)perylene	Method	59	295
bis(2-ethylhexyl)phthalate	Method	28	280

QL - Quantitation Limit

Blank Actions

If the sample concentration $\leq$ QL and $\leq$ blank action level, qualify the result as not detected (U6) at the QL.
If the sample concentration > QL and $\leq$ blank action level, qualify the result as not detected (U6) at the reported value.
If the sample concentration > blank action level, report the value unqualified.

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The following tables lists the compound results which were qualified as nondetect (U6) at the reported value or quantitation limit due to method blank contamination.

Compound	29-0'-4'	29-4'-8'	29-8'-12'	SS-87A	SS-87B	SS-6TA	SS-6TB
bromomethane		U6	U6	-	-	-	-
acetone	U6	U6	U6	-	-	-	-
methylene chloride	U6	U6	U6	-	-	-	-
toluene	U6	U6	U6	U6	-	U6	-
acetophenone	U6	-	U6	U6	U6	-	-
diethylphthalate	U6	-	-	-	-	-	-
phenanthrene	-	-	U6	-	-	-	-
anthracene	-	-	U6	-	-	-	-
carbazole	-	-	-	-	U6	-	-
di-n-butylphthalate	U6	-	-	U6	U6	U6	U6
fluoranthene	-	-	U6	-	-	-	-
pyrene	-	-	U6	-	-	-	-
benzo(a)pyrene	-	-	U6	-	-	-	-
benzo(ghi)perylene	-	-	U6	-	-	-	-
bis(2-ethylhexyl)phthalate	U6	-	U6	U6	U6	U6	U6

Compound	SS-6TC	SS-91F	SS-91B
toluene	U6	U6	-
acetophenone	-	-	U6
di-n-butylphthalate	U6	U6	U6
bis(2-ethylhexyl)phthalate	U6	U6	-

- No actions required.

MS/MSD Results

Sample GP-25-0'-4' (2778B) was designated for MS/MSD VOC analyses with this sample set. All criteria were met. A comparison of the results for the unspiked compounds in the sample/MS/MSD was performed. Compound %RSDs were <50%.

The laboratory performed an MS/MSD on sample HA-SS-6TC for the SVOC analyses. Pyrene was recovered outside of control limits, however as the sample level was greater than 4x the spike, no

action was required. A comparison of the results for the unspiked compounds in the sample/MS/MSD was performed. All %RSDs were less than 50%.

LCS Results

The following table lists the VOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS 020 ppbQCS associated with all soil samples and the resultant actions.

Compound	Recovery	Actions
acetone	165%	Estimate (UJ9) blank-qualified nondetect values for samples GP-29-0'-4', GP-29-4'-8', and GP-29'-8'-12'; possible high bias.
2-butanone	155%	Estimate (J9) positive results for 2-butanone in samples GP-29-0'-4', GP-29-4'-8', and GP-29'-8'-12'; possible high bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKQS associated with the rinsate blank ER110501 and the resultant actions.

Compound	Recovery	Actions
hexachlorocyclopentadiene	50%	Estimate (UJ9) nondetect result for hexachlorocyclopentadiene in sample ER110501; possible low bias.
indeno(123-cd)pyrene	142%	No actions required; result nondetect and high bias indicated.
benzo(ghi)perylene	160%	No actions required; result nondetect and high bias indicated.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKPQ associated with all soil samples and the resultant actions.

Compound	Recovery	Actions
2-methylphenol	48%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
4-methylphenol	51%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
hexachloroethane	55%	Estimate (J/UJ9) positive and nondetect results for all soils; possible low bias.
indeno(123-cd)pyrene	154%	Estimate (J9) positive results for indeno(123-cd)pyrene in samples GP-29-0'-4', GP-29-4'-8', HA-SS-87A, HA-SS-87B, HA-SS-6TA, HA-SS-6TB, HA-SS-6TC, HA-SS-91F, and HA-SS-91B; possible high bias.

Compound	Recovery	Actions
benzo(ghi)perylene	146%	Estimate (J9) positive results for benzo(ghi)perylene in samples GP-29-0'-4', GP-29-4'-8', HA-SS-87A, HA-SS-87B, HA-SS-6TA, HA-SS-6TB, HA-SS-6TC, HA-SS-91F, and HA-SS-91B; possible high bias.

Sample Quantitation and Data Assessment

Results were reported which were below the lowest calibration standard level and quantitation limit in the VOC and SVOC analyses. These results were qualified as estimated (J5) by the laboratory.

The following table lists the sample dilutions performed due to high levels of target compounds. Quantitation limits were elevated accordingly.

Sample	Analyses	Dilution Reported
GP29-0'-4'	SVOC	2-fold
GP29-4'-8'	SVOC	20-fold
HA-SS-87A	SVOC	2-fold
HA-SS-6TA	SVOC	5-fold
HA-SS-6TB	SVOC	10-fold
HA-SS-6TC	SVOC	10-fold
HA-SS-91F	SVOC	4-fold

The inorganic data were evaluated based on the following parameters:

* Holding Times and Sample Preservation
* Instrument Calibration
NA Contract Required Detection Limit (CRDL) Standard Analysis
* Blank Analysis Results
NA Inductively Coupled Plasma (ICP) Interference Check Sample Results
* Matrix Spike (MS) Results
* Laboratory Duplicate Results
NA Field Duplicate Results
* Laboratory Control Sample (LCS) Results
NA ICP Serial Dilution Results
* Detection Limit Results
* Sample Quantitation

* All criteria were met for this parameter.

NA - Not applicable as ICP analysis was not utilized and a field duplicate pair was not associated with this sample group.

All results were found to be usable.

All criteria were met. No qualifications were required.

Site:	Haverstraw, NY
Laboratory:	Severn Trent Laboratories, Shelton, CT
Report No.:	7001-1550A
Reviewer:	Lorie MacKinnon/GEI Consultants
Date:	February 12, 2002

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
HA-SB22-20'	011550A-01	Metals, CN, WAD CN
HA-SB22-12'	011550A-02	Metals, CN, WAD CN
HA-SB17-12'	011550A-03	Metals, CN, WAD CN
HA-SB17-14'	011550A-04	Metals, CN, WAD CN
HA-SB17-4'	011550A-05	Metals, CN, WAD CN
HA-SB14-22'	011550A-06	Metals, CN, WAD CN
HA-SB44-22'	011550A-07	Metals, CN, WAD CN
HA-SB14-10'	011550A-08	Metals, CN, WAD CN
HA-MW27-18'	011550A-09	Metals, CN, WAD CN
HA-SB23-22'	011550A-10	Metals, CN, WAD CN
HA-SB17A-28'	011550A-11	Metals, CN, WAD CN
HA-MW24-18'	011550A-12	Metals, CN, WAD CN
HA-SB18-11.5'	011550A-13	Metals, CN, WAD CN
HA-SB18-31'	011550A-14	Metals, CN, WAD CN
HA-ER-DR	011550A-15	Metals, CN, WAD CN
HA-SB16-18'	011550A-16	Metals, CN, WAD CN
HA-SB16-30'	011550A-17	Metals, CN, WAD CN
HA-SB16-36'	011550A-18	Metals, CN, WAD CN
HA-SB25-13'	011550A-19	Metals, CN, WAD CN
HA-SB25-21'	011550A-20	Metals, CN, WAD CN

ASSOCIATED QC SAMPLE(S): Field Blanks: HA-ER-DR
Field Duplicate pairs: HA-SB14-22'/HA-SB44-22'

The above listed samples were analyzed for TAL metals and cyanide by method ILM04.0 and weak acid dissociable cyanide by method 4500CM. The data validation was performed based on the National Functional Guidelines for Evaluating Inorganic Analyses, EPA 540/R-94/012, dated February 1994.

The inorganic data were evaluated based on the following parameters:

Holding Times and Sample Preservation
* Instrument Calibration
Contract Required Detection Limit (CRDL) Standard Analysis

Blank Analysis Results
Inductively Coupled Plasma (ICP) Interference Check Sample Results
Matrix Spike (MS) Results
* Laboratory Duplicate Results
* Field Duplicate Results
Laboratory Control Sample (LCS) Results
ICP Serial Dilution Results
Detection Limit Results
* Sample Quantitation

* All criteria were met for this parameter.

All results were found to be usable.

The validation recommendations listed above were based on the following information.

Holding Times

The free cyanide analysis for samples SB22-20', SB22-12', SB17-12', SB17-14', and SB17-4' was performed one day outside of the required holding time of 14 days. The nondetect results for free cyanide in samples SB22-20', SB22-12', SB17-12', SB17-14', and SB17-4' were qualified as estimated (UJ1) and may be biased low. The total and free cyanide analysis for samples SB18-11.5' and SB18-31' was performed one day outside of the required holding time of 14 days. The nondetect results for free and total cyanide in samples SB18-11.5' and SB18-31' were qualified as estimated (UJ1) and may be biased low.

CRDL Standard Analysis

A CRDL standard was analyzed at 2x the required detection limit for the ICP analyses. The following table lists the analytes which exhibited recoveries outside of the validation control limits of 80 - 120%. Sample results which were less than 3xCRDL were qualified as estimated (J/UJ) dependant on recovery.

Analyte	Recovery (%)	Associated Samples	Actions
Lead	142.2	HA-ER-DR	No actions were required. All results were nondetect; high bias indicated.
Selenium	120.4	HA-ER-DR	No actions were required. All results were nondetect; high bias indicated.
Thallium	121.8, 124.2	HA-ER-DR	No actions were required. All results were nondetect; high bias indicated.

Interference Check Sample Results

Analyte recoveries were within control limits in the ICSAB sample analysis associated with the aqueous analysis with the exception of selenium (79.7%, 75.3%). No action was required as interferent levels in the field blank were less than 50% those in the ICSAB sample.

Analyte recoveries were within control limits in the ICSAB sample analysis associated with the soil analysis.

Positive results were observed for barium, cadmium, chromium, lead, and sodium in the ICSA solution analysis associated with the soil samples. Negative results were observed for cobalt, manganese, and thallium in this analysis. The levels of interferents in the associated samples were reviewed. Iron was present in samples HA-SB17-4 (53%) and HA-SB14-10 (77%) at greater than 50% that of the level in the ICSA solution. The following table lists the calculated possible interferences and the resulting validation actions. Professional judgement was used to accept results in which the estimated interference was less than 10% of the analyte level detected or in which the estimated negative interference for a nondetect result was less than one-half the QL.

Sample	Analyte	Sample Wet Weight Result (mg/kg)	Estimated Interference (mg/kg)	Actions
SB17-4'	Barium	77.3	0.2	No validation action required; interference <10% sample level.
	Cadmium	0.45	1.06	Estimate (J21) positive cadmium result; possible high bias.
	Chromium	13.0	0.2	No validation action required; interference <10% sample level.
	Cobalt	7.0	-0.53	No validation action required; interference <10% sample level.
	Lead	33.1	0.74	No validation action required; interference <10% sample level.
	Manganese	213	-0.42	No validation action required; interference <10% sample level.
	Sodium	73.2 U6	8.1	Estimate (UJ21) blank-qualified nondetect sodium result; possible high bias.
	Thallium	2.0 U	-1.4	Estimate (UJ21) nondetect thallium result; possible low bias.

Sample	Analyte	Sample Wet Weight Result (mg/kg)	Estimated Interference (mg/kg)	Actions
SB14-10'	Barium	134	0.31	No validation action required; interference <10% sample level.
	Cadmium	0.57	1.54	Estimate (J21) positive cadmium result; possible high bias.
	Chromium	18.1	0.31	No validation action required; interference <10% sample level.
	Cobalt	10.9	-0.77	No validation action required; interference <10% sample level.
	Lead	12.3	1.08	No validation action required; interference <10% sample level.
	Manganese	580	-0.62	No validation action required; interference <10% sample level.
	Sodium	97 U6	11.7	Estimate (UJ21) blank-qualified nondetect sodium result; possible high bias.
	Thallium	2.0 U	-2.0	Estimate (UJ21) nondetect thallium result; possible low bias.

Blank Results

The following table summarizes the blank contaminants detected in the laboratory blanks associated with all soil samples and the associated action levels.

Analyte	Action Level
Aluminum	35.9 mg/kg
Antimony	8.0 mg/kg
Beryllium	0.6 mg/kg
Sodium	70.2 mg/kg

The following table summarizes the blank contaminants detected in the field blank HA-ER-DR associated with the soil samples and the associated action levels.

Analyte	Action Level
Calcium	176 mg/kg
Chromium	1.0 mg/kg
Potassium	44.9 mg/kg
Sodium	1910 mg/kg
Zinc	16.8 mg/kg

Qualification of the data was performed as follows:

For positive contamination,

If the positive sample value was > the instrument detection limit (IDL) and < the Action Level, qualify the result as a nondetect (U) at the reported concentration.
If the positive sample value was > the IDL and > the Action Level, report the value unqualified.

The following tables lists the analyte results which were qualified as nondetect (U6) at the reported value due to method blank contamination.

Analyte	SB22-20'	SB22-12'	SB17-12'	SB17-14'	SB17-4'	SB14-22'	SB44-22'
beryllium	U6	U6	U6	U6	-	U6	U6
sodium	-	-	-	-	-	-	-

Analyte	SB14-10'	MW27-18'	SB23-22'	SB17A-28'	MW24-18'	SB18-11.5'	SB18-31'
beryllium	-	U6	U6	U6	U6	U6	U6
sodium	-	-	-	-	-	U6	-

Analyte	SB16-18'	SB16-30'	SB16-36'	SB25-13'	SB25-21'
beryllium	U6	U6	U6	U6	U6
sodium	U6	-	-	-	-

- No actions required.

The following tables lists the analyte results which were qualified as nondetect (U6) at the reported value due to field blank contamination.

Analyte	SB22-20'	SB22-12'	SB17-12'	SB17-14'	SB17-4'	SB14-22'	SB44-22'
sodium	U6	U6	U6	U6	U6	U6	U6

Analyte	SB14-10'	MW27-18'	SB23-22'	SB17A-28'	MW24-18'	SB18-11.5'	SB18-31'
sodium	U6	U6	U6	U6	U6	-	U6

Analyte	SB16-18'	SB16-30'	SB16-36'	SB25-13'	SB25-21'
sodium	-	U6	U6	U6	U6

Matrix Spike Results

A matrix spike was performed on sample HA-SB25-21 for all metals and cyanide. The following table lists the analyte recoveries found outside of control limits of 75-125% and the resultant actions.

Analyte	Recovery	Actions
Antimony	63.4%	Qualify nondetect results for antimony as estimated (UJ8) in all soil samples; possible low bias.

The recoveries for aluminum and iron were outside of the control limits of 75 - 125% in the MS performed on sample HA-SB25-21; however, since sample levels were greater than four times the spiking levels, no validation actions were required.

Laboratory Control Sample Results

The following table lists the analyte recoveries found outside of the aqueous control limits of 80 - 120% for the LCS associated with the aqueous field blank sample and the resultant actions.

Analyte	Recovery	Actions
silver	51.9%	Qualify the nondetect silver result as estimated (UJ9) in sample HA-ER-DR; possible low bias.

Detection Limit Results

Although not a requirement of the National Functional Validation Guidelines, positive results which were ≤2x the IDL were qualified as estimated (J5) due to uncertainty at the low end of calibration. The following results were affected by this qualification: arsenic in samples SB22-20', SB17-12', SB17-14', SB17A-28', MW24-18', SB16-18', SB16-30', and SB16-36'; cadmium in samples SB22-12', SB17-12', MW24-18', SB16-36', and SB25-21'; chromium in sample ER-DR; and potassium in sample ER-DR.

Site:	Haverstraw, NY
Laboratory:	Severn Trent Laboratories, Shelton, CT
Report No.:	7001-1550A
Reviewer:	Lisa McDonagh/GEI Consultants
Date:	February 11, 2002

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
HA-SB22-20'	011550A-01	VOC, SVOC
HA-SB22-12'	011550A-02	VOC, SVOC
HA-SB17-12'	011550A-03	VOC, SVOC
HA-SB17-14'	011550A-04	VOC, SVOC
HA-SB17-4'	011550A-05	VOC, SVOC
HA-SB14-22'	011550A-06	VOC, SVOC
HA-SB44-22'	011550A-07	VOC, SVOC
HA-SB14-10'	011550A-08	VOC, SVOC
HA-MW27-18'	011550A-09	VOC, SVOC
HA-SB23-22'	011550A-10	VOC, SVOC
HA-SB17A-28'	011550A-11	VOC, SVOC
HA-MW24-18'	011550A-12	VOC, SVOC
HA-SB18-11.5'	011550A-13	VOC, SVOC
HA-SB18-31'	011550A-14	VOC, SVOC
HA-ER-DR	011550A-15	VOC, SVOC
HA-SB16-18'	011550A-16	VOC, SVOC
HA-SB16-30'	011550A-17	VOC, SVOC
HA-SB16-36'	011550A-18	VOC, SVOC
HA-SB25-13'	011550A-19	VOC, SVOC
HA-SB25-21'	011550A-20	VOC, SVOC

ASSOCIATED QC SAMPLE(S): Field Blank: HA-ER-DR
Field Duplicate pair: HA-SB14-22'/HA-SB44-22'

The above listed samples were analyzed for volatile organic compounds (VOCs) by NYSDEC CLP Protocols and semivolatile organic compounds (SVOCs) by NYSDEC 95/USEPA CLP OLM3.2. The data validation was performed in accordance with the National Functional Guidelines for Evaluating Organic Analyses, EPA 540/R-94/012, dated February 1993.

The organic data were evaluated based on the following parameters:

	•	Holding Times and Sample Preservation
*	•	Gas Chromatography/Mass Spectrometry (GC/MS) Tunes
	•	Initial and Continuing Calibrations
	•	Blanks
*	•	Surrogate Recoveries
	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
*	•	Internal Standards
	•	Laboratory Control Sample (LCS) Results
*	•	Field Duplicate Results
	•	Sample Quantitation and Reported Quantitation Limits
*	•	Target Compound Identification

* - All criteria were met.

All results were found to be usable.

The validation recommendations listed above were based on the following information.

Holding Times and Sample Preservation

The semivolatile samples HA-SB16-36 was extracted 9 days outside of the required holding time and sample HA-SB25-21 was extracted 8 days outside if the required holding time. Estimate the positive and nondetect results (J1, UJ1) for these samples. Possible low bias.

Initial and Continuing Calibrations

Compounds that did not meet criteria in the VOC and SVOC initial and continuing calibrations are summarized in the following table.

Instrument ID HP5970M Compound	IC 6/18/01	CC 6/26/01	CC 6/27/01
acetone		XX (42.7%)	XX (45.2%)
2-butanone		XX (37.0%)	XX (46.8%)
4-methyl-2-pentanone		XX (38.4%)	XX (35.5%)
2-hexanone		XX (41.2%)	XX (35.3%)

Haverstraw, NY Project 01082

Instrument ID HP5970M Compound	IC 6/18/01	CC 6/26/01	CC 6/27/01
Samples Affected	All listed	HA-SB14-10', HA-SB17-4', HA-SB17-12'	HA-SB18-11.5', HA-SB16-18', HA-ER-DR

Instrument ID HP5971O Compound	IC 6/22/01	CC 6/25/01	CC 6/26/01
vinyl chloride		XX (30.1%)	XX (25.7%)
Samples Affected	All listed	HA-SB22-20', HA-SB22-12', HA-SB17-14', HA-SB14-22', HA-SB44-22'	HA-SB25-21', HA-MW27-18', HA-SB23-22', HA-SB17A-28', HA-SB18-31', HA-MW24-18', HA-SB16-36'

Instrument ID HP5972T Compound	IC 6/15/01	CC 6/29/01
chloromethane		XX (29.9%)
chloroethane		XX (25.4%)
Samples Affected	All listed	HA-SB25-13'

Instrument ID HP5971R Compound	IC 6/28/01	CC 7/6/01
hexachlorocyclopentadiene		XX (28.1%)
pentachlorophenol		XX (30.9%)
Samples Affected	All listed	HA-SB17-4, HA-SB14-10

Instrument ID HP5971R Compound	IC 7/9/01	CC 7/10/01	CC 7/11/01
2,4-dinitrophenol		XX (28.1%)	
indeno(123cd)pyrene		XX (36.0%)	XX (26.6%)
dibenz(ah)anthracene		XX (39.2%)	
benzo(ghi)perylene		XX (36.0%)	XX (33.0%)
Samples Affected	All listed	QC samples	HA-ER-DR

Instrument ID HP5972S Compound	IC 7/3/01	CC 7/16/01	CC 7/17/01	CC 7/18/01
hexachlorocyclopentadiene		XX (27.8%)	XX (26.4%)	XX (31.1%)
indeno(123cd)pyrene		XX (30.6%)		XX (28.0%)
dibenz(ah)anthracene		XX (26.7%)		XX (25.3%)
benzo(ghi)perylene		XX (36.7%)		XX (31.9%)
Samples Affected	All listed	HA-MW27-18, HA-SB23-22, HA-SB17A-28, HA-MW24-18, HA-SB18-31	QC samples	HA-SB18-11.5, HA-SB16-18, HA-SB16-30, HA-SB25-13

X = Initial calibration (IC) relative standard deviation (%RSD) > 30; estimate (J3) positive and (UJ3) blank-qualified nondetect results.

XX = Continuing calibration (CC) percent difference (%D) > 25; estimate (J4/UJ4) positive and nondetect results.

+ = Response factor (RRF) < 0.05; Estimate (J2) positive results and reject (R2) nondetect results.

The positive, blank qualified results and nondetect results for the following samples were qualified as estimated (J4/UJ4) due to continuing nonconformances; acetone, 2-butanone, 4-methyl-2-pentanone and 2-hexanone in samples HA-SB14-10', HA-SB17-4', HA-SB17-12', HA-SB18-11.5', HA-SB16-18' and HA-ER-DR; vinyl chloride in samples HA-SB22-20', HA-SB22-12', HA-SB17-14', HA-SB14-22', HA-SB44-22', HA-SB25-21', HA-MW27-18', HA-SB23-22', HA-SB17A-28', HA-SB18-31', HA-MW24-18' and HA-SB16-36'; chloromethane and chloroethane in sample HA-SB25-13'; hexachlorocyclopentadiene and pentachlorophenol in samples HA-SB17-4' and HA-SB14-10';

indeno(123cd)pyrene and benzo(ghi)perylene in sample HA-ER-DR; hexachlorocyclopentadiene, indeno(123cd)pyrene, dibenz(ah)anthracene and benzo(ghi)perylene in samples HA-MW27-18', HA-SB23-22', HA-SB17A-28', HA-MW24-18', HA-SB18-31', HA-SB18-11.5', HA-SB16-18', HA-SB16-30' and HA-SB25-13'. The direction of the bias cannot be determined from these nonconformances.

Blanks

The following table summarizes the method blank contamination in the VOC and SVOC analyses.

Compound	Type of Blank	Maximum Concentration	Blank Action Level
methylene chloride	Medium Level Method	470 ug/Kg	4700 ug/Kg
acetone	Medium Level Method	790 ug/Kg	7900 ug/Kg
methylene chloride	Low Level Method	5 ug/Kg	50 ug/Kg
carbon disulfide	Low Level Method	1 ug/Kg	5 ug/Kg
toluene	Low Level Method	0.7 ug/Kg	7 ug/Kg
di-n-butylphthalate	Field	2 ug/L	20 ug/L
butylbenzylphthalate	Field	0.2 ug/L	2 ug/L
bis(2-ethylhexyl)phthalate	Method	98 ug/Kg	980 ug/Kg
di-n-octylphthalate	Field	0.3 ug/L	3 ug/L

QL - Quantitation Limit

Blank Actions

If the sample concentration ≤ QL and ≤ blank action level, qualify the result as not detected (U6) at the QL.
If the sample concentration > QL and ≤ blank action level, qualify the result as not detected (U6) at the reported value.
If the sample concentration > blank action level, report the value unqualified.

The following tables lists the compound results which were qualified as nondetect (U6) at the reported value or quantitation limit due to method blank contamination.

Compound	HA-SB22-20'	HA-SB22-12'	HA-SB17-12'	HA-SB17-14'	HA-SB17-4'	HA-SB14-22'	HA-SB44-22'
methylene chloride	U6	U6	U6	U6	U6	U6	U6
acetone	-	-	U6	-	-	-	-
carbon disulfide	U6	-	-	-	-	-	-
toluene	U6	-	-	U6	-	-	-

Haverstraw, NY Project 01082

Compound	HA-SB22-20'	HA-SB22-12'	HA-SB17-12'	HA-SB17-14'	HA-SB17-4'	HA-SB14-22'	HA-SB44-22'
di-n-butylphthalate	-	-	-	U6	-	-	U6
butylbenylphthalate	U6	-	-	U6	-	U6	U6
bis(2-ethylhexyl)phthalate	U6	U6	-	U6	-	U6	U6
di-n-octylphthalate	-	-	-	-	-	-	-

Compound	HA-SB14-10'	HA-SB18-11.5'	HA-SB18-31'	HA-SB16-18'	HA-SB16-30'	HA-SB16-36'	HA-SB25-13'	HA-SB25-21'
methylene chloride	U6	U6	U6	U6	U6	U6	U6	U6
acetone	U6	-	-	U6	-	-	U6	-
carbon disulfide	-	-	-	-	-	-	-	-
toluene	-	-	-	-	-	U6	-	-
di-n-butylphthalate	-	-	-	-	-	-	-	-
butylbenzylphthalate	-	-	U6	-	U6	-	-	-
bis(2-ethylhexyl)phthalate	-	-	U6	-	U6	U6	-	U6
di-n-octylphthalate	-	-	-	-	-	-	-	-

Compound	HA-MW27-18'	HA-SB23-22'	HA-SB17 A-28'	HA-MW24-18'
methylene chloride	U6	U6	U6	U6
acetone	-	-	-	-
carbon disulfide	-	-	-	-
toluene	U6	U6	-	U6
di-n-butylphthalate	-	-	-	-
butylbenzylphthalate	-	-	-	U6
bis(2-ethylhexyl)phthalate	U6	U6	U6	U6

Compound	HA-MW27-18'	HA-SB23-22'	HA-SB17A-28'	HA-MW24-18'
di-n-octylphthalate	-	-	-	-

- No actions required.

MS/MSD Results

The laboratory performed an MS/MSD on sample HA-SB25-21 for the SVOC analyses. The following table lists the compound recoveries found outside of control limits and the resultant actions.

Compound	Recovery	RPD	Control Limits	Actions
2,4-dinitrotoluene	95%	-	28-89	Qualify nondetect (UJ8) result in the unspiked sample.

- Within control limits.

A comparison of the results for the unspiked compounds in the sample/MS/MSD was performed. Compound %RSDs were <50%.

LCS Results

The following table lists the VOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS 020 ppbQCS- O4562 associated with the soil samples HA-SB22-20, HA-SB22-12, HA-SB17-14, HA-SB14-22, HA-SB44-22, HA-SB25-21, HA-MW27-18, HA-SB23-22, HA-SB17A-28, HA-SB18-31, HA-MW24-18, HA-SB16-36 and HA-SB16-30 and the resultant actions.

Compound	Recovery	Actions
acetone	160%	Estimate (J9) positive values and (UJ9) blank qualified values for samples; possible high bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKQR associated with the aqueous sample HA-ER-DR and the resultant actions.

Compound	Recovery	Actions
2-methylphenol	50%	Estimate (J/UJ9) positive and nondetect results for the aqueous sample; possible low bias.
4-methylphenol	50%	Estimate (J/UJ9) positive and nondetect results for the aqueous sample; possible low bias.
2,4-dimethylphenol	18%	Estimate (J/UJ9) positive and nondetect results for the aqueous sample; possible low bias.
hexachlorocyclopentadiene	35%	Estimate (J/UJ9) positive and nondetect results for the aqueous sample; possible low bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKHR associated with the soil samples HA-SB22-20, HA-SB22-12, HA-SB17-14, HA-SB14-22, HA-SB44-22, HA-SB17-12, HA-SB17-4 and HA-SB14-10 and the resultant actions.

Compound	Recovery	Actions
1,3-dichlorobenzene	58%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
2-methylphenol	52%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
4-methylphenol	56%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
hexachlorocyclopentadiene	55%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKOS associated with the soil samples HA-SB18-11.5, HA-SB18-31, HA-SB16-18, HA-SB16-30, HA-SB25-13, HA-MW27-18, HA-SB23-22, HA-SB17A-28 and HA-MW24-18 and the resultant actions.

Compound	Recovery	Actions
1,3-dichlorobenzene	56%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
1,4-dichlorobenzene	58%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
2-methylphenol	50%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
4-methylphenol	52%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
hexachloroethane	57%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
2,4-dimethylphenol	34%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
hexachlorocyclopentadiene	57%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
benzo(ghi)perylene	39%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKRS associated with the soil samples HA-SB16-36 and HA-SB25-21 and the resultant actions.

Compound	Recovery	Actions
1,3-dichlorobenzene	55%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
1,4-dichlorobenzene	57%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.

Compound	Recovery	Actions
1,2-dichlorobenzene	57%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
2-methylphenol	54%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
4-methylphenol	55%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
hexachloroethane	55%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
hexachlorocyclopentadiene	48%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.

Sample Quantitation and Data Assessment

Results were reported which were below the lowest calibration standard level and quantitation limit in the VOC and SVOC analyses. These results were qualified as estimated (J5).

The following table lists the sample dilutions performed and reported. Quantitation limits were elevated accordingly.

Sample	Analyses	Dilution Reported
HA-SB17-12'	SVOC	100-fold
HA-SB17-4'	SVOC	100-fold
HA-SB14-10'	SVOC	100-fold
HA-SB18-11.5'	SVOC	20-fold
HA-SB16-18'	SVOC	20-fold
HA-SB16-30'	SVOC	4-fold
HA-SB25-13'	SVOC	40-fold
HA-SB17-12'	VOC	Medium Level
HA-SB17-4'	VOC	Medium Level
HA-SB14-10'	VOC	Medium Level

Sample	Analyses	Dilution Reported
HA-SB18-11.5'	VOC	Medium Level
HA-SB16-18'	VOC	Medium Level
HA-SB25-13'	VOC	Medium Level

Data Review Cover Sheet

Data Reviewed by: P. Silva Date: 08.21.01

Project Title: OFR Haverstraw Project Number: ~~OH~~ 01082

Laboratory: STL (CT) Laboratory Job Number: 7001-155DA

Chain of Custody - Present and Complete (Y/N): Y
All requested Analyses performed (Y/N): Y
Case Narrative present - (Y/N): Y
All Samples Properly Preserved (Y/N): Y

Laboratory Contacted - (Y/N) N Date:
Laboratory Personnel Contacted:
Subject:

Resolution:

All data review is based on the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analyses (November 1988).

The following footnotes were used to qualify the project data: (Circle footnote letters)

(B) The reported result is attributed to laboratory contamination due to the presence of the chemical in the associated laboratory blank.
(J) The reported result is below the laboratory reporting limit and is therefore estimated.

A The result is estimated due to exceedance of holding times.
C The result is estimated due to surrogate recovery outside of control limits.
D The reporting limit is elevated due to the presence of non-target or target analytes.
E The reporting limit is elevated due to a matrix effect.
F The result is estimated due to matrix spike recovery outside of control limits.
G The result is estimated due to duplicate precision outside of control limits.
H The result is estimated due to internal standard areas outside of control limits.
(K) The result is estimated due to blank spike compound recovery outside of control limits
R The result is rejected due to gross exceedance of _____ criteria.

There were no qualifications. (Circle if applicable)

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Volatile Organics

Sample Prep Method: _____

Analysis Method: 8260B

Category	Criteria		Criteria Met? Y	Criteria Met? N	Problem(s) Encountered		Affected Samples	Data Qualifier
Holding Time & Preservation (from date sampled)	Solid - 14 d , MeOH AQ – 14 d - HCL AQ – 7d (unpreserved)		X					
Surrogate Recovery	Surrogate	Rec Limits	X					
	12-DCEd4	76-114						
	4-BFB	86-115						
	Tol-d8	88-110						
Method Blank	All non-detect			X	Analyte Detected Methylene Chloride (6) Acetone (2) Carbon Disulfide (3) Toluene (4)	Blank Action Lvl	HA-SB22-20 (6)(2) HA-SB22-12 (6) HA-SB17-14 (6) HA-SB44-22 (6) HA-SB44-22 (1) HA-SB27-18 (6) HA-SB23-22 (6) HA-MW24-18 (6)	B
Trip Blanks	All non-detect		—		Analyte Detected	Blank Action Lvl	HA-SB16-36 (6)(2) HA-SB16-30 (1) HA-SB18-11.5 (1)	
Field or Lab Duplicates	50% RPD-solid 30% RPD - AQ		—					
Reporting limits	Reporting limits			X	estimated : J		all samples affected by at least one of *	J
Lab Control STD (LCS)	Control limits 80-120			X	Rec. for six analytes above rec limits		ALL (SEE Sample data summary)	J
Matrix Spike Rec. HA-SB25-21	Control limits		X					
Matrix Spike RPD			X					

Comments: * Methylene Chloride, Carbon Disulfide, Trichloroethene, Toluene, Xylene (total), Ethylbenzene, Benzene, Chloroform, Styrene, Acetone, Bromoform, Bromodichloromethane

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Semivolatile Organics

Sample Prep Method: _____

Analysis Method: 8270C

Category	Criteria	Criteria Met? Yes	Criteria Met? No	Problem(s) Encountered	Affected Samples	Data Qualifier
Holding Time & Preservation (from collect date)	Solid - 14 d , 4 degrees AQ – 7 d , 4 degrees	X				
Surrogate Recovery	Surrogate / Rec Limits: 2-FPh 24-119 Ph-d6 25-121 2,4,6-TBP 19-122 NB-d5 23-120 2-FB 30-115 p-TP-d14 18-137		X	SURR. diluted out	HA-SB17-12 HA-SB14-10 HA-SB17-4	–
Method Blank	All non-detect		X	Analyte Detected / Blank Action Lvl: Diethylph ① Bis(2eh)ph ②	HA-ER-BR ①② HA-SB22-20 ② HA-SB22-12 ③ HA-SB14-22 ④ HA-SB44-22 ⑤ ~~HA-SB44-20~~ HA-SB23-22 HA-MW24-15 HA-SB16-30	B
Field Duplicates Lab	50% RPD-solid 30% RPD - AQ				AA-SB16-30 HA-SB25-21	
Reporting limits	Quantitation limits		X	estimated J		
Lab Control STD (LCS)	Control limits		X	2,4-Dimethylphenol REC. below cc limits	(QR) HR, OS 2 M	J
Matrix Spike/MSD HA-SB25-21	Control limits	X		2,4-Dinitrotoluene REC. above limit	HASB25-21	–
TICs		–				

Comments: Diethylphthalate, Di-n-butylphthalate, Butylbenzylphthalate, bis(2-ethylhexyl)phthalate, Di-n-octylphthalate, Naphthalene, Acenaphthylene, Acenaphthene, Phenanthrene, Anthracene, Fluorene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Benzo(g,h,i,)perylene, Dibenzofuran, Dibenz(a,h)anthracene

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Metals

Category	Criteria	Criteria Met?		Problems Encountered	Affected Samples	Data Qualifier
		Yes	No			
Target Metals	Method					
TAL Metals	6010/7471					
		X				
Preservation Holding Time (from collection)	HNO3 (aq) 180 days 28 days – Mercury	X				
Method Blank	All non-detect		X	Al detected in all Blks	all	B
Field Duplicates Lab Replicate	50% RPD –solid 30% RPD -AQ	X				
Reporting limits	Quantitation limits	X				
Lab Control STD	80 – 120 % Recovery	X				
Matrix Spike/Dup HA-SB25-21A	Within Control limits 75-125%	X				
Serial Dilution		→				

Comments:

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Inorganics/Wet Chemistry

Category	Criteria	Criteria Met?		Problems Encountered	Affected Samples	Data Qualifier
		Yes	No			
Parameter Cyanide Free & Total	Method	X				
Holding Time (from collection) Preservation		X				
Method Blank	All Non-detect	X				
Field Duplicates (Lab)	50% RPD –solid 30% RPD -AQ	X				
Reporting limits	Quantitation limits	X				
Lab Control STD	70 – 130 % Recovery	X				
Matrix Spike/Dup AA-SB25-21	70-130 % Recovery	X				
Other QC		—				

Comments:

SEVERN TRENT SERVICES

STL Connecticut

SAMPLE DATA SUMMARY PACKAGE

Client:	GEI/ATLANTIC ENVIRONMENTAL
Project ID:	O&R HAVERSTRAW
SDG #:	A1550
STL ID:	7001-1550A

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		*VOA GC/MS Method #	*BNA GC/MS Method #	*VOA GC Method #	*Pest PCBs Method #	*Metals	*Other
EA-SB22-20	011550A-01	X	X			X	
EA-SB22-12	011550A-02	X	X			X	
EA-SB17-12	011550A-03	X	X			X	
EA-SB17-14	011550A-04	X	X			X	
EA-SB17-4	011550A-05	X	X			X	
EA-SB14-22	011550A-06	X	X			X	
EA-SB44-22	011550A-07	X	X			X	
EA-SB14-10	011550A-08	X	X			X	
EA-MW27-18	011550A-09	X	X			X	
EA-SB23-22	011550A-10	X	X			X	
EA-MW7A-28	011550A-11	X	X			X	
EA-MW24-18	011550A-12	X	X			X	
EA-SB18-11.5	011550A-13	X	X			X	
EA-SB18-31	011550A-14	X	X			X	
EA-ER-DR	011550A-15	X	X			X	
EA-SB16-18	011550A-16	X	X			X	
EA-SB16-30	011550A-17	X	X			X	
EA-SB16-36	011550A-18	X	X			X	
EA-SB25-13	011550A-19	X	X			X	
EA-SB25-21	011550A-20	X	X			X	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		*VOA GC/MS Method #	*BNA GC/MS Method #	*VOA GC Method #	*Pest PCBs Method #	*Metals	*Other
EA-SB25-21	011550A-20D					X	
EA-SB25-21	011550A-20MS	X	X				
EA-SB25-21	011550A-20MSB	X	X				
EA-SB25-21	011550A-20MSD	X	X				
EA-SB25-21	011550A-20S					X	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
011550A-01	SOIL	06/18/01	06/19/01	N/A	06/25/01
011550A-02	SOIL	06/18/01	06/19/01		↓
011550A-03	SOIL	06/18/01	06/19/01		06/26/01
011550A-04	SOIL	06/18/01	06/19/01		06/25/01
011550A-05	SOIL	06/18/01	06/19/01		06/26/01
011550A-06	SOIL	06/18/01	06/19/01		06/25/01
011550A-07	SOIL	06/18/01	06/19/01		↓
011550A-08	SOIL	06/18/01	06/19/01		06/26/01
011550A-09	SOIL	06/21/01	06/22/01		06/26/01
011550A-10	SOIL	06/21/01	06/22/01		↓
011550A-11	SOIL	06/22/01	06/22/01		↓
011550A-12	SOIL	06/22/01	06/22/01		↓
011550A-13	SOIL	06/19/01	06/22/01		06/27/01
011550A-14	SOIL	06/19/01	06/22/01		06/26/01
011550A-15	WATER	06/21/01	06/22/01		06/27/01
011550A-16	SOIL	06/20/01	06/22/01		↓
011550A-17	SOIL	06/20/01	06/22/01		06/27/01
011550A-18	SOIL	06/20/01	06/22/01		06/26/01
011550A-19	SOIL	06/21/01	06/22/01		06/29/01
011550A-20	SOIL	06/21/01	06/22/01	↓	06/26/01

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
SEMIVOLATILE (BNA)
ANALYSES

LABORATORY SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILIARY CLEANUP	DIL/CONC FACTOR
011550A-01	SOIL	NCLP 3.2	SONC	GPC	1.0
011550A-02	SOIL	↓	↓	↓	1.0
011550A-03	SOIL				100.0
011550A-04	SOIL				1.0
011550A-05	SOIL				100.0
011550A-06	SOIL				1.0
011550A-07	SOIL				1.0
011550A-08	SOIL				100.0
011550A-09	SOIL				1.0
011550A-10	SOIL				1.0
011550A-11	SOIL				1.0
011550A-12	SOIL				1.0
011550A-13	SOIL				20.0
011550A-14	SOIL		↓	↓	1.0
011550A-15	WATER		CONT	NA	1.0
011550A-16	SOIL		SONC	GPC	20.0
011550A-17	SOIL		↓	↓	4.0
011550A-18	SOIL				1.0
011550A-19	SOIL				40.0
011550A-20	SOIL				1.0
011550A-20MS, MSD, MSB	SOIL	↓	↓	↓	1.0, 1.0, 1.0

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
SEMIVOLATILE (BNA)
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
011550A-01	SOIL	06/18/01	06/19/01	6-22-01	7-3-01
011550A-02	SOIL	06/18/01	06/19/01	↓	↓
011550A-03	SOIL	06/18/01	06/19/01	↓	7-5-01
011550A-04	SOIL	06/18/01	06/19/01	↓	7-3-01
011550A-05	SOIL	06/18/01	06/19/01	↓	7-6-01
011550A-06	SOIL	06/19/01	06/19/01	↓	7-3-01
011550A-07	SOIL	06/19/01	06/19/01	↓	7-3-01
011550A-08	SOIL	06/19/01	06/19/01	↓	7-6-01
011550A-09	SOIL	06/21/01	06/22/01	6-27-01	7-16-01
011550A-10	SOIL	06/21/01	06/22/01	↓	7-16-01
011550A-11	SOIL	06/22/01	06/22/01	↓	7-16-01
011550A-12	SOIL	06/22/01	06/22/01	↓	7-16-01
011550A-13	SOIL	06/19/01	06/22/01	↓	7-18-01
011550A-14	SOIL	06/19/01	06/22/01	↓	7-16-01
011550A-15	WATER	06/21/01	06/22/01	6-27-01	7-11-01
011550A-16	SOIL	06/20/01	06/22/01	↓	7-18-01
011550A-17	SOIL	06/20/01	06/22/01	↓	7-18-01
011550A-18	SOIL	06/20/01	06/22/01	7-13-01	7-24-01
011550A-19	SOIL	06/21/01	06/22/01	6-27-01	7-18-01
011550A-20	SOIL	06/21/01	06/22/01	7-13-01	7-24-01
011550A-20MS, MSD, MB	↓	↓	↓	6-27-01	7-17, 7-17, 7-16-01

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSES

Laboratory Sample ID	Matrix	Metals Requested	Date Rec'd at Lab	Date Analyzed
011550A-01	SOIL	MET-NCLP4.0-TAL	06/19/01	7/9/01
011550A-02	SOIL	MET-NCLP4.0-TAL	06/19/01	
011550A-03	SOIL	MET-NCLP4.0-TAL	06/19/01	
011550A-04	SOIL	MET-NCLP4.0-TAL	06/19/01	
011550A-05	SOIL	MET-NCLP4.0-TAL	06/19/01	
011550A-06	SOIL	MET-NCLP4.0-TAL	06/19/01	
011550A-07	SOIL	MET-NCLP4.0-TAL	06/19/01	
011550A-08	SOIL	MET-NCLP4.0-TAL	06/19/01	
011550A-09	SOIL	MET-NCLP4.0-TAL	06/22/01	
011550A-10	SOIL	MET-NCLP4.0-TAL	06/22/01	
011550A-11	SOIL	MET-NCLP4.0-TAL	06/22/01	
011550A-12	SOIL	MET-NCLP4.0-TAL	06/22/01	
011550A-13	SOIL	MET-NCLP4.0-TAL	06/22/01	
011550A-14	SOIL	MET-NCLP4.0-TAL	06/22/01	
011550A-15	WATER	MET-NCLP4.0-TAL	06/22/	
011550A-16	SOIL	MET-NCLP4.0-TAL	06/22/01	
011550A-17	SOIL	MET-NCLP4.0-TAL	06/22/01	
011550A-18	SOIL	MET-NCLP4.0-TAL	06/22/01	
011550A-19	SOIL	MET-NCLP4.0-TAL	06/22/01	
011550A-20	SOIL	MET-NCLP4.0-TAL	06/22/01	

7001-1550A
GEI/ATLANTIC ENVIRONMENTAL

Case Narrative

Sample Receipt – All samples were received in good condition and at the proper temperature.

Volatile Organics – Volatile organics were determined by purge and trap GC/MS using NYSDEC CLP Protocols. The instrumentation used was a Tekmar Model 2000/2016 Concentrator/Archon 4552 autosampler interfaced with a Hewlett-Packard Model 5970A/5972A GC/MS/DS.

Sample Calculation:

Sample ID – HA-SB16-30
Compound – Acetone

$$\frac{(21969)(250)}{(110809)(.824)(1.52)(.87)} = 45.5 = 45 \text{ UG/KG.}$$

Sample HA-SB16-30 was analyzed at a 1:4 dilution due to high target chromatography.

The following samples were analyzed as medium level soils due to high target compound concentrations:

HA-SB14-10	1:2
HA-SB17-4	1:2
HA-SB17-12	1:5
HA-SB18-11.5	1:2
HA-SB16-18	1:5
HA-SB25-13	1:250

Metals – ICAP metals were determined using a JA61E trace ICAP; mercury was determined by cold vapor technique using a Leeman Labs mercury analyzer; following guidance provided in SW846 according to methods: ICAP – 3010A, 3050B/6010B; mercury-7470A, 7471A.

Antimony failed the controls for spike recovery analysis of sample HA-SB25-21 resulting in one "N" flag.

No other problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for the samples analyzed in this SDG. No analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
Cyanide – Total	9012	1
Cyanide – Free	4500-CN I	2

References:

1. Test Methods for the Evaluation of Solid Wastes, SW846, 3rd ed., 1986.
2. Standard Methods for the Examination of Water and Wastewater, 18th edition, 1992.

Semi-Volatile Organics - Semi-volatile organic samples were extracted and analyzed according toNYSDEC '95/USEPA CLP OLM3.2 by capillary GC/MS. The instrumentation used was a Hewlett-Packard gas chromatograph interfaced with a mass selective detector using an RTX-5 30 meter column with 0.25 mm ID and 0.5 um film thickness.

Due to the implementation of an electronic pressure controlled method a secondary ion (63) was used for the quantitation of Bis(2-chloroethyl)ether. A non-target compound, aniline (quant ion 93), was determined to coelute with Bis(2-chloroethyl)ether with this new method. Quantitation using the secondary ion ensures correct integration and quantitation of both compounds.

Samples HA-SB16-36 and HA-SB25-21 were lost on the GPC. The samples were reextracted eleven days out of holding time. The QC for samples HA-SB25-21 were extracted and analyzed within holding time.

Sample SBLKRSFMS had one surrogate out of recovery criteria, but within CLP protocol acceptance criteria.

The spike recovery for the compound, 2,4-dinitrotoluene, was outside recovery limits for HA-SB25-21MS.

The spike recovery for 2,4-dimethylphenol was below recovery limits in SBLKOSFMS, SBLKQRFMS and SBLKHRFMS.

The following samples were analyzed at dilutions due to the presence of high levels of target compounds:

HA-SB17-12	1:100
HA-SB17-4	1:100
HA-SB14-10	1:100
HA-SB18-11.5	1:20
HA-SB16-18	1:20
HA-SB16-30	1:4
HA-SB25-13	1:40

Sample Calculation:

Sample ID – HA-SB17-14
Compound - acenaphthene

$$\frac{(419254)(40)(500)(1)(2)}{(1176223)(.972)(2)(30.9)(.85)} = 279 = 280\text{ug/kg}$$

Site: Haverstraw, NY
Laboratory: Severn Trent Laboratories, Shelton, CT
Report No.: 7001-2860A
Reviewer: Lorie MacKinnon/GEI Consultants
Date: February 15, 2002

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
MW-21-8'-10'	012860A-01	Metals, CN, WAD CN
MW-21-20'-22'	012860A-02	Metals, CN, WAD CN
MW-20-10'	012860A-03	Metals, CN, WAD CN
MW-20-25.5'	012860A-04	Metals, CN, WAD CN
MW-28-30'	012860A-05	Metals, CN, WAD CN
MW-29-29'	012860A-06	Metals, CN, WAD CN
MW-28-8'-10'	012860A-07	Metals, CN, WAD CN
MW-38-18'-20'	012860A-08	Metals, CN, WAD CN
HA-ER-11-29	012860A-09	Metals, CN, WAD CN
HA-BSS01-1	012860A-12	CN, WAD CN
HA-BSS01-2	012860A-13	CN, WAD CN
HA-BSS01-3	012860A-14	CN, WAD CN
HA-BSS01-4	012860A-15	CN, WAD CN
HA-BSS01-5	012860A-16	CN, WAD CN
HA-BSS01-6	012860A-17	CN, WAD CN
HA-ER-SSOIL	012860A-18	CN, WAD CN

ASSOCIATED QC SAMPLE(S): Field Blanks: HA-ER-11-29, HA-ER-SSOIL
Field Duplicate pairs: MW-28-8'-10'/MW-38-18'-20'

The above listed samples were analyzed for TAL metals and cyanide by method ILM04.0 and weak acid dissociable cyanide by method 4500CM. The data validation was performed based on the National Functional Guidelines for Evaluating Inorganic Analyses, EPA 540/R-94/012, dated February 1994.

The inorganic data were evaluated based on the following parameters:

* Holding Times and Sample Preservation
* Instrument Calibration
  Contract Required Detection Limit (CRDL) Standard Analysis
  Blank Analysis Results
  Inductively Coupled Plasma (ICP) Interference Check Sample Results
  Matrix Spike (MS) Results
* Laboratory Duplicate Results

Field Duplicate Results
Laboratory Control Sample (LCS) Results
ICP Serial Dilution Results
Detection Limit Results
* Sample Quantitation

* All criteria were met for this parameter.

All results were found to be usable.

The validation recommendations listed above were based on the following information.

CRDL Standard Analysis

A CRDL standard was analyzed at 2x the required detection limit for the ICP analyses. The following table lists the analytes which exhibited recoveries outside of the validation control limits of 80 - 120%. Sample results which were less than 3xCRDL were qualified as estimated (J/UJ) dependent on the recovery.

Analyte	Recovery (%)	Associated Samples	Actions
Lead	122	HA-ER-11-29	No actions were required. All results were nondetect; high bias indicated.
Selenium	51.1, 66.1	HA-ER-11-29	Qualify nondetect selenium result for sample ER-11-29 as estimated (UJ14); possible low bias.
Thallium	68.9	HA-ER-11-29	Qualify nondetect thallium result for sample ER-11-29 as estimated (UJ14); possible low bias.
Lead	126.3	Soil samples	No actions were required. All results were detected above the affected range.
Thallium	123.3	Soil samples	No actions were required. All results were nondetect; high bias indicated.

Blank Results

The following table summarizes the blank contaminants detected in the laboratory blanks associated with all soil samples and the associated action levels.

Analyte	Action Level
Aluminum	95.5 mg/kg
Beryllium	1.4 mg/kg

Analyte	Action Level
Calcium	43.6 mg/kg
Sodium	98.1 mg/kg
Zinc	4.9 mg/kg

The following table summarizes the blank contaminants detected in the field blank sample HA-ER-11-29 associated with the following soil samples, MW-21-8'-10', MW-21-20'-22', MW-20-10', MW-20-25.5', MW-28-30', MW-29-29', MW-28-8'-10', and MW-38-18'-20' and the associated action levels.

Analyte	Action Level
Aluminum	156 mg/kg
Barium	1.2 mg/kg
Calcium	42.1 mg/kg
Iron	33.0 mg/kg
Magnesium	25.0 mg/kg
Sodium	70.8 mg/kg

Target analytes were not detected in the field blank HA-ER-SSOIL associated with the following soil samples, BSS01-1, BSS01-2, BSS01-3, BSS01-4, BSS01-5, and BSS01-6.

Qualification of the data was performed as follows:

For positive contamination,

If the positive sample value was > the instrument detection limit (IDL) and < the Action Level, qualify the result as a nondetect (U) at the reported concentration.
If the positive sample value was > the IDL and > the Action Level, report the value unqualified.

The following tables lists the analyte results which were qualified as nondetect (U6) at the reported value due to method blank contamination.

Analyte	MW21-8'-10'	MW21-20'-22'	MW20-10'	MW20-25.5'	MW28-30'	MW29-29'
beryllium	U6	U6	U6	U6	U6	U6

Analyte	MW28-8'-10'	MW38-18'-20'
beryllium	U6	U6

- No actions required.

Based on the field blank action levels determined, qualifications were not required due to field blank contamination detected.

Interference Check Sample Results

Analyte recoveries were within control limits in the ICSAB sample analysis.

Positive results were observed for cadmium and sodium in the ICSA solution analysis associated with the soil samples. Negative results were observed for cobalt, manganese, and thallium in this analysis. The levels of interferents in the associated samples were reviewed. Iron was present in samples MW-21-8'-10' (94%), MW-21-20'-22' (58%), MW-20-10' (63%), MW-28-8'-10' (57%), and MW-38-18'-20' (50%) at greater than 50% that of the level in the ICSA solution. The following table lists the calculated possible interferences and the resulting validation actions. Professional judgement was used to accept results in which the estimated interference was less than 10% of the analyte level detected or in which the estimated negative interference for a nondetect result was less than one-half the QL.

Sample	Analyte	Sample Wet Weight Result (mg/kg)	Estimated Interference (mg/kg)	Actions
MW21-8'-10'	Cadmium	0.16 U	0.56	No validation action required; results nondetect.
	Cobalt	12.6	-0.75	No validation action required; interference <10% sample level.
	Manganese	583	-0.75	No validation action required; interference <10% sample level.
	Sodium	192	10.3	No validation action required; interference <10% sample level.
	Thallium	2.0 U	-2.1	Estimate (UJ21) nondetect thallium result; possible low bias.
MW21-20'-22'	Cadmium	0.16 U	0.34	No validation action required; results nondetect.
	Cobalt	6.77	-0.46	No validation action required; interference <10% sample level.
	Manganese	382	-0.46	No validation action required; interference <10% sample level.
	Sodium	148	6.4	No validation action required; interference <10% sample level.
	Thallium	2.0 U	-1.28	Estimate (UJ21) nondetect thallium result; possible low bias.

Sample	Analyte	Sample Wet Weight Result (mg/kg)	Estimated Interference (mg/kg)	Actions
MW20-10'	Cadmium	0.16 U	0.38	No validation action required; results nondetect.
	Cobalt	6.2	-0.50	No validation action required; interference <10% sample level.
	Manganese	174	-0.50	No validation action required; interference <10% sample level.
	Sodium	141	6.9	No validation action required; interference <10% sample level.
	Thallium	2.0 U	-1.4	Estimate (UJ21) nondetect thallium result; possible low bias.
MW28-8'-10'	Cadmium	0.16 U	0.34	No validation action required; results nondetect.
	Cobalt	6.7	-0.46	No validation action required; interference <10% sample level.
	Manganese	287	-0.46	No validation action required; interference <10% sample level.
	Sodium	117	6.3	No validation action required; interference <10% sample level.
	Thallium	2.0 U	-1.25	Estimate (UJ21) nondetect thallium result; possible low bias.
MW-38-18'-20'	Cadmium	0.16 U	0.29	No validation action required; results nondetect.
	Cobalt	5.1	-0.38	No validation action required; interference <10% sample level.
	Manganese	239	-0.38	No validation action required; interference <10% sample level.
	Sodium	110	5.3	No validation action required; interference <10% sample level.
	Thallium	2.0 U	-1.06	Estimate (UJ21) nondetect thallium result; possible low bias.

Matrix Spike Results

A matrix spike was performed on sample MW-28-30' for all metals and cyanide. A cyanide matrix spike was also performed on sample BSS01-2. The following table lists the analyte recoveries found outside of control limits of 75-125% and the resultant actions.

Analyte	Recovery	Actions
Antimony	56.2%	Qualify nondetect results for antimony as estimated (UJ8) in all soil samples; possible low bias.
Cadmium	74.1%	Qualify nondetect results for cadmium as estimated (UJ8) in all soil samples; possible low bias.
Lead	65.2%	Qualify positive results for lead as estimated (J8) in all soil samples; possible low bias.

Analyte	Recovery	Actions
Manganese	254.3%	Qualify positive manganese results as estimated (J8) for all soil samples; possible high bias.
Selenium	134.7%	Quality positive selenium results as estimated (J8) for samples MW28-8'10', and MW38-18'-20'; possible high bias.

The recoveries for aluminum, mercury, and iron were outside of the control limits of 75 - 125% in the MS performed on sample MW-28-30'; however, since sample levels were greater than four times the spiking levels, no validation actions were required.

A matrix spike analysis was not associated with the aqueous analysis. No action was taken on this basis as the associated sample was a field blank.

Laboratory Control Sample Results

The following table lists the analyte recoveries found outside of the aqueous control limits of 80 - 120% for the LCS associated with the aqueous samples and the resultant actions.

Analyte	Recovery	Actions
silver	45.4%	Qualify the nondetect silver result as estimated (UJ9) in sample HA-ER-11-29.

Field Duplicate Results

The field duplicate pair of MW-28-8'-10' and MW-38-18'-20' was identified. The following table lists the %RPDs found outside of the control limit of 50% and the resultant actions. The direction of the bias cannot be determined by this nonconformance.

Analyte	RPD (%)	Actions
Aluminum	51.9	Estimate (J10) the positive results for aluminum in samples MW-28-8'-10' and MW-38-18'-20'.
Barium	52.8	Estimate (J10) the positive results for barium in samples MW-28-8'-10' and MW-38-18'-20'.
Mercury	70.6	Estimate (J10) the positive results for mercury in samples MW-28-8'-10' and MW-38-18'-20'.

ICP Serial Dilution Results

An ICP serial dilution analysis was performed on soil sample MW-38-18'-20'. The following table lists the analyte %Ds found above the control limit 10% and the resultant actions.

Analyte	-%D	Actions
Potassium	18.5%	Quality positive potassium results as estimated (J19) for all soil samples.

Detection Limit Results

Although not a requirement of the National Functional Validation Guidelines, positive results which were ≤2x the IDL were qualified as estimated (J5) due to uncertainty at the low end of calibration. The following results were affected by this qualification: arsenic in sample MW-29-29' and magnesium in sample ER-11-29.

The laboratory incorrectly reported the detection limit for thallium in all samples. The validator edited the nondetect thallium results.

Site: Haverstraw, NY
Laboratory: Severn Trent Laboratories, Shelton, CT
Report No.: 7001-1930A
Reviewer: Lisa McDonagh/GEI Consultants
Date: February 13, 2002

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
MW21-8-10'	012860A-01	VOC, SVOC
MW21-20-22'	012860A-02	VOC, SVOC
MW20-10'	012860A-03	VOC, SVOC
MW20-25.5'	012860A-04	VOC, SVOC
MW28-30'	012860A-05	VOC, SVOC
MW29-29'	012860A-06	VOC, SVOC
MW28-8-10'	012860A-07	VOC, SVOC
MW38-18-20'	012860A-08	VOC, SVOC
HA-ER-11-29	012860A-09	VOC, SVOC
93B-MW1	012860A-10	VOC, SVOC
93B-MW2	012860A-11	VOC, SVOC
HA-BSS01-1	012860A-12	VOC1, SVOC
HA-BSS01-2	012860A-13	VOC1, SVOC
HA-BSS01-3	012860A-14	VOC1, SVOC
HA-BSS01-4	012860A-15	VOC1, SVOC
HA-BSS01-5	012860A-16	VOC1, SVOC
HA-BSS01-6	012860A-17	VOC1, SVOC
HA-ER-SSOIL	012860A-18	VOC1, SVOC

VOC1 BTEX

ASSOCIATED QC SAMPLE(S): Field Blanks: HA-ER-11-29, HA-ERR-SSOIL
Field Duplicate pair: MW28-8-10'/MW38-18-20'

The above listed samples were analyzed for volatile organic compounds (VOCs) by NYSDEC CLP Protocols and semivolatile organic compounds (SVOCs) by NYSDEC 95/USEPA CLP OLM4.2. The data validation was performed in accordance with the National Functional Guidelines for Evaluating Organic Analyses, EPA 540/R-94/012, dated February 1993.

The organic data were evaluated based on the following parameters:

*	•	Holding Times and Sample Preservation
*	•	Gas Chromatography/Mass Spectrometry (GC/MS) Tunes
	•	Initial and Continuing Calibrations
	•	Blanks
*	•	Surrogate Recoveries
	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
*	•	Internal Standards
	•	Laboratory Control Sample (LCS) Results
	•	Field Duplicate Results
	•	Sample Quantitation and Reported Quantitation Limits
*	•	Target Compound Identification

* - All criteria were met.

All results were found to be usable with the exception of benzoic acid in sample 93B-MW-1 which was rejected due to poor recovery in the laboratory spike.

The validation recommendations listed above were based on the following information.

Initial and Continuing Calibrations

Compounds that did not meet criteria in the VOC and SVOC initial and continuing calibrations are summarized in the following table.

Instrument ID HP5971O Compound	IC 11/29/01	CC 12/5/01	CC 12/6/01
chloromethane		XX (34.0%)	XX (26.4%)
vinyl chloride		XX (32.4%)	XX (25.7%)
methylene chloride	X (34.1%)		
acetone	X (37.2%)		
carbon disulfide		XX (44.3%)	XX (40.6%)
1,1-dichloroethene		XX (26.3%)	

Instrument ID HP5971O Compound	IC 11/29/01	CC 12/5/01	CC 12/6/01
trans-1,2-dichloroethene		XX (34.1%)	XX (32.4%)
vinyl acetate		XX (30.3%)	XX (31.9%)
Samples Affected	All listed	MW21-20-22', MW20-25.5', MW28-30', MW29-29', HA-BSS01-1, HA-BSS01-2, HA-BSS01-3, HA-BSS01-4, HA-BSS01-5, HA-BSS01-6	MW21-8-10'

Instrument ID HP5971N Compound	IC 11/27/01	CC 12/5/01	CC 12/6/01
carbon tetrachloride		XX (26.2%)	XX (30.8%)
dichlorodifluoromethane		XX (60.2%)	
Samples Affected	All listed	HA-ER-11-29, 93B-MW2, 93B-MW1	MW20-10', MW38-18-20', MW28-8-10', HA-ER-SSOIL

Instrument ID HP5971R Compound	IC 11/27/01	CC 12/6/01
hexachlorocyclopentadiene	X (43.9%)	
4-nitroaniline		XX (26.4%)
benzidine		XX (59.0%)
Samples Affected	All listed	93B-MW1, 93B-MW2

Instrument ID **HP5972S** **Compound**	**IC** **12/17/01**	**CC** **12/18/01**	**CC** **12/18/01**	**CC** **12/19/01**
benzaldehyde	X (61.3%)		XX (30.4%)	XX (48.5%)
hexachlorocyclopentadiene	X (31.0%)	XX (46.0%)	XX (37.5%)	XX (50.0%)
4-nitrophenol				XX (30.9%)
benzo(k)fluoranthene				XX (25.9%)
Samples Affected	All listed	MW21-8-10', MW21-20-22', MW20-25.5', MW28-30'	HA-ER-11-29, HA-ER-SSOIL, MW29-29', HA-BSS01-1, HA-BSS01-2, HA-BSS01-6	MW38-18-20', HA-BSS01-3, HA-BSS01-4, HA-BSS01-5, MW28-8-10', MW20-10'

X = Initial calibration (IC) relative standard deviation (%RSD) > 30; estimate (J) positive and (UJ) blank-qualified nondetect results.

XX = Continuing calibration (CC) percent difference (%D) > 25; estimate (J/UJ) positive and nondetect results.

+ = Response factor (RRF) < 0.05; Estimate (J) positive results and reject (R) nondetect results.

The positive and/or blank qualified results for methylene chloride and acetone in the soil samples MW21-20-22', MW20-25.5', MW28-30', MW29-29', HA-BSS01-1, HA-BSS01-2, HA-BSS01-3, HA-BSS01-4, HA-BSS01-5, HA-BSS01-6 and MW21-8-10' and hexachlorocyclopentadiene in samples 93B-MW1 and 93B-MW2 were qualified as estimated (J3/UJ3) due to initial nonconformances. The positive, blank qualified results and/or nondetect results for the following samples were qualified as estimated (J4/UJ4) due to continuing nonconformances; chloromethane, vinyl chloride, carbon disulfide, 1,1-dichloroethene, trans-1,2-dichloroethene and vinyl acetate in samples MW21-20-22', MW20-25.5', MW28-30', MW29-29', HA-BSS01-1, HA-BSS01-2, HA-BSS01-3, HA-BSS01-4, HA-BSS01-5 and HA-BSS01-6 ; chloromethane, vinyl chloride, carbon disulfide, trans-1,2-dichloroethene and vinyl acetate in sample MW21-8-10'; carbon tetrachloride and dichlorodifluoromethane in samples HA-ER-11-29, 93B-MW1 and 93B-MW1'; carbon tetrachloride in samples MW20-10', MW38-18-20', MW28-8-10' and HA-ER-SSOIL'; 4-nitroaniline and benzidine in samples 93B-MW1 and 93B-MW2;. The direction of the bias cannot be determined from these nonconformances.

Blanks

The following table summarizes the method blank contamination in the VOC and SVOC analyses.

Compound	Type of Blank	Maximum Concentration (ug/Kg)	Blank Action Level (ug/Kg)
methylene chloride	Low Level Method	4	40
acetone	Low Level Method	12	120
carbon disulfide	Low Level Method	0.3	1.5
2-hexanone	Low Level Method	5	25
benzaldehyde	Method	96	480
acetophenone	Method	14	70
bis(2-ethylhexyl)phthalate	Method	53	530

QL - Quantitation Limit

Blank Actions

If the sample concentration $\leq$ QL and $\leq$ blank action level, qualify the result as not detected (U6) at the QL.
If the sample concentration > QL and $\leq$ blank action level, qualify the result as not detected (U6) at the reported value.
If the sample concentration > blank action level, report the value unqualified.

The following tables lists the compound results which were qualified as nondetect (U6) at the reported value or quantitation limit due to method blank contamination.

Compound	MW21-8-10'	MW21-20-22'	MW20-25.5'	MW28-30'	MW29-29'
methylene chloride	U6	U6	U6	U6	U6
acetone	U6	U6	U6	U6	U6
carbon disulfide	U6	U6	-	-	-
2-hexanone	-	-	-	-	-
benzaldehyde	-	-	-	-	-
acetophenone	U6	-	-	-	-
bis(2-ethylhexyl)phthalate	U6	U6	U6	U6	U6

Compound	MW28-8-10'	MW38-18-20'	HA-BSS01-1	HA-BSS01-2	HA-BSS01-3	HA-BSS01-4
methylene chloride	-	-	-	-	-	-
acetone	-	-	-	-	-	-
carbon disulfide	-	-	-	-	-	-
2-hexanone	-	-	-	-	-	-
benzaldehyde	-	-	-	-	-	-
acetophenone	-	-	-	-	U6	U6
bis(2-ethylhexyl)phthalate	-	-	U6	U6	U6	U6

Compound	HA-BSS01-5	HA-BSS01-6
methylene chloride	U6	U6
acetone	U6	U6
carbon disulfide	U6	U6
2-hexanone	-	-
benzaldehyde	-	-
acetophenone	U6	-
bis(2-ethylhexyl)phthalate	U6	U6

- No actions required.

MS/MSD Results

The laboratory performed an MS/MSD on sample HA-BSS01-2 for the SVOC analyses. The following table lists the compound recoveries found outside of control limits and the resultant actions.

Compound	Recovery	RPD	Control Limits	Actions
pyrene	-, 17%	120	35-142%, <36	Qualify positive result (J8) in the unspiked sample.

A comparison of the results for the unspiked compounds in the sample/MS/MSD was performed. Compound %RSDs were <50%.

- Within control limits.

LCS Results

The following table lists the VOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS 020 ppbQCS (O6080) associated with the soil samples: MW21-20-22', MW20-25.5', MW28-30' and MW29-29' and the resultant actions.

Compound	Recovery	Actions
methylene chloride	155%	Estimate (J9) positive results for the associated soil samples; possible high bias.
vinyl acetate	20%	Estimate (J/UJ9) positive and nondetect results for the associated soil samples; possible low bias.
trichlorofluoromethane	150%	Estimate (J9) positive results for the associated soil samples; possible high bias.
acrolein	55%	Estimate (J/UJ9) positive and nondetect results for the associated soil samples; possible low bias.

The following table lists the VOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS 020 ppbQCS (O6101) associated with the soil sample: MW21-8-10' and the resultant actions.

Compound	Recovery	Actions
acetone	145%	Estimate (J9) positive results for the associated soil samples; possible high bias.
vinyl acetate	20%	Estimate (J/UJ9) positive and nondetect results for the associated soil samples; possible low bias.
trichlorofluoromethane	150%	Estimate (J9) positive results for the associated soil samples; possible high bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKF1 associated with aqueous samples 93B-MW1 and 93B-MW2 and the resultant actions.

Compound	Recovery	Actions
phenol	35%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
2-methylphenol	50%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
4-methylphenol	50%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
benzoic acid	0%	Estimate (J9/R9) positive and reject nondetect results for the aqueous samples; possible low bias.
hexachlorocyclopentadiene	42%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
4-nitrophenol	48%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKPS associated with the soil samples MW21-8-10', MW21-20-22', MW20-10', MW20-25.5', MW28-30', MW29-29', MW28-8-10', MW38-18-20', HA-BSS01-1, HA-BSS01-2, HA-BSS01-3, HA-BSS01-4, HA-BSS01-5 and HA-BSS01-6 and the resultant actions.

Compound	Recovery	Actions
phenol	58%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
bis(2-chloroethyl)ether	52%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
2-methylphenol	42%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
2,2'-oxybis(1-chloropropane)	52%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
4-methylphenol	45%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
N-Nitroso-di-n-propylamine	59%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
hexachloroethane	43%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
bis(2-chloroethoxy)methane	55%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
4-chloroaniline	56%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
hexachlorobutadiene	58%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
hexachlorocyclopentadiene	43%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
245-trichlorophenol	58%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.
3,3'-dichlorobenzidine	50%	Estimate (J/UJ9) positive and nondetect results for the soil samples; possible low bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS SBLKNS associated with the aqueous samples HA-ER-11-29 and HA-ER-SSOIL and the resultant actions.

Compound	Recovery	Actions
2-methylphenol	58%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
4-methylphenol	55%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
2,4-dimethylphenol	35%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.
hexachlorocyclopentadiene	35%	Estimate (J/UJ9) positive and nondetect results for the aqueous samples; possible low bias.

Field Duplicate Results

Samples MW28-8-10' and MW38-18-20' were submitted as a field duplicate pair with this sample group. The following table lists the RPDs which were outside of control limits in the comparison of field duplicate results and the resulting validation actions.

Compound	Sample conc. (µg/kg)	Duplicate conc. (µg/kg)	RPD (%)	Control Limits	Action
naphthalene	1,200,000	710,000	51	RPD <50	Estimate (J10) positive results in field duplicate pair.
2-methylnaphthalene	820,000	430,000	62	RPD <50	Estimate (J10) positive results in field duplicate pair.
phenanthrene	940,000	520,000	57	RPD <50	Estimate (J10) positive results in field duplicate pair.
anthracene	340,000	190,000	57	RPD <50	Estimate (J10) positive results in field duplicate pair.
pyrene	590,000	310,000	62	RPD <50	Estimate (J10) positive results in field duplicate pair.

Sample Quantitation and Data Assessment

Results were reported which were below the lowest calibration standard level and quantitation limit in the VOC and SVOC analyses. These results were qualified as estimated (J5).

The following table lists the sample dilutions performed and reported. Quantitation limits were elevated accordingly.

Sample	Analyses	Dilution Reported
MW20-10'	SVOC	50-fold
MW28-8-10'	SVOC	200-fold
MW38-18-20'	SVOC	100-fold
HA-BSS01-1	SVOC	2-fold
HA-BSS01-2	SVOC	2-fold

Sample	Analyses	Dilution Reported
HA-BSS01-3	SVOC	2-fold
HA-BSS01-4	SVOC	2-fold
HA-BSS01-5	SVOC	2-fold
MW20-10'	VOC	Medium Level
MW28-8-10'	VOC	Medium Level
MW38-18-20'	VOC	Medium Level
93B-MW1	VOC	10-fold

Site: Haverstraw, NY
Laboratory: Severn Trent Laboratories, Shelton, CT
Report No.: 200484
Reviewer: Lorie MacKinnon/GEI Consultants
Date: March 13, 2002

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
SWOUT013002-1	200484-01	VOC, SVOC, CN, WAD CN, hardness, pH, TOC
SW013102-1	200484-02	VOC, SVOC, CN, WAD CN, hardness, pH, TOC
SW013102-5	200484-03	VOC, SVOC, CN, WAD CN, hardness, pH, TOC
SW013102-6	200484-04	VOC, SVOC, CN, WAD CN, hardness, pH, TOC
SW013102-8	200484-05	VOC, SVOC, CN, WAD CN, hardness, pH, TOC
TB	200484-06	VOC
EB013102-1	200484-07	VOC, SVOC, CN, WAD CN, hardness, pH, TOC
SD013102-2	200484-08	VOC, SVOC, CN, WAD CN, hardness, pH, TOC
SD013102-3	200484-09	VOC, SVOC, CN, WAD CN, hardness, pH, TOC
SD013102-4	200484-10	VOC, SVOC, CN, WAD CN, hardness, pH, TOC
SD013102-6	200484-11	VOC, SVOC, CN, WAD CN, hardness, pH, TOC

ASSOCIATED QC SAMPLE(S): Field Blanks: TB, EB013102-1
Field Duplicate pair: SW013102-6/SW013102-8

The above listed samples were analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) by CLP SOW OLM04.2, hardness by method 2340B, cyanide by method CLP 4.0, weak acid dissociable cyanide by standard methods method 4500CN, TOC by SW-846 method 9060, and pH by EPA method 150.1 and SW-846 method 9045C. The data validation was performed in accordance with the National Functional Guidelines for Evaluating Organic Analyses, EPA 540/R-99/008, dated October 1993 and the National Functional Guidelines for Evaluating Inorganic Analyses, EPA 540/R-94/012, dated February 1994.

It should be noted that the cooler temperature was measured at 10 degrees Celsius at the time of laboratory receipt. No action was taken, as the samples were delivered to the laboratory on the day of sampling.

The organic data were evaluated based on the following parameters:

- Holding Times and Sample Preservation
- * Gas Chromatography/Mass Spectrometry (GC/MS) Tunes
- Initial and Continuing Calibrations
- Blanks
- * Surrogate Recoveries
- * Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results

* • Internal Standards
  • Laboratory Control Sample (LCS) Results
* • Field Duplicate Results
  • Sample Quantitation and Reported Quantitation Limits
* • Target Compound Identification

* - All criteria were met.

All results were found to be usable.

The validation recommendations listed above were based on the following information.

Holding Times and Sample Preservation

It was noted on the laboratory's sample receipt checklist that headspace was observed in the volatile samples SWOUT013002-1, SW013102-6, and SW013102-8. The positive and nondetect volatile results for samples SWOUT013002-1, SW013102-6, and SW013102-8 were qualified as estimated (J/UJ1). Results may be biased low.

Initial and Continuing Calibrations

Compounds that did not meet criteria in the VOC and SVOC initial and continuing calibrations are summarized in the following table.

Instrument ID MSN Compound	IC 02/01/02	CC 02/05/02
acetone		XX (26.0%)
2-hexanone	X (30.2%)	XX (43.7%)
Samples Affected	All listed	SWOUT013002-1, SW013102-1, SW013102-5, SW013102-6, SW013102-8, TB, EB013102-1

Instrument ID MSN Compound	IC 02/01/02	CC 02/05/02
acetone	X (75.3%)	XX (46.2%)
chloromethane		XX (26.9%)
2-hexanone	X (38.8%)	XX (27.3%)
Samples Affected	All listed	SD013102-2, SD013102-3, SD013102-4, SD013102-6

Instrument ID MSS Compound	IC 02/07/02	CC 02/08/02
benzaldehyde	X (49.2%)	XX (42.6%)
atrazine		XX (29.1%)
Samples Affected	All listed	SWOUT013002-1, SW013102-1, SW013102-5, SW013102-6, SW013102-8, EB013102-1, SD013102-2

Instrument ID MSS Compound	IC 02/14/02	CC 02/18/02
benzaldehyde	X (59.9%)	XX (73.4%)
Samples Affected	All listed	SD013102-3, SD013102-4, SD013102-6

X = Initial calibration (IC) relative standard deviation (%RSD) > 30; estimate (J) positive and (UJ) blank-qualified nondetect results.
XX = Continuing calibration (CC) percent difference (%D) > 25; estimate (J/UJ) positive and nondetect results.
+ = Response factor (RRF) < 0.05; Estimate (J) positive results and reject (R) nondetect results.

The blank-qualified nondetect results for acetone in samples SD013102-2, SD013102-3, SD013102-4, and SD013102-6 and the positive result for benzaldehyde in sample SW013102-1 were qualified as estimated (J/UJ3) due to initial calibration nonconformances.

The following results were qualified as estimated (J/UJ4) due to continuing calibration nonconformances: 2-hexanone and acetone in samples SWOUT013002-1, SW013102-1, SW013102-5, SW013102-6, SW013102-8, TB, and EB013102-1; acetone, 2-hexanone, and chloromethane in samples SD013102-2, SD013102-3, SD013102-4, and SD013102-6; benzaldehyde and atrazine in samples SWOUT013002-1, SW013102-1, SW013102-5, SW013102-6, SW013102-8, EB013102-1, and SD013102-2; and benzaldehyde in samples SD013102-3, SD013102-4, and SD013102-6. The direction of the bias cannot be determined from these nonconformances.

Blanks

The following table summarizes the method and field blank contamination in the VOC and SVOC analyses .

Compound	Type of Blank	Maximum Concentration	Blank Action Level
acetone	Trip blank	10 ug/L, equivalent 10 ug/kg	SOIL 100 ug/kg
acetone	Trip blank	10 ug/L	AQUEOUS 100 ug/L
methylene chloride	Rinsate EB013102-1	5 ug/L, equivalent 5 ug/kg	SOIL 50 ug/kg
methylene chloride	Rinsate EB013102-1	5 ug/L	AQUEOUS 50 ug/L
bis(2-ethylhexyl)phthalate	Method	60.3 ug/kg	SOIL 603 ug/kg
bis(2-ethylhexyl)phthalate	Method	6.79 ug/L	AQUEOUS 67.9 ug/L
caprolactam	Rinsate EB013102-1	1 ug/L, equivalent 33 ug/kg	SOIL 165 ug/kg
caprolactam	Rinsate EB013102-1	1 ug/L	AQUEOUS 5 ug/L

Blank Actions

If the sample concentration $\leq$ QL and $\leq$ blank action level, qualify the result as not detected (U6) at the QL.
If the sample concentration > QL and $\leq$ blank action level, qualify the result as not detected (U6) at the reported value.
If the sample concentration > blank action level, report the value unqualified.

The following tables lists the compound results which were qualified as nondetect (U6) at the reported value or quantitation limit due to method and field blank contamination.

Compound	SWOUT013002-1	SW013102-1	SW013102-5	SW013102-6	SW013102-8
acetone	U6	U6	U6	U6	U6
methylene chloride	U6	U6	U6	U6	U6
bis(2-ethylhexyl)phthalate	-	U6	U6	-	U6

Compound	SD013102-2	SD013102-3	SD013102-4	SD013102-6
acetone	U6	U6	U6	U6
methylene chloride	U6	U6	U6	U6
bis(2-ethylhexyl)phthalate	-	U6		-

- No actions required.

MS/MSD Results

The laboratory submitted batch QC for the volatile MS/MSD analyses. All criteria were met. The laboratory did not submit semivolatile MS/MSD information. No validation action was taken, since semivolatile blank spike information was included.

Haverstraw, NY Project 01082

LCS Results

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS associated with all soil samples and the resultant actions.

Compound	Recovery	Actions
bis(2-chloroethyl)ether	58%	Estimate (J/UJ9) positive and nondetect bis(2-chloroethyl)ether results for all soils; possible low bias.
2,2'-oxybis(1-chloropropane)	55%	Estimate (J/UJ9) positive and nondetect 2,2'-oxybis(1-chloropropane) results for all soils; possible low bias.
2-methylphenol	45%	Estimate (J/UJ9) positive and nondetect 2-methylphenol results for all soils; possible low bias.
4-methylphenol	47%	Estimate (J/UJ9) positive and nondetect 4-methylphenol results for all soils; possible low bias.
hexachloroethane	51%	Estimate (J/UJ9) positive and nondetect hexachloroethane results for all soils; possible low bias.
2,4-dimethylphenol	53%	Estimate (J/UJ9) positive and nondetect 2,4-dimethylphenol results for all soils; possible low bias.
hexachlorocyclopentadiene	49%	Estimate (J/UJ9) positive and nondetect hexachlorocyclopentadiene results for all soils; possible low bias.
2,4,5-trichlorophenol	52%	Estimate (J/UJ9) positive and nondetect 2,4,5-trichlorophenol results for all soils; possible low bias.

The following table lists the SVOC compound recoveries found outside of the validation control limits of 60 - 140% for the LCS associated with all aqueous samples and the resultant actions.

Compound	Recovery	Actions
2-methylphenol	55%	Estimate (J/UJ9) positive and nondetect 2-methylphenol results for all waters; possible low bias.
4-methylphenol	56%	Estimate (J/UJ9) positive and nondetect 4-methylphenol results for all waters; possible low bias.
2,4-dimethylphenol	44%	Estimate (J/UJ9) positive and nondetect 2,4-dimethylphenol results for all waters; possible low bias.
hexachlorocyclopentadiene	43%	Estimate (J/UJ9) positive and nondetect hexachlorocyclopentadiene results for all waters; possible low bias.
2,4,5-trichlorophenol	56%	Estimate (J/UJ9) positive and nondetect 2,4,5-trichlorophenol results for all waters; possible low bias.

Field Duplicate Results

The field duplicate pair of SW013102-6 and SW013102-8 was associated with the aqueous samples in this sample group. All criteria were met. A soil field duplicate pair was not associated with this sample group.

Sample Quantitation and Data Assessment

Results were reported which were below the lowest calibration standard level and quantitation limit in the VOC and SVOC analyses. These results were qualified as estimated (J5) by the laboratory.

The following table lists the sample dilutions performed and reported. Quantitation limits were elevated accordingly.

Sample	Analyses	Dilution Reported
SD013102-3	SVOC	4-fold
SD013102-6	SVOC	10-fold

The inorganic data were evaluated based on the following parameters:

Holding Times and Sample Preservation
* Instrument Calibration
Blank Analysis Results
* Matrix Spike (MS) Results
* Laboratory Duplicate Results
* Field Duplicate Results
* Laboratory Control Sample (LCS) Results
Detection Limit Results
* Sample Quantitation

* All criteria were met for this parameter.

All results were found to be usable.

Holding Times and Sample Preservation

The pH analysis for sample SWOUT013002-1 was performed one day outside of the required holding time of one day. The pH result for sample SWOUT013002-1 was qualified as estimated (J1).

Blanks

The following table summarizes the field blank contamination in the inorganic analyses. Contamination was not detected in any method blanks.

Compound	Type of Blank	Maximum Concentration	Blank Action Level
TOC	Rinsate EB013102-1	14 mg/L	Aqueous 70 mg/L
cyanide	Rinsate EB013102-1	3.3 ug/L, 165 ug/kg	Aqueous 16.5 ug/L, Soil 825 ug/kg
hardness	Rinsate EB013102-1	37.8 mg/L	189 mg/L

Blank Actions

If the sample concentration > QL and ≤ blank action level, qualify the result as not detected (U6) at the reported value.
If the sample concentration > blank action level, report the value unqualified.

The following tables lists the compound results which were qualified as nondetect (U6) at the reported value or quantitation limit due to method and field blank contamination.

Compound	SWOUT013002-1	SW013102-1	SW013102-5	SW013102-6	SW013102-8
TOC	U6	U6	U6	U6	U6
Cyanide	-	-	U6	-	-

Compound	SD013102-2	SD013102-3	SD013102-4	SD013102-6
TOC	-	-	-	-
Cyanide	-	U6	-	-

- No actions required.

Matrix Spike Results

The laboratory performed a matrix spike for cyanide on aqueous sample SWOUT013002-1 and soil sample SD013102-4. The laboratory performed a matrix spike for TOC on soil sample SD013102-6. Batch QC was submitted for the aqueous TOC MS analysis. All criteria were met.

Laboratory Duplicate Results

The laboratory performed a laboratory duplicate analysis for cyanide on aqueous sample SWOUT013002-1 and soil sample SD013102-4. The laboratory performed a laboratory duplicate analysis for TOC on soil sample SD013102-6. Batch QC was submitted for the aqueous TOC laboratory duplicate analysis. The laboratory performed a laboratory duplicate analysis for pH on

aqueous sample SWOUT013002-1 and soil sample SD013102-2. All criteria were met.

Field Duplicate Results

The field duplicate pair of SW013102-6 and SW013102-8 was associated with the aqueous samples in this sample group. All criteria were met. A soil field duplicate pair was not associated with this sample group.

Detection Limit Results

Although not a requirement of the National Functional Validation Guidelines, positive results which were ≤2x the IDL were qualified as estimated (J5) due to uncertainty at the low end of calibration. The following results were affected by this qualification: cyanide in sample EB013102-1.

Data Review Cover Sheet

Data Reviewed by: P. Silva Date: 07.31.01

Project Title: O & R Haverstraw Project Number: 01053

Laboratory: STL (CT) Laboratory Job Number: 7001-169SA

Chain of Custody - Present and Complete (Y/N): Y
All requested Analyses performed (Y/N): Y
Case Narrative present - (Y/N): Y
All Samples Properly Preserved (Y/N): Y

Laboratory Contacted - (Y/N) N Date:
Laboratory Personnel Contacted:
Subject:

Resolution:

All data review is based on the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analyses (November 1988).

The following footnotes were used to qualify the project data: (Circle footnote letters)

(B) The reported result is attributed to laboratory contamination due to the presence of the chemical in the associated laboratory blank.
J The reported result is below the laboratory reporting limit and is therefore estimated.

A The result is estimated due to exceedance of holding times.
(C) The result is estimated due to surrogate recovery outside of control limits.
D The reporting limit is elevated due to the presence of non-target or target analytes.
E The reporting limit is elevated due to a matrix effect.
(F) The result is estimated due to matrix spike recovery outside of control limits.
G The result is estimated due to duplicate precision outside of control limits.
H The result is estimated due to internal standard areas outside of control limits.
I The result is estimated due to blank spike compound recovery outside of control limits
R The result is rejected due to gross exceedance of _____ criteria.

There were no qualifications. (Circle if applicable)

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Volatile Organics

Sample Prep Method: _____

Analysis Method: 8260 B

Category	Criteria		Criteria Met? Y	Criteria Met? N	Problem(s) Encountered		Affected Samples	Data Qualifier
Holding Time & Preservation (from date sampled)	Solid - 14 d , MeOH AQ – 14 d - HCL AQ – 7d (unpreserved)		X					
Surrogate Recovery	Surrogate	Rec Limits		X	1,2-DCE-d4 REC. ~~low~~ outside (1) 4-BFB REC. outside (4) Tol-d8 REC outside (5)		GP01-12-16 REs (4) GP01-16-20 LL (4) GP01-R-16 ~~(4)(5)~~ GP02-12-16 (4)(5)	C
	12-DCEd4	76-114						
	4-BFB	86-117						
	Tol-d8	88-110						
Method Blank	All non-detect			X	Analyte Detected	Blank Action Lvl	all sample RES effected by at least one of these	B
					Acetone	90 (4x)		
					MeCl2	60		
					~~Tetrachloroethene~~	~~5.0~~		
Trip Blanks	All non-detect		—		Analyte Detected	Blank Action Lvl		
Field or Lab Duplicates	50% RPD-solid 30% RPD - AQ		—					
Reporting limits	Reporting limits		X					
Lab Control STD (LCS)	Control limits 80-120		X					
Matrix Spike Rec. GP02-8-12	Control limits		X					
Matrix Spike RPD			X					

Comments: _____

_____

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form
Semivolatile Organics

Sample Prep Method: _____
Analysis Method: E27cc

Category	Criteria	Criteria Met? Yes	Criteria Met? No	Problem(s) Encountered	Affected Samples	Data Qualifier
Holding Time & Preservation (from collect date)	Solid - 14 d, 4 degrees AQ - 7 d, 4 degrees	X		ERGP1 + ERGP2 one day out of NYSDEC hold	none	
Surrogate Recovery	Surrogate / Rec Limits: 2-FPh 21-110 Ph-d6 10-110 2,4,6-TBP 10-123 NB-d5 35-114 2-FB 43-116 p-TP-d14 33-141	X				
Method Blank	All non-detect		X	Analyte Detected / Blank Action Lvl: Naphthalene 390 2-Methylnaphth 220	GP-04-12-16 GP64-12-16 GP04-4-8 GP04-8-10 GP03-0-4 GP03-4-8 GP03-12-16	B
Field Duplicates Lab	50% RPD-solid 30% RPD - AQ	—			GP03-16-18 GP02-4-8 GP02-8-12	
Reporting limits	Quantitation limits	X				
Lab Control STD (LCS)	Control limits	X				
Matrix Spike/MSD GP02-8-12	Control limits		X	REC for N-Nitroso-di-n-prop below limits ~~RPD for~~	GP02-8-12	F
~~TBs~~ Rinsate Blank		—				

Comments: Rinsate Blank for ERGP2 had 0.3 ppb naphthalene (none in MB) AL concentration ACTION level uncertain, but another ~~FB~~ RINSATE in 1694ADSB6 also had naphthalene, so likely site-related (cross-contamination). AL = 0.3 ug/L x 330 = 1 ppm

Φ GEI Consultants, Inc.
Tier 2 Data Quality Review Form
Inorganics/Wet Chemistry

Category	Criteria	Criteria Met?		Problems Encountered	Affected Samples	Data Qualifier
		Yes	No			
Parameter	Method					
Cyanide	SW846 - CN-4500	X				
Holding Time (from collection) Preservation		X				
Method Blank	All Non-detect	X				
Field Duplicates (Lab)	50% RPD –solid 30% RPD -AQ	X			GP02-S-12	
Reporting limits	Quantitation limits	X				
Lab Control STD	70 – 130 % Recovery	X				
Matrix Spike/Dup GP02-S-12	70-130 % Recovery	X				
Other QC		—				

Comments:

Data Review Cover Sheet

Data Reviewed by: D. Silva Date: 07-30-01 07-31-01

Project Title: D & R Haverstraw Project Number: 01082

Laboratory: STL (CT) Laboratory Job Number: 7001-1695B

Chain of Custody - Present and Complete (Y/N): Y
All requested Analyses performed (Y/N): Y
Case Narrative present - (Y/N): Y
All Samples Properly Preserved (Y/N): Y

Laboratory Contacted - (Y/N) N Date:
Laboratory Personnel Contacted:
Subject:

Resolution:

All data review is based on the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analyses (November 1988).

The following footnotes were used to qualify the project data: (Circle footnote letters)

(B) The reported result is attributed to laboratory contamination due to the presence of the chemical in the associated laboratory blank.
J The reported result is below the laboratory reporting limit and is therefore estimated.

A The result is estimated due to exceedance of holding times.
C The result is estimated due to surrogate recovery outside of control limits.
D The reporting limit is elevated due to the presence of non-target or target analytes.
E The reporting limit is elevated due to a matrix effect.
(F) The result is estimated due to matrix spike recovery outside of control limits.
G The result is estimated due to duplicate precision outside of control limits.
H The result is estimated due to internal standard areas outside of control limits.
(L) The result is estimated due to blank spike compound recovery outside of control limits
R The result is rejected due to gross exceedance of _____ criteria.

There were no qualifications. (Circle if applicable)

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Volatile Organics

Sample Prep Method: _____

Analysis Method: 8260B

Category	Criteria		Criteria Met? Y	Criteria Met? N	Problem(s) Encountered		Affected Samples	Data Qualifier
Holding Time & Preservation (from date sampled)	Solid - 14 d , MeOH AQ – 14 d - HCL AQ – 7d (unpreserved)		X					
Surrogate Recovery	Surrogate	Rec Limits	X					
	12-DCEd4	70-121						
	4-BFB	59-113						
	Tol-d8	84-138						
Method Blank	All non-detect			X	Analyte Detected	Blank Action Lvl	all samples are affected by at least one of these analytes	B
					1,1,2 TC, 1,2,2 TFE	6 3.0		
					Acetone	~~20~~ 26000		
					$MeCl_2$	~~200~~ 3600		
					~~1,2,4-TCB~~	~~4.5~~		
Trip Blanks	All non-detect		—		Analyte Detected	Blank Action Lvl		
Field or Lab Duplicates	50% RPD-solid 30% RPD - AQ		—					
Reporting limits	Reporting limits		X					
Lab Control STD (LCS)	Control limits 80-120		X					
Matrix Spike Rec. GP07A - 13	Control limits		X					
Matrix Spike RPD			X					

Comments: _____

_____

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Semivolatile Organics

Sample Prep Method: _____

Analysis Method: 8270C

Category	Criteria	Criteria Met? Yes	Criteria Met? No	Problem(s) Encountered	Affected Samples	Data Qualifier
Holding Time & Preservation (from collect date)	Solid - 14 d , 4 degrees AQ – 7 d , 4 degrees	Y				
Surrogate Recovery	Surrogate / Rec Limits: 2-FPh 25-121 Ph-d6 24-113 2,4,6-TBP 19-122 NB-d5 23-120 2-FB 30-115 p-TP-d14 18-137	X				
Method Blank	All non-detect		X	Analyte Detected / Blank Action Lvl: Benzaldehyde 3100 Di-n-butylphth 60 bis(2-e/h)phth 190	all samples are effected by at least one compound	B
Field Duplicates Lab	50% RPD-solid 30% RPD - AQ	—				
Reporting limits	Quantitation limits	X				
Lab Control STD (LCS)	Control limits		X	4-Nitrophenol REC above limits	all	K
Matrix Spike/MSD GP07A-13	Control limits		X	RPD for Acenaphthene the above limits	GP07A-13	F
TICs		—				

Comments: _____

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Φ GEI Consultants, Inc.
Tier 2 Data Quality Review Form
Inorganics/Wet Chemistry

Category	Criteria	Criteria Met?		Problems Encountered	Affected Samples	Data Qualifier
		Yes	No			
Parameter	Method	X				
Cyanide	SW846 - 4500-CN					
Holding Time (from collection) Preservation		X				
Method Blank	All Non-detect	X				
Field Duplicates (Lab)	50% RPD –solid 30% RPD -AQ	X			GP07A-13	
Reporting limits	Quantitation limits	X				
Lab Control STD	70 – 130 % Recovery	X				
Matrix Spike/Dup GP07A-13	70-130 % Recovery	X				
Other QC						

Comments:

Data Review Cover Sheet

Data Reviewed by: P. Silva Date: 04-01-01

Project Title: O&P Haverstraw Project Number: 01082

Laboratory: STL (CT) Laboratory Job Number: 7001-1695C

Chain of Custody - Present and Complete (Y/N): ~~Y~~ N

All requested Analyses performed (Y/N): Y

Case Narrative present - (Y/N): Y

All Samples Properly Preserved (Y/N): ~~Y~~ Y

Laboratory Contacted - (Y/N) ~~Y~~ N Date:

Laboratory Personnel Contacted:

Subject:

Resolution:

All data review is based on the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analyses (November 1988).

The following footnotes were used to qualify the project data: (Circle footnote letters)

(B) The reported result is attributed to laboratory contamination due to the presence of the chemical in the associated laboratory blank.

J The reported result is below the laboratory reporting limit and is therefore estimated.

A The result is estimated due to exceedance of holding times.

(C) The result is estimated due to surrogate recovery outside of control limits.

D The reporting limit is elevated due to the presence of non-target or target analytes.

E The reporting limit is elevated due to a matrix effect.

(F) The result is estimated due to matrix spike recovery outside of control limits.

G The result is estimated due to duplicate precision outside of control limits.

H The result is estimated due to internal standard areas outside of control limits.

(K) The result is estimated due to blank spike compound recovery outside of control limits

R The result is rejected due to gross exceedance of _____ criteria.

There were no qualifications. (Circle if applicable)

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Volatile Organics

Sample Prep Method: _____

Analysis Method: 8260B

Category	Criteria		Criteria Met? Y	Criteria Met? N	Problem(s) Encountered		Affected Samples	Data Qualifier
Holding Time & Preservation (from date sampled)	Solid - 14 d , MeOH AQ – 14 d - HCL AQ – 7d (unpreserved)		X					
Surrogate Recovery	Surrogate	Rec Limits		X	Tol-d8 & 4-BFB Rec outside limits		GP13-12-14 RE	C
	12-DCEd4	70-121						
	4-BFB	59-113						
	Tol-d8	84-138						
Method Blank	All non-detect			X	Analyte Detected	Blank Action Lvl	all samples affected by at least one of these compounds	B
					Acetone	360		
					MeCl2	2600		
Trip Blanks	All non-detect		—		Analyte Detected	Blank Action Lvl		
Field or Lab Duplicates	50% RPD-solid 30% RPD - AQ		—					
Reporting limits	Reporting limits		X					
Lab Control STD (LCS)	Control limits 80-120		X					
Matrix Spike Rec. GP15-4-8	Control limits		X					
Matrix Spike RPD			X					

Comments: _____

_____

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Semivolatile Organics

Sample Prep Method: _____

Analysis Method: 8270C

Category	Criteria		Criteria Met? Yes	Criteria Met? No	Problem(s) Encountered		Affected Samples	Data Qualifier
Holding Time & Preservation (from collect date)	Solid - 14 d , 4 degrees AQ – 7 d , 4 degrees		X					
Surrogate Recovery	Surrogate	Rec Limits	X					
	2-FPh	24-113						
	Ph-d6	25-121						
	2,4,6-TBP	19-122						
	NB-d5	23-120						
	2-FB	30-115						
	p-TP-d14	18-137						
Method Blank	All non-detect			X	Analyte Detected	Blank Action Lvl	All effected except: GP10-8-11 GP10-4-8 GP10-0-4 GP08-4-8 GP08-0-4 GP13-7 GP13-0-4 GP15-0-4	B
					Benzo(a)anthracene	330		
					Acenaphthene	80		
Field Duplicates Lab	50% RPD-solid 30% RPD - AQ		—				GP15-0-4	
Reporting limits	Quantitation limits		X					
Lab Control STD (LCS)	Control limits			X	Rec. for 4-Nitrophenol above limits		all	K
Matrix Spike/MSD GP15-4-8	Control limits			X	Rec. for Pyrene & Acenaphthene below qc limits		GP15-4-8	F
TICs			—					

Comments: _____

_____

_____

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Inorganics/Wet Chemistry

Category	Criteria	Criteria Met?		Problems Encountered	Affected Samples	Data Qualifier
		Yes	No			
Parameter	Method					
Cyanide	SW846 - 4500-CN	X				
Holding Time (from collection) Preservation		X				
Method Blank	All Non-detect	X				
Field Duplicates (1 26)	50% RPD –solid 30% RPD -AQ	X			GP15-4-8	
Reporting limits	Quantitation limits	X				
Lab Control STD	70 – 130 % Recovery	X				
Matrix Spike/Dup GP15-4-8	70-130 % Recovery	X				
Other QC		—				

Comments:

Data Review Cover Sheet

Data Reviewed by: P.S.Viz Date: 08.01.01

Project Title: O&R Haverstraw Project Number: 61082

Laboratory: STL (CT) Laboratory Job Number: 7001-1695 Δ

Chain of Custody - Present and Complete (Y/N): Y
All requested Analyses performed (Y/N): Y
Case Narrative present - (Y/N): Y
All Samples Properly Preserved (Y/N): Y

Laboratory Contacted - (Y/N) √ Date:
Laboratory Personnel Contacted:
Subject:

Resolution:

All data review is based on the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analyses (November 1988).

The following footnotes were used to qualify the project data: (Circle footnote letters)

(B) The reported result is attributed to laboratory contamination due to the presence of the chemical in the associated laboratory blank.
J The reported result is below the laboratory reporting limit and is therefore estimated.

A The result is estimated due to exceedance of holding times.
C The result is estimated due to surrogate recovery outside of control limits.
D The reporting limit is elevated due to the presence of non-target or target analytes.
E The reporting limit is elevated due to a matrix effect.
F The result is estimated due to matrix spike recovery outside of control limits.
G The result is estimated due to duplicate precision outside of control limits.
H The result is estimated due to internal standard areas outside of control limits.
(K) The result is estimated due to blank spike compound recovery outside of control limits
R The result is rejected due to gross exceedance of _____ criteria.

There were no qualifications. (Circle if applicable)

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Volatile Organics

Sample Prep Method: _____

Analysis Method: E260B

Category	Criteria	Criteria Met? Y	Criteria Met? N	Problem(s) Encountered	Affected Samples	Data Qualifier
Holding Time & Preservation (from date sampled)	Solid - 14 d , MeOH AQ – 14 d - HCL AQ – 7d (unpreserved)	X				
Surrogate Recovery	Surrogate / Rec Limits: 12-DCEd4 76-114 4-BFB 86-115 Tol-d8 88-110	X				
Method Blank	All non-detect		X	Analyte Detected / Blank Action Lvl: ~~1,2-Dichloroethane~~ " Acetone "60 MeCl2 "60 1,2,4-TCB "3.5 ~~Cyclohexane~~ "	all sample effected by at least one compound	B
Trip Blanks ~~Rinsate~~	All non-detect	~~N~~	X	Analyte Detected / Blank Action Lvl: Acetone MeCl2 ~~methylene~~ -		
Field or Lab Duplicates	50% RPD-solid 30% RPD - AQ	-				
Reporting limits	Reporting limits	X				
Lab Control STD (LCS)	Control limits 80-120	X				
Matrix Spike Rec. GP15-4-8	Control limits	X				
Matrix Spike RPD		Y				

Comments: ~~naphthalene in rinsate Blank at 0.5 J ppb~~ JJ

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Semivolatile Organics

Sample Prep Method: _____

Analysis Method: 8270C

Category	Criteria	Criteria Met? Yes	Criteria Met? No	Problem(s) Encountered	Affected Samples	Data Qualifier
Holding Time & Preservation (from collect date)	Solid - 14 d , 4 degrees AQ – 7 d , 4 degrees	X				
Surrogate Recovery	Surrogate / Rec Limits: 2-FPh 21-110 Ph-d6 10-110 2,4,6-TBP 10-123 NB-d5 35-114 2-FB 43-116 p-TP-d14 33-141	X				
Method Blank	All non-detect		X	Analyte Detected / Blank Action Lvl: Caprolactum 10 1,1' Biphenyl 0.5 Fluorene 10 Di-N-butylph 2.0 bis(2-eh)ph 70	all samples affected by at least one of these compounds	B
Field Duplicates Lab	50% RPD-solid 30% RPD - AQ	—				
Reporting limits	Quantitation limits	X				
Lab Control STD (LCS) LCS Dup	Control limits		X	REC. for bis(2-chloroethyl)ether) bis(2-chloroisopropyl) ether, Hexachloroethane below limits	24	J
Matrix Spike/MSD	Control limits	—		~~B2fcb6C~~		
~~MS~~ Equipment Blank		—		naphthalene - 0.5J phthalates, caprolactum } likely due to method blank		

Comments: Naphthalene in rinsate blank ER6P3 at 0.5 ppb

Φ GEI Consultants, Inc.
Tier 2 Data Quality Review Form
Inorganics/Wet Chemistry

Category	Criteria	Criteria Met?		Problems Encountered	Affected Samples	Data Qualifier
		Yes	No			
Parameter	Method					
Cyanide	SW846 4500-CN	X				
Holding Time (from collection) Preservation		X				
Method Blank	All Non-detect	X				
Field Duplicates	50% RPD –solid 30% RPD -AQ	—				
Reporting limits	Quantitation limits	X				
Lab Control STD	70 – 130 % Recovery	X				
Matrix Spike/Dup	70-130 % Recovery	—				
Other QC		—				

Comments:

Data Review Cover Sheet

Data Reviewed by: P. Silva Date: 08-24-01

Project Title: O&R Haverstraw Project Number: 01082 TC 1013 Beach 1800

Laboratory: STL (CT) Laboratory Job Number: 7001-1696A

Chain of Custody - Present and Complete (Y/N): Y
All requested Analyses performed (Y/N): Y
Case Narrative present - (Y/N): Y
All Samples Properly Preserved (Y/N): Y

Laboratory Contacted - (Y/N) N Date:
Laboratory Personnel Contacted:
Subject:

Resolution:

All data review is based on the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analyses (November 1988).

The following footnotes were used to qualify the project data: (Circle footnote letters)

(B) The reported result is attributed to laboratory contamination due to the presence of the chemical in the associated laboratory blank.
(J) The reported result is below the laboratory reporting limit and is therefore estimated.

A The result is estimated due to exceedance of holding times.
C The result is estimated due to surrogate recovery outside of control limits.
D The reporting limit is elevated due to the presence of non-target or target analytes.
E The reporting limit is elevated due to a matrix effect.
(F) The result is estimated due to matrix spike recovery outside of control limits.
(G) The result is estimated due to duplicate precision outside of control limits.
H The result is estimated due to internal standard areas outside of control limits.
(K) The result is estimated due to blank spike compound recovery outside of control limits
R The result is rejected due to gross exceedance of _____ criteria.

There were no qualifications. (Circle if applicable)

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Volatile Organics TCLP

Sample Prep Method: _____

Analysis Method: 8260B

Category	Criteria	Criteria Met? Y	Criteria Met? N	Problem(s) Encountered	Affected Samples	Data Qualifier
Holding Time & Preservation (from date sampled)	Solid - 14 d , MeOH AQ – 14 d - HCL AQ – 7d (unpreserved)	X				
Surrogate Recovery	Surrogate / Rec Limits 12-DCEd4 71-129 4-BFB 78-120 Tol-d8 85-116	X				
Method Blank	All non-detect		X	Analyte Detected: 2-Butanone; Blank Action Lvl: 40	GP12-11	B
Trip Blanks	All non-detect	—		Analyte Detected / Blank Action Lvl		
Field or Lab Duplicates	50% RPD-solid 30% RPD - AQ	—				
Reporting limits	Reporting limits	~~X~~	X	estimated: 2-Butanone	GP12-11	J
Lab Control STD (LCS)	Control limits 80-120	X				
Matrix Spike Rec. HA VSOIL	Control limits	X				
Matrix Spike RPD		X				

Comments: _____

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Semivolatile Organics TCLP

Sample Prep Method: _____

Analysis Method: 8270C

Category	Criteria	Criteria Met? Yes	Criteria Met? No	Problem(s) Encountered	Affected Samples	Data Qualifier
Holding Time & Preservation (from collect date)	Solid - 14 d , 4 degrees AQ – 7 d , 4 degrees	X				
Surrogate Recovery	Surrogate / Rec Limits: 2-FPh 30-110 Ph-d6 21-110 2,4,6-TBP 10-123 NB-d5 35-114 2-FB 43-116 p-TP-d14 33-141	X				
Method Blank	All non-detect	X		Analyte Detected / Blank Action Lvl		
Field Duplicates Lab	50% RPD-solid 30% RPD - AQ	—				
Reporting limits	Quantitation limits	~~X~~	X	Estimated: 2-methylphenol 4-methylphenol	GP12-11	J
Lab Control STD (LCS)	Control limits		X	2,4,5-Trichlorophenol rec. below qc limits	all	K
Matrix Spike/MSD	Control limits	—				
TICs		—				

Comments: _____

Φ GEI Consultants, Inc.

Tier 2 Data Quality Review Form

Metals

Category	Criteria	Criteria Met?		Problems Encountered	Affected Samples	Data Qualifier
		Yes	No			
Target Metals	Method					
RCRA 8	6010B					
		X				
Preservation Holding Time (from collection)	HNO3 (aq) 180 days 28 days – Mercury	X				
Method Blank	All non-detect	X				
Field Duplicates Lab Replicate	50% RPD –solid 30% RPD -AQ	~~X~~	X	RPD above limit for Cd ①, Cr ② Se ③	BG2-A(15-20)① TDD ②③	S
Reporting limits	Quantitation limits	X				
Lab Control STD	80 – 120 % Recovery	X				
Matrix Spike/Dup	Within Control limits 75-125%		X	Se REC. below QC limits	BG2-A(15-20)S	F
Serial Dilution		—				

Comments:

VALIDATION GUIDELINES FOOTNOTES

J/UJ1, R1	Holding times have been exceeded or samples were improperly preserved; estimate positive results and non-detects or reject results if holding times were grossly exceeded.
J2, R2	The initial or continuing calibration RF was low: estimate positive results and reject non-detects.
J/UJ3	The initial %RSD was greater than 30% for semivolatile and volatiles or greater than 20% for pesticide/PCB; estimate positive and blank-qualified nondetect results.
J/UJ4	The continuing calibration %D was greater than 25% ; estimate positive results and non-detects. For inorganics, the initial or continuing calibration verification standard was outside of control limits of 90 - 110% for metals, 80 - 120% for Mercury or 85 - 115% for Cyanide; the positive or non-detected results are estimated dependent on the recovery.
J5	The reported concentration was quantitively qualified because the concentration was below the CRQL, or lowest calibration standard, but greater than the MDL. For inorganics, the result was less than 2xIDL. The concentration is considered estimated since the value obtained is at the low end of the instrument performance.
U6	Compound was present in the associated blank. Compound is present in the sample at a concentration less than the CRQL: report the CRQL (U6). For organic results greater than the CRQL but lower than the action level: report the sample concentration followed by "U". For inorganics, the analyte was present in the associated blank. The sample result was less than the action level of 5X the maximum concentration found in any blank and has been qualified as nondetect.
J/UJ7, R7	One or more of the surrogate standard % recoveries was found outside of the Contract Required Recovery Range (CRR): estimate positive and/or non-detected results within that area of the chromatogram dependent on recovery. For surrogate recoveries less than 10%, estimate positive results and reject non-detects within that area of the chromatogram.
J/UJ8, R8	The matrix spike (MS) and/or matrix spike duplicate (MSD) % recoveries or MS/MSD %RPD for this compound were not within control limits for this compound: estimate positive and/or non-detected results in the unspiked sample dependent on the recovery. The MS and/or MSD % recoveries were less than 10% (for organics) or less than 30% (for inorganics) for this analyte: estimate positive results in the unspiked sample and reject non-detects.
J/UJ9, R9	The blank spike (LCS) recovery for this analyte was outside of criteria. The reported result or detection limit is estimated or rejected based on the recovery.
J/UJ10	Field duplicate %RPD was high for this compound: estimate positive results for this compound in the sample and duplicate. For results less than 5XCRDL, a control limit of +/- 4XCRDL was used for inorganics. For results less than 5XCRQL, a control limit of +/- 2XCRQL was used for organics.

J/UJ11, R11	One or more of the Internal standard (IS) areas were not within the CRR: estimate positive results and non-detects for all compounds quantitated from that IS or if one or more IS areas were grossly low: estimate positive results and reject non-detects for all compounds quantitated from that IS.
J12	The %RSD for this unspiked compound in the sample/MS/MSD set exceeded the advisory criterion of < 30% for aqueous samples or < 50% for soil samples: estimate positive results for that compound in the sample, MS and MSD.
J13	Compound reported above calibration range.
J/UJ14	Linearity was poor near the CRDL (Low levels). Estimate analyte results based on the recovery.
J/UJ15	The associated blank had a value below the negative IDL. The detection limit and/or positive results may by biased low.
J/UJ16, R16	The ICS recovery of an element is outside of criteria. The reported results or detection limit is estimated or rejected based on the recovery.
J17	The RPD for laboratory duplicate sample analysis results exceeded 20% (35% for soils) for this analyte. The reported results are estimated.
J19	The results of the ICP Serial Dilution analysis were outside of criteria. Positive sample results are estimated.
J/UJ20	The sample was less than 50% solids. Analysis using a method intended for soils might not give representative results. The results are estimated.
J/UJ21	In the analysis of the interferent solution, the analyte was detected above 2XIDL or negative 2XIDL. The sample interferent levels were at least 50% those of the ICSA standard and the estimated interference at least 10% of the sample level, therefore the result is estimated.
J/JN22, R22	% Breakdown for DDT exceeded 20%: estimate positive results for DDT (J18), DDD, and DDE (JN18) in all associated samples. If no DDT is present, but DDD and/or DDE are present: reject the CRQL (R18) for DDT.
J/JN23, R23	% Breakdown for endrin exceeded 20%: estimate positive results for endrin (J19) and endrin ketone (JN19) in all associated samples. If no endrin is present, but endrin ketone and/or endrin aldehyde are present: reject the CRQL (R19) for endrin.
J24	Pesticide compounds which have concentration values differing by greater than 25% in its two analyses. Estimate positive results for the compounds.
J/UJ25	Compound recoveries for the pesticide GPC check standard were below the control limits of 80 - 110%: Estimate the detected and non-detected results for this compound.
J26	The %RSD of duplicate injections for GFAA analysis do not agree within +/- 20%, or the laboratory performed a single burn analysis. The sample results are estimated.

J/UJ27,R27	The recovery of analytical spikes for GFAA analysis is outside of control limits. Positive sample results or detection limits are estimated or rejected based on recovery.
J28	The sample required an MSA which was not performed, was performed incorrectly, or the correlation was < 0.995. The positive results are estimated.
J29	The dissolved metals result was greater than the total result by more than 10%. The total and dissolved analyte results are estimated in the pair.
J30	The result is estimated due to high levels detected in the field blank. The dissolved sample results however are comparable to the total results and are therefore not qualified as non-detected.
J31/R31	The TIC result is estimated as a compound specific response factor is not used for the quantitation. The TIC result is rejected as it was detected in a field or laboratory blank.
R32	The TIC result is rejected as it was reported as a target analyte in another fraction.