Former Sag Harbor Manufactured Gas Plant Site

SAG HARBOR, NEW YORK

Site Management Plan

New York State Department of Environmental Conservation

Site Number: 1-52-159

Prepared for:

National Grid
175 East Old Country Road
Hicksville, New York 11801

Prepared by:

AECOM
125 Broad Street, 16th Fl
New York, New York 10004
212-377-8708

February 2014

Contents

List of Appendices

List of Tables

List of Figures

1.0 Introduction and Description of Remedial Program

1.1 Introduction

This document is required as an element of the remedial program at the former Sag Harbor Manufactured Gas Plant site under the New York State Inactive Hazardous Waste Disposal Site Remedial Program administered by the New York State Department of Environmental Conservation. The former Sag Harbor Manufactured Gas Plant site and surrounding off-site areas were remediated in accordance with Order on Consent Index D1-0002-98-11, Site Number 1-52-159 [New York State Department of Environmental Conservation, 2005], which was executed on October 5, 2005. The location in question is shown on Figure 1-1.

1.1.1 General

National Grid entered into the Order of Consent with the New York State Department of Environmental Conservation to remediate a 0.8 acre property and surrounding off-site areas located in the Village of Sag Harbor, New York. This Order of Consent requires National Grid to investigate and remediate contaminated media at the former Sag Harbor Manufactured Gas Plant site and surrounding off-site areas. For purposes of further discussion in this Site Management Plan, the term "Site" will include the former Sag Harbor Manufactured Gas Plant site (5 Bridge Street), an adjacent private property to the north (31 Long Island Avenue), portions of the adjacent private property to the south (11 Bridge Street), and the Village of Sag Harbor sidewalk and roads to the north and west. The term "off-Site areas " will include all or portions of adjacent private properties to the north (22 Long Island Avenue, 2 Long Island Avenue, 4 West Water Street, and 8 West Water Street), south (7 Bridge Street), and west (18 Bridge Street) of the Site; and the United States Postal Service Post Office property and a small portion of the Village of Sag Harbor parking lot to the east consistent with the Record Of Decision [New York State Department of Environmental Conservation, 2006]. A map showing the Site layout and boundaries subject to this Site Management Plan is provided in Figure 1-2. The boundaries of the Site are more fully described in the metes and bounds description attached to the Environmental Easement(s).

After completion of the remedial work described in the Remedial Design / Remedial Action Work Plan [AECOM, 2008], some contamination was left in the subsurface of the Site and portion of off-Site areas, which is hereafter referred to as ”remaining contamination.” This Site Management Plan was prepared to manage remaining contamination at the Site in perpetuity or until extinguishment of the Environmental Easement(s) in accord with New York State Environmental Conservation Law Article 71, Title 36. This Site Management Plan was also prepared to manage remaining contamination within the off-Site areas in perpetuity or as recommended by New York State Department of Environmental Conservation. All reports associated with the Site and off-Site areas can be viewed by contacting the New York State Department of Environmental Conservation or its successor agency managing environmental issues in New York State.

This Site Management Plan was prepared by AECOM, on behalf of National Grid, in accordance with the requirements in New York State Department of Environmental Conservation DER-10 Technical Guidance for Site Investigation and Remediation [(DER-10); New York State Department of Environmental Conservation, 2010] and the guidelines provided by New York State Department of Environmental Conservation. This Site Management Plan addresses the means for implementing the Institutional Controls and Engineering Controls that are required by the Environmental Easement for the Site and by the Remedial Design/Remedial Action Work Plan for the off-Site areas.

1.1.2 Purpose

Engineering Controls have been incorporated into the Site remedy to provide proper management of remaining contamination in the future to ensure protection of public health and the environment. Environmental Easement(s) will be granted to New York State Department of Environmental Conservation, and recorded with the Suffolk County Clerk, that provides an enforceable legal instrument to ensure compliance with this Site Management Plan and all Engineering Controls and Institutional Controls placed on the Site. Due to the limited nature of remaining contamination within the off-Site areas, compliance with this Site Management Plan and all Engineering Controls and Institutional Controls for the off-Site areas is recommended and implemented via access agreements that may exist between National Grid and the property owner(s). The Institutional Controls place restrictions on the use of the Site and off-Site areas, and mandate operation, maintenance, monitoring, and reporting measures for all Engineering Controls and Institutional Controls. This Site Management Plan specifies the methods necessary to ensure compliance with all Engineering Controls and Institutional Controls required by the Environmental Easement(s) or recommended by New York State Department of Environmental Conservation for remaining contamination. This Site Management Plan has been approved by the New York State Department of Environmental Conservation, and compliance with this Site Management Plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns for the Site. This Site Management Plan may only be revised with the approval of the New York State Department of Environmental Conservation.

This Site Management Plan provides a detailed description of all procedures required to manage remaining contamination after completion of the Remedial Action, including: (1) implementation and management of all Engineering Controls/Institutional Controls; (2) media monitoring; (3) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (4) defining criteria for termination of treatment system operations.

To address these needs, this Site Management Plan includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of Engineering Controls/Institutional Controls; (2) a Monitoring Plan for implementation of Site and off-Site Monitoring; and (3) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to New York State Department of Environmental Conservation.

It is important to note that:

- This Site Management Plan details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement this Site Management Plan is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion;

- Failure to comply with this Site Management Plan is also a violation of the Environmental Conservation Law, 6 New York Codes Rules and Regulations Part 375 and the Order of Consent, and thereby cause for applicable penalties;

- The Site Management Plan also details specific implementation procedures for the off-Site areas that are recommended by New York State Department of Environmental Conservation. This Site Management Plan may be implemented on the off-Site areas via access agreements executed between National Grid and owners of the properties comprising the off-Site areas; and

- At the time the Site Management Plan was prepared, the Site Management Plan and Site and off-Site areas documents related to the Remedial Investigation and the Remedial Action are maintained at the New York State Department of Environmental Conservation office in Albany.

At this time, February 2013, Site and off-Site areas documents can also be found in the repository established for this project:

John Jermain Public Library
Main and Jermain Streets, Sag Harbor, New York 11963
(631) 725-0049
Hours: Mon - Sat. 10-5, Thurs. 10-9

1.1.3 Revisions

Revisions to this Site Management Plan will be proposed in writing to the New York State Department of Environmental Conservation Project Manager. In accord with the Environmental Easement for the Site, the New York State Department of Environmental Conservation will provide a notice of any approved changes to this Site Management Plan, and append the notices to this Site Management Plan that is retained in its files.

1.2 Site Background

1.2.1 Site Location and Description

The former Sag Harbor Manufactured Gas Plant site is located in the Village of Sag Harbor and is identified as Block 0002, Lot 10 on the Town of Southampton Tax Map. The former Sag Harbor Manufactured Gas Plant site is an approximately 0.8 acre area bounded by Long Island Avenue and a private property to the north, commercial property and residences to the south, a United States Post Office and a public parking lot to the east, and Bridge Street and the Harbor Close Condominium to the west (see Figure 1-2). The boundaries of the Site are more fully described in the metes and bounds description attached to the Environmental Easement(s).

1.2.2 Site History

1.2.2.1 Operational/Disposal History

The former Sag Harbor Manufactured Gas Plant operated from 1859 to 1930. The Manufactured Gas Plant produced gas from coal or wood rosin before being switched to a water gas process in 1892. The byproducts of gas production that spilled, leaked, or were disposed on the former Sag Harbor Manufactured Gas Plant site are the source of the contamination.

1.2.2.2 Remedial History

The former Sag Harbor Manufactured Gas Plant site was discovered during the investigation of the Sag Harbor Bridge Street Site (Site Number 1-52-126) which was listed as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York in 1988. That site was delisted in 1995. In 1997, a preliminary site assessment was performed on the former Sag Harbor Manufactured Gas Plant site and, as a result, the New York State Department of Environmental Conservation listed the former Sag Harbor Manufactured Gas Plant site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York in 1997. Following that listing, an Interim Remedial Measure was performed to remove and cap historic piping present at the former Sag Harbor Manufactured Gas Plant site to prevent migration of Manufactured Gas Plant by-products.

1.2.3 Geologic Conditions

The Site is located in an area that was a marine wetland before being filled in the 1800s. Today, the ground surface stands a few feet above sea level, with the uppermost soil layer made up of material used to fill the original wetland (sandy soils, brick fragments, ash, etc.). The peat, silt, and clay deposits which formed the original wetland bottom are still present at depths of eight (8) to 12 feet below the ground surface. Below these lie several hundred feet of unconsolidated sands. A geologic cross-section is shown in Figure 1-3.

The peat, silt, and clay layers are important because they are far less permeable than the predominantly sandy soils above and below. Groundwater and other liquids do not readily move through the peat, sand, and clay. In most areas, this has had the effect of limiting the degree to which Manufactured Gas Plant tar moved downward through the subsurface. However, these deposits are absent in some portions of the Site, and Manufactured Gas Plant tar has moved downward into the underlying sands in these areas.

The water table at the Site is very shallow. The depth to groundwater varies from approximately six inches to approximately 18 inches below grade. This high groundwater level leads to localized ponding during heavy rains. The groundwater is tidally influenced, but consistently flows in a northerly or northwesterly direction. The groundwater is brackish and discharges to Sag Harbor Cove. A groundwater flow map is shown in Figure 1-4.

1.3 Summary of Remedial Investigation Findings

The Remedial Investigation was performed to characterize the nature and extent of contamination at the Site and surrounding areas. The results of the Remedial Investigation are described in detail in the following reports:

- Sag Harbor former Manufactured Gas Plant Site Remedial Investigation Report, June 2002 [Dvirka and Barticulli, 2002]

- Final Remedial Investigation Report, Sag Harbor Former Manufactured Gas Plant Site, New York, December 2003 [Dvirka and Bartilucci, 2003]

- Draft Supplemental Field Program Report, Sag Harbor Former Manufactured Gas Plant Site, New York, February 2005 [GEI, 2005]

To determine whether the soil, groundwater, surface water, soil vapor, air, and sediment contain contamination at levels of concern, data from the Remedial Investigation were compared to the following standards, criteria and guidance:

- Groundwater, drinking water, and surface water standards, criteria, and guidance's are based on the New York State Department of Environmental Conservation "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil standards, criteria, and guidance's are based on the New York State Department of Environmental Conservation "Technical and Administrative Guidance Memorandum 4046; Determination of Soil Cleanup Objectives and Cleanup Levels."

- Sediment standards, criteria, and guidance's are based on the New York State Department of Environmental Conservation "Technical Guidance for Screening Contaminated Sediments."

- Indoor air standards, criteria, and guidance's are based on the New York State Department of Health Database summary of indoor and outdoor air sample results in control homes collected and analyzed by New York State Department of Health from 1989 through 1996.

Generally, the Remedial Investigation found that there were no ongoing exposures to contamination from the Site or off-Site areas. The Site surface is mostly covered which further reduces the likelihood of direct contact with contaminated soil. Exposure to contaminated groundwater is not occurring as there are no supply wells located in the contaminated area. The area surrounding the Site is served by a public water supply, which is regularly tested to ensure that it meets state and federal drinking water standards for a number of contaminants, including those associated with the former Sag Harbor Manufactured Gas Plant site. Indoor air samples from buildings on and surrounding the Site have not shown evidence of Manufactured Gas Plant-related contamination.

Many soil, groundwater, ambient and indoor air, and sediment samples were collected during the Remedial Investigation to characterize the nature and extent of contamination. The main categories of contaminants that exceed their standards, criteria, and guidance's are volatile organic compounds and semi-volatile organic compounds. The principal human health and environmental risks posed by this Site relate to the widespread distribution of Manufactured Gas Plant (coal) tar throughout the Site and surrounding area.

Coal tar belongs to a group of organic contaminants known as dense non-aqueous phase liquids. Dense non-aqueous phase liquids do not readily dissolve in water and tend to sink to the bottom of water bodies and aquifers. When released into the subsurface, these liquids can spread out in complex directions that may or may not be the same direction as groundwater flow. Coal tar is an unusual dense non-aqueous phase liquid because its density is only slightly greater than water. Although coal tar does tend to sink, the relatively slight difference in density between tar and water makes this sinking effect somewhat unpredictable.

Two classes of chemical compounds contained in the coal tar are of concern:

(1) Benzene, toluene, ethylbenzene, and xylenes are volatile organic compounds, which are also commonly found in unleaded gasoline, paint thinners, and other solvents. They are somewhat soluble in water. Consequently, groundwater which comes into contact with Manufactured Gas Plant tar often becomes contaminated with these compounds. This contaminated groundwater is then free to move away from the source along with the ordinary groundwater flow through the subsurface.

(2) Polycyclic aromatic hydrocarbons. This is a large group of semi-volatile organic compounds with several hundred different individuals known to exist. They are far less soluble than the benzene, toluene, ethylbenzene, and xylene, and consequently are far less likely to cause groundwater contamination. They are also far less likely to be digested by soil bacteria, and thus are very persistent in the environment. The United States Environmental Protection Agency has identified 17 of the polycyclic aromatic hydrocarbons as hazardous materials, and these are the ones used to define the extent of polycyclic aromatic hydrocarbons contamination at the Site.

An inorganic contaminant of concern is cyanide. Cyanide, bound to iron to form ferric-ferrocyanide, is a component of some coal tars. While it is not dangerous in its bound form, certain conditions can release free cyanide, causing an exposure risk both for humans and the environment. Cyanide was not detected in any of the samples collected from Site and Off-Site area above the standards, criteria, and guidance's.

Table 1-1 and Table 1-2 summarize the analytical data for the contaminants of concern in surface soil, subsurface soil, and groundwater; and compare the data with the standards, criteria, and guidance's for the Site and off-Site areas. The locations of all the samples are noted on Figure 1-5.

Below is a summary of Site conditions when the Remedial Investigation was performed between April 2000 and May 2004:

WASTE

The waste material associated with the former Sag Harbor Manufactured Gas Plant site is coal tar. Coal tar migrated to a depth of roughly 8-10 feet below the ground surface. At this level, it encountered a layer of peat, silt, and clay which it could not readily penetrate, and spread laterally on top of this layer beneath the former Sag Harbor Manufactured Gas Plant site. It also spread beyond the former Sag Harbor Manufactured Gas Plant site boundaries, roughly 50 feet to the south and 80 feet to the north, where it was found beneath the 31 Long Island Avenue property located within the Site.

Near the center of the former Sag Harbor Manufactured Gas Plant site, the peat, silt, and clay layer is absent, and the Manufactured Gas Plant tar spread downward much further, to a total depth of roughly 90 feet. No deep penetration of tar has been found beyond the limits of the former Sag Harbor Manufactured Gas Plant site.

The tar appeared to be in a steady state, in which the overall limits of the tar migration would not change unless Site conditions changed significantly. However, within the area of tar contamination, some pockets of pooled, mobile tar may have existed. The extent of the coal tar contamination identified during the Remedial Investigation is shown on Figure 1-6. This material required remediation, as it acted as a source for soil and groundwater contamination.

SURFACE SOIL

Surface soil samples were collected from the upper zero to two or zero to six inches across the Site, as well as off-Site. All samples were analyzed for semi-volatile organic compounds, metals, and cyanide. The off-Site samples were also analyzed for volatile organic compounds. Although benzene, toluene, ethylbenzene, and xylene were detected in the off-Site samples, all of the detections were below the New York State Recommended Soil Cleanup Objectives from Technical Guidance Manual 4046. Polycyclic aromatic hydrocarbons were found in the majority of the surface soil samples across the Site and in some off-Site areas. The maximum detections of polycyclic aromatic hydrocarbons were, in the majority of samples, above the individual standards, criteria, and guidance's. The highest total polycyclic aromatic hydrocarbons in surface soil was 950 parts per million and was found in the historic location of the southeastern gas holder on the former Sag Harbor Manufactured Gas Plant site. Cyanide was identified in samples collected from Site and off-Site areas, with the maximum concentration found on the former Sag Harbor Manufactured Gas Plant site in the location of the former gas holders. The soils containing cyanide were not above guidance levels and were, most likely, a constituent of the coal tar.

SUBSURFACE SOIL

Polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene contamination of subsurface soils was detected in several areas, with the highest contaminant concentrations found in areas where visible tar contamination was present. Thus, the highest levels of soil contamination are found in the shallow subsurface soils (generally less than eight feet below the ground surface) in the eastern portion of the former Sag Harbor Manufactured Gas Plant site. Outside of the zones of tar contamination, polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene concentrations decrease rapidly. Individual benzene, toluene, ethylbenzene, and xylene concentrations ranged from not detectable to 500 parts per million, and polycyclic aromatic hydrocarbons concentrations ranged from not detectable to 1,700 parts per million. Cyanide was detected in only a few subsurface samples, at low levels. The highest value, 4.8 parts per million, was found in an area of shallow visible tar contamination, which also contained high levels of polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene.

GROUNDWATER

Both polycyclic aromatic hydrocarbons and benzene, toluene, ethylbenzene, and xylene compounds are found in Site and off-Site groundwater, with the highest contaminant levels found at shallow depths, in close proximity to the Manufactured Gas Plant tar. Groundwater flow direction is north toward Sag Harbor Cove. Benzene, toluene, ethylbenzene, and xylene compounds were found in the majority of the groundwater samples, both on-Site and off-Site. Benzene was the individual compound detected most frequently, and at the highest concentration, with values ranging from non-detect to 8,700 parts per billion. Polycyclic aromatic hydrocarbons compounds are less soluble than benzene, toluene, ethylbenzene, and xylene, but due to the extensive distribution of Manufactured Gas Plant tar, they were detected in most groundwater samples as well. Naphthalene is the polycyclic aromatic hydrocarbons compound detected most frequently, and at the highest concentration, with values ranging from non-detect to 79,000 parts per billion. The extent of groundwater contamination detected during the Remedial Investigation is shown on Figure 1-7.

SURFACE WATER

Surface water and groundwater seep samples were collected. The only Site-related contaminant detected was xylene at a concentration of one parts per billion in one of the 31 surface water samples, which is far below the standards, criteria, and guidance for xylene of 19 parts per billion.

SEDIMENTS

The sediments in Sag Harbor Cove were sampled for benzene, toluene, ethylbenzene, xylene, and polycyclic aromatic hydrocarbons. None of the samples indicate an impact from the Sag Harbor Manufactured Gas Plant site. The low levels of benzene, toluene, ethylbenzene, xylene, and polycyclic aromatic hydrocarbons which were detected were distributed randomly across the survey area, which suggests that they represent general background conditions in the area and are not the result of Manufactured Gas Plant contamination.

SOIL VAPOR

Soil vapor samples were collected and analyzed for benzene, toluene, ethylbenzene, xylene compounds, and naphthalene. Naphthalene and other polycyclic aromatic hydrocarbons were not detected in any of the samples. Benzene, toluene, ethylbenzene, and xylene was detected in samples collected above areas of Manufactured Gas Plant tars.

INDOOR AND AMBIENT AIR

Indoor and ambient air samples were collected during two rounds of sampling from buildings on and surrounding the Site. The samples were analyzed for volatile organic compounds, which included benzene, toluene, ethylbenzene, xylene and naphthalene. Although some volatile organic compounds were detected in several samples, the New York State Department of Health determined that these detections are not related to the former Sag Harbor Manufactured Gas Plant site. Further monitoring of soil vapor and air samples will be required to monitor for potential indoor air exposures.

1.4 Summary of Remedial Actions

The Site and portion of the 18 Bridge Street property was remediated in accordance with the New York State Department of Environmental Conservation-approved Remedial Design/Remedial Action Work Plan [AECOM, 2008] dated August 2008. In accordance with the Record of Decision, the remediation goals for the Site are to eliminate / reduce volatile organic compounds, semi-volatile organic compounds, and cyanide in surface soil, subsurface soil, groundwater, and soil vapor and attain ambient groundwater quality standards and recommended soil cleanup values for surface soils.

The following is a summary of the Remedial Action performed at the Site:

1. An excavation support system (Soil Mix Wall) to allow for shallow subsurface soil removal was installed. The commercial building to the north on the 31 Long Island Avenue Property was removed. The top eight to 15 feet of contaminated soil was then excavated. Soils were transported off-Site for proper treatment and disposal. The excavated areas were backfilled with clean soil materials from an off-Site location to meet or exceed the Unrestricted Use Soil Cleanup Objective's.

2. All vegetated areas were covered with one foot of clean soil and all non-vegetated areas were covered with either concrete or a paving system.

3. A passive (non-pumping) dense non-aqueous phase liquid collection system was installed to collect any dense non-aqueous phase liquid remaining in the subsurface. The wells will collect tar passively at first. Additional wells may be installed if additional areas of mobile tar are identified following regular monitoring of the dense non-aqueous phase liquid collection wells. Low-flow pumping may be implemented if early results indicate that this will increase tar recovery.

4. This Site Management Plan was developed to: (a) address remaining contaminated soils that may be excavated during future redevelopment. Soils beneath the remaining peat layer are considered contaminated and will require soil characterization and, where applicable, disposal/reuse in accordance with New York State Department of Environmental Conservation regulations; (b) evaluate the potential for vapor intrusion in any buildings on or adjacent to the Site, including provision for mitigation of any impacts identified; and (c) identify any use restrictions.

5. Imposition of an Institutional Controls in the form of an Environmental Easement that will (a) require compliance with the approved Site Management Plan; (b) limit the use and development of the Site to Restricted Residential; (c) restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by the New York State Department of Health; and (d) require National Grid and, where appropriate, the various property owners within the Site and off-Site areas, to complete and submit to the New York State Department of Environmental Conservation a periodic certification.

Excavation and Site restoration activities were completed in June 2009.

1.4.1 Removal of Contaminated Materials from the Site and Off-Site Areas

A Remedial Action comprising of construction of the soil mix wall, removal and disposal of heavily contaminated residual Manufactured Gas Plant-related soils, and placing of clean fill material was implemented from August 2008 through June 2009. The Remedial Action was implemented according to the Record of Decision [New York State Department of Environmental Conservation, 2006] and the Remedial Design/Remedial Action Work Plan [AECOM, 2008] on the following properties located within the Site and off-Site areas: 5 Bridge Street (former Sag Harbor Manufactured Gas Plant site), 31 Long Island Avenue, portions of 11 Bridge Street and 18 Bridge Street, and select areas of the Village of Sag Harbor Right of Way including Bridge Street and Long Island Avenue as shown in Figure 1-8.

Implementation of the Remedial Action resulted in the removal of several different types of waste: concrete and debris, spoils from both soil mix wall swell and cured soil mix wall grading, hazardous soils impacted with lead, non-hazardous residual Manufactured Gas Plant-related soils, construction debris (hay bales, etc.), and treated water generated during construction, including groundwater, stormwater, and decon water.

Concrete and debris was generated during the demolition of surface and subsurface structures during the remedial activities including the Commercial Building located on the northern portion of the Site, the support structures for the former hortonsphere structure, various pavements, chain link fences, former Manufactured Gas Plant foundations, piping, and monitoring wells. Concrete and debris was broken up using excavation and demolition equipment, segregated from the soil, stockpiled, decontaminated (if required), and transported off-Site for disposal. A total of 505 tons of concrete and debris were transported to Pioneer Crossing Landfill in Birdsboro, Pennsylvania and G.R.O.W.S Landfill in Morrisville, Pennsylvania.

A total of 4,937 tons of soils were generated as soil mix wall swell during the construction of the soil mix wall. A total of 1,589 tons of soil and concrete mixture were excavated during the removal of the top two feet of the soil mix wall. All soil mix wall related soils were shipped for thermal treatment to ESMI of New Jersey in Keasbey, New Jersey and Clean Earth of Southeast Pennsylvania, Inc. in Morrisville, Pennsylvania.

A total of 30,067 tons of non-hazardous, residual Manufactured Gas Plant-related soils were excavated and transported off-Site for thermal treatment to Clean Earth of Southeast Pennsylvania, Inc. and Clean Earth of Philadelphia, Inc. in Philadelphia, Pennsylvania. A total of 734 tons of residual Manufactured Gas Plant-related soils designated hazardous for lead were excavated and transported off-site for stabilization and disposal to Casie Protank of Vineland, New Jersey.

Table 1-3 details the total tonnage of contaminated soil removed from the Site and off-Site areas.

Water generated from construction activities (like dewatering, stormwater collection, and decontamination) were treated at an on-Site water treatment plant and discharged under a New York State Department of Environmental Conservation State Pollution Discharge Elimination System Permit Equivalent through an approximate 3,500 foot high density polyethylene pipeline to Sag Harbor Bay. A total of 15,618,288 gallons of water were treated and discharged into the Bay. An additional 36,220 gallons of water were transported off-Site for disposal to Clean Waters of New York in Richmond, New York. Table 1-3 details the daily quantities of water treated and discharged.

A total of 31,668 tons of backfill material and 4,843.81 tons of Type 2 and bluestone gravel were transported to the Site and off-Site areas and placed in the excavated areas. All fill material met the Restricted Residential Soil Cleanup Objectives.

All excavated areas meet the Soil Cleanup Objectives for Restricted Residential.

1.4.2 Treatment Systems

No long-term treatment systems were installed as part of the Site remedy.

1.4.3 Remaining Contamination

The Remedial Action resulted in the removal of 90% of the shallow contaminated soil (zero to 15 ft below ground surface from the Site and off-Site areas. Though some deep contaminated soil remains on Site and off-Site areas, it is not expected to have any effect. This deeper contamination will naturally attenuate over time. This section provides a summary of the remaining contamination following the completion of the Remedial Action.

Table 1-4 and Figure 1-9 summarize results of all samples of soil remaining at the Site and off-Site areas after completion of the Remedial Action that exceed the Unrestricted Soil Cleanup Objectives.

Table 1-5 and Figure 1-9 summarize results of all samples of soil remaining at the Site and off-Site areas after completion of Remedial Action that exceed the Restricted Residential Soil Cleanup Objectives.

1.4.3.1 5 Bridge Street (former Sag Harbor Manufactured Gas Plant site) Property

Soil

The soils on the entire property were excavated to a depth of eight feet to 15 below ground surface and backfilled with clean fill meeting the requirements of the Unrestricted Use Soil Cleanup Objectives. This depth corresponds with the bottom of the peat layer which prevented the migration of contamination vertically downwards. Based on the findings of the Remedial Investigation and the observation made during the Remedial Action, contaminated soil is present at a depth of 10 ft below ground surface to a potential depth of 60 ft below ground surface. Contaminated soil stabilized with cement is located at two feet below ground surface on the eastern and western property limits.

Figure 1-9 provides details of the existing soil impacts on the 5 Bridge Street property.

Groundwater

Residual groundwater contamination above New York State Department of Environmental Conservation Class GA Groundwater Criteria is present throughout the 5 Bridge Street property. Figure 1-10 provides details of the locations and depth of existing groundwater contamination on the 5 Bridge Street property.

Soil Vapor

No soil vapor contamination is believed to be present on the 5 Bridge Street property.

1.4.3.2 31 Long Island Avenue Property

Soil

The soils on the entire 31 Long Island property were excavated to a depth of eight feet to 15 feet below ground surface and backfilled with clean fill meeting the requirements of the Unrestricted Use Soil Cleanup Objectives. This depth corresponds with the bottom of the peat layer which prevented the migration of contamination vertically downwards. Based on the findings of the Remedial Investigation and the observation made during the Remedial Action, contaminated soil may be present at a depth of 10 ft below ground surface to a potential depth of 60 ft below ground surface. Contaminated soil stabilized with cement is at located two feet below ground surface on the northern, eastern, and western property limits.

Figure 1-9 provides details of the existing soil impacts on the 31 Long Island property.

Groundwater

Residual groundwater contamination above New York State Department of Environmental Conservation Class GA Groundwater Criteria is present throughout the 31 Long Island property. Figure 1-10 provides details of the locations and depth of existing groundwater contamination on the 31 Long Island property.

Soil Vapor

No soil vapor contamination is believed to be present on the 31 Long Island property.

1.4.3.3 11 Bridge Street Property

Soil

The soils on the northern portion of the 11 Bridge property, at the location of the current paved parking lot, were excavated to a depth of eight feet to 15 feet below ground surface and backfilled with clean fill meeting the requirements of the Unrestricted Use Soil Cleanup Objectives. This depth corresponds with the bottom of the peat layer which prevented the migration of contamination vertically downwards. Based on the findings of the Remedial Investigation and the observation made during the Remedial Action, contaminated soils may be present at a depth of 10 ft below ground surface to a potential depth of 60 ft below ground surface in areas of the Remedial Action. Contaminated soil stabilized with cement is located at two feet below ground surface on the northern portion of the 11 Bridge Street property boundary. Localized hot spots of surface and subsurface contamination are present on the southeastern and southern portion of the 11 Bridge Street property.

Figure 1-9 provides details of the existing soil impacts on the 11 Bridge property.

Groundwater

Remaining groundwater contamination above New York State Department of Environmental Conservation Class GA Groundwater Criteria is present throughout the 11 Bridge Street property. Figure 1-10 provides details of the locations and depth of existing groundwater contamination on the 11 Bridge Street property.

Soil Vapor

No soil vapor contamination is believed to be present on the 11 Bridge Street property.

1.4.3.4 18 Bridge Street Property

Soil

The soils on the northern portion of the 18 Bridge Street property along Long Island Avenue were excavated to a depth of six feet to eight feet below ground surface and backfilled with clean fill meeting the requirements of the Unrestricted Use Soil Cleanup Objectives. Based on the findings of the Remedial Investigation and the observation made during the Remedial Action, localized hot spots of contaminated soils may be present below a depth of two feet below ground surface in the north eastern portion of the 18 Bridge Street property (the area of the current parking lot along Bridge Street) and below a depth of 8 feet below ground surface on the central portion of the 18 Bridge Street property between the two northern condominium buildings.

Figure 1-9 provides details of the existing soil impacts on the 18 Bridge Street property.

Groundwater

Remaining groundwater contamination above New York State Department of Environmental Conservation Class GA Groundwater Criteria is assumed to be present on the northern portion of the 18 Bridge Street property along Bridge Street. Figure 1-10 provides details of the locations and depth of existing groundwater contamination on the 18 Bridge Street property.

Soil Vapor

No soil vapor contamination is believed to be present on the 18 Bridge Street property.

1.4.3.5 Village of Sag Harbor Right of Way

Soil

Soils on the northern portion of Bridge Street were excavated to a depth of six feet to eight feet below ground surface and backfilled with clean fill meeting the requirements of the Unrestricted Use Soil Cleanup Objectives.

Localized hot spots of contaminated soils are present at a depth of three feet below ground surface on the northwestern portion of Bridge Street along the 18 Bridge Street property and at a depth of six feet below ground surface on the southern portion of Bridge Street along the 11 and 18 Bridge Street properties. Localized hot spots of contaminated soil are present below the asphalt cover on the public parking lot southeast of the 5 Bridge Street property. Localized hop spots of contaminated soil are present below four feet below ground surface on Long Island Avenue along the 31 Long Island Avenue property to the eastern portion of the 18 Bridge Street property.

Figure 1-9 provides details of the existing soil impacts on the Village of Sag Harbor Right of Way.

Groundwater

Remaining groundwater contamination above New York State Department of Environmental Conservation Class GA Groundwater Criteria is assumed to be present on the northern portion of the Bridge Street and on Long Island Avenue along the 31 Long Island avenue property and the 18 Bridge Street property. Figure 1-10 provides details of the locations and depth of existing groundwater contamination on the Village of Sag Harbor Right of Way.

Soil Vapor

No soil vapor contamination is believed to be present on the Village of Sag Harbor Right of Way.

1.4.3.6 United States Postal Service Property

Soil

No known soil contamination is believed to be present on the United States Postal Service property.

Groundwater

Historic groundwater samples collected from the United States Postal Service property have shown no contamination.

Soil Vapor

No soil vapor contamination is believed to be present on the United States Postal Service property.

1.4.3.7 7 Bridge Street Property

Soil

No known soil contamination is believed to be present on the 7 Bridge Street property.

Groundwater

A potential for residual groundwater contamination above New York State Department of Environmental Conservation Class GA Groundwater Criteria may be present on the 7 Bridge Street property. Figure 1-10 provides details of the locations and depth of existing groundwater contamination adjacent to the 7 Bridge Street property.

Soil Vapor

No soil vapor contamination is believed to be present on the 7 Bridge Street property.

1.4.3.8 Properties north of Long Island Avenue

Properties north of Long Island Avenue include:

- 22 Long Island Avenue
- 2 West Water Street
- 4 West Water Street
- 8 West Water Street

Soil

No known soil contamination is believed to be present on the properties north of Long Island Avenue.

Groundwater

Although ongoing quarterly groundwater monitoring at select locations on the properties north of Long Island Avenue have shown no groundwater contamination, historic samples collected during the Remedial Investigation indicated minimal groundwater contamination. Figure 1-10 provides details of the locations and depth of historic groundwater contamination on the properties north of Long Island Avenue.

Soil Vapor

No soil vapor contamination is believed to be present on any of the properties north of Long Island Avenue.

1.4.4 Engineering and Institutional Controls

Since remaining contamination is present at the Site and surrounding off-Site areas, the following Engineering Controls/Institutional Controls have been implemented:

1. A cover system consisting of a two feet of soil cover, asphalt pavement, concrete sidewalks, and concrete building slabs;
2. Monitored Natural Attenuation; and
3. A passive dense non-aqueous phase liquid collection system.

A series of Institutional Controls are required to implement, maintain, and monitor these Engineering Controls. The Environmental Easement(s) for the Site require compliance with these Institutional Controls and access agreements for the off-Site areas recommend compliance with these Institutional Controls, to ensure that:

- All Engineering Controls are operated and maintained as specified in this Site Management Plan;

- All Engineering Controls on the Site and off-Site areas are inspected and certified at a frequency and in a manner defined in this Site Management Plan;

- Groundwater, indoor air, and other environmental or public health monitoring are performed as defined in this Site Management Plan;

- Data and information pertinent to management of the Site and off-Site areas must be reported at the frequency and in a manner defined in this Site Management Plan; and

- Site and off-Site area environmental monitoring devices, including but not limited to, groundwater monitoring wells, must be protected and replaced as necessary to ensure continued functioning in the manner specified in this Site Management Plan.

In addition, the Environmental Easement will place restrictions on the various properties discussed above that are located within the Site. The restrictions are detailed in Section 2 of this Site Management Plan.

2.0 Engineering and Institutional Control Plan

2.1 Introduction

2.1.1 General

Remedial Actions, completed at the Site and the 18 Bridge Street property, were conducted in accordance with the New York State Department of Environmental Conservation-approved Remedial Design/Remedial Action Work Plan for the former Sag Harbor Manufactured Gas Plant site [AECOM, August 2008]. The remedial goals included attainment of 6 New York Codes Rules and Regulations Part 375 Restricted Residential Use Soil Cleanup Objectives for Site Soils. The Restricted Soil Cleanup Objectives were approved by the New York State Department of Environmental Conservation and are listed in Table 2-1. A summary of the remedial strategies and Engineering Controls and Institutional Controls implemented at the Site and off-Site areas are detailed in this section.

Since remaining contamination exists beneath the Site and off-Site areas, Engineering Controls/Institutional Controls are required. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all Engineering Controls/Institutional Controls at the Site and off-Site areas. The Engineering Controls/Institutional Controls Plan is one component of the Site Management Plan and is subject to revision by the New York State Department of Environmental Conservation.

2.1.2 Purpose

The purpose of this Plan is to provide:

- A description of all Engineering Controls/Institutional Controls for the various properties comprising the Site;
- A description of all Engineering Controls/Institutional Controls for the off-Site areas;
- The basic operation and intended role of each implemented Engineering Controls/Institutional Controls;
- A description of the key components of the Institutional Controls created as stated in the Environmental Easement(s);
- A description of the features that should be evaluated during each periodic inspection and compliance certification period;
- A description of plans and procedures to be followed for implementation of Engineering Controls/Institutional Controls, such as the implementation of the Excavation Work Plan for the safe handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site or on off-Site areas; and

- Any other provisions necessary to identify or establish methods for implementing the Engineering Controls/Institutional Controls as determined by the New York State Department of Environmental Conservation.

2.2 5 Bridge Street Property

2.2.1 Engineering Controls

2.2.1.1 Engineering Control Systems

Soil Cover System

Exposure to remaining contamination in soil/fill at the 5 Bridge Street property is prevented by a soil cover system placed over the property. The soil cover system is comprised of a minimum of two feet of clean fill that meets the requirements of 6 New York Codes Rules and Regulations 375 Restricted Residential Soil Cleanup Objectives (Figure 2-1). Additionally, in areas not covered by the subsurface soil mix wall, the soil cover system comprises of a minimum of eight feet of clean fill that meets the requirements of Restricted Residential Soil Cleanup Objectives. The Excavation Work Plan that appears in Appendix A outlines the procedures required to be implemented in the event the soil cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this soil cover system are provided in the Monitoring Plan included in Section 3 of this Site Management Plan.

Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will be completed on a quarterly basis. The details of the groundwater monitoring program are provided in Section 3.

Passive Dense Non-Aqueous Phase Liquid Collection System

Migration of potential dense non-aqueous phase liquid will be prevented by a passive dense non-aqueous phase liquid collection system installed on the 5 Bridge Street Property. The dense non-aqueous phase liquid collection system consists of a groundwater monitoring well which is fitted with a sump to observe and passively collect any potential dense non-aqueous phase liquid that is remaining in the subsurface. The dense non-aqueous phase liquid collection wells will be inspected quarterly for the presence of dense non-aqueous phase liquid. Any dense non-aqueous phase liquid collected in the sump and that can be pumped out will be removed.

2.2.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the Record of Decision. The framework for determining when remedial processes are complete is provided in Section 6.6 of New York State Department of Environmental Conservation DER-10 [New York State Department of Environmental Conservation, 2010].

Soil Cover System

The soil cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

Monitored Natural Attenuation

Groundwater monitoring activities to assess Monitored Natural Attenuation will continue, as determined by the New York State Department of Environmental Conservation, until groundwater concentrations are found to be consistently below New York State Department of Environmental Conservation standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the New York State Department of Environmental Conservation. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the New York State Department of Environmental Conservation, additional source removal, treatment and/or control measures will be evaluated.

Passive Dense Non-Aqueous Phase Liquid Collection System

The dense non-aqueous phase liquid collection system will continue until dense non-aqueous phase liquid can no longer be pumped from the collection well over four consecutive monitoring events and until permission to discontinue is granted in writing by the New York State Department of Environmental Conservation. If dense non-aqueous phase liquid is observed at levels that are not acceptable to the New York State Department of Environmental Conservation, additional source removal, treatment and/or control measures will be evaluated.

2.2.2 Institutional Controls

A series of Institutional Controls are required by the Record of Decision [New York State Department of Environmental Conservation, 2006] to: (1) implement, maintain and monitor the soil cover system (Figure 2-1), Monitored Natural Attenuation, and passive dense non-aqueous phase liquid collection system; (2) control disturbances of the subsurface contamination (Figures 1-9 and 1-10); and, (3) limit the use and development of the 5 Bridge Street property to restricted-residential uses only. Adherence to these Institutional Controls on the 5 Bridge Street property is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement by the Grantor and the Grantor's successors and assigns with all elements of this Site Management Plan;
- All Engineering Controls must be operated and maintained as specified in this Site Management Plan by National Grid;
- All Engineering Controls must be inspected and certified by National Grid at a frequency and in a manner defined in this Site Management Plan.
- Groundwater and indoor air monitoring must be performed by National Grid as defined in this Site Management Plan; and
- Data and information pertinent to site management must be reported by National Grid at the frequency and in a manner defined in this Site Management Plan.

Institutional Controls may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The 5 Bridge Street property has a series of Institutional Controls in the form of restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Restrictions that apply to the 5 Bridge Street property are:

- Vegetable gardens and farming on the 5 Bridge Street property are prohibited;
- The use of the groundwater underlying the 5 Bridge Street property is prohibited without the approval of the New York State Department of Environmental Conservation;
- All future activities on the 5 Bridge Street property that will disturb remaining contaminated material are prohibited unless they are conducted in accordance with this Site Management Plan;
- Implementation of a Health and Safety Plan and an Excavation Work Plan prior to any ground intrusive activity (with the exception of normal landscaping to a maximum of 24 inches below ground surface or to top of groundwater table whichever is shallower) including utility work, boring completion, monitoring well installation, and excavation;
- The potential for vapor intrusion must be evaluated prior to any modification to the 5 Bridge Street property conditions and for any buildings developed on the 5 Bridge Street property, and any potential impacts that are identified must be mitigated;
- The 5 Bridge Street property may only be used for restricted-residential (i.e., multi residential unit) use provided that the long-term Engineering Controls/Institutional Controls included in this Site Management Plan are employed;
- The 5 Bridge Street property may not be used for a higher level of use, such as Residential Use without additional remediation and amendment of the Environmental Easement, as approved by the New York State Department of Environmental Conservation irrespective of the local zoning laws; and
- National Grid will submit to the New York State Department of Environmental Conservation a written statement that certifies, under penalty of perjury, that: (1) controls employed at the 5 Bridge Street property are unchanged from the previous certification or that any changes to the controls were approved by the New York State Department of Environmental Conservation; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with this Site Management Plan. The New York State Department of Environmental Conservation retains the right to access the 5 Bridge Street property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that the New York State Department of Environmental Conservation may allow and will be made by an expert that the New York State Department of Environmental Conservation finds acceptable.

2.3 31 Long Island Avenue Property

2.3.1 Engineering Controls

2.3.1.1 Engineering Control Systems

<u>Soil Cover System</u>

Exposure to remaining contamination in soil/fill at the 31 Long Island Avenue property is prevented by a soil cover system placed over the property. The soil cover system is comprised of a minimum of two feet of clean fill that meets the requirements of 6 New York Codes Rules and Regulations 375 Restricted Residential Soil Cleanup Objectives (Figure 2-1). Additionally, in areas not covered by the subsurface soil mix wall, the soil cover system comprises of a minimum of eight feet of clean fill that meets the requirements of 6 New York Codes Rules and Regulations 375 Restricted Residential Soil Cleanup Objectives. The Excavation Work Plan that appears in Appendix A outlines the procedures required to be implemented in the event the soil cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this soil cover system are provided in the Monitoring Plan included in Section 3 of this Site Management Plan.

<u>Monitored Natural Attenuation</u>

Groundwater monitoring activities to assess Monitored Natural Attenuation will be completed on a quarterly basis. The details of the groundwater monitoring program are provided in Section 3.

2.3.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the Record of Decision. The framework for determining when remedial processes are complete is provided in Section 6.6 of New York State Department of Environmental Conservation DER-10.

<u>Soil Cover System</u>

The soil cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

<u>Monitored Natural Attenuation</u>

Groundwater monitoring activities to assess Monitored Natural Attenuation will continue, as determined by the New York State Department of Environmental Conservation, until groundwater concentrations are found to be consistently below New York State Department of Environmental Conservation standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the New York State Department of Environmental Conservation. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the New York State Department of Environmental Conservation, additional source removal, treatment and/or control measures will be evaluated.

2.3.2 Institutional Controls

A series of Institutional Controls is required by the Record of Decision to: (1) implement, maintain and monitor the soil cover system (Figure 2-1) and Monitored Natural Attenuation; (2) control disturbances of the subsurface contamination (Figures 1-9 and 1-10); and, (3) limit the use and development of the 31 Long Island Avenue property to Restricted-Residential Use only. Adherence to these Institutional Controls on the 31 Long Island Avenue property is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement by the Grantor and the Grantor's successors and assigns with all elements of this Site Management Plan;

- All Engineering Controls must be operated and maintained as specified in this Site Management Plan by the respective property owners and National Grid jointly;

- All Engineering Controls must be inspected and certified by National Grid at a frequency and in a manner defined in this Site Management Plan;

- Indoor air monitoring must be performed by National Grid as defined in this Site Management Plan; and

- Data and information pertinent to site management must be reported by National Grid at the frequency and in a manner defined in this Site Management Plan.

Institutional Controls may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The 31 Long Island Avenue property has a series of Institutional Controls in the form of restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Restrictions that apply to the 31 Long Island Avenue property are:

- Vegetable gardens and farming on the 31 Long Island Avenue property are prohibited;

- The use of the groundwater underlying the 31 Long Island Avenue property is prohibited without the approval of the New York State Department of Environmental Conservation;

- All future activities on the 31 Long Island Avenue property that will disturb remaining contaminated material are prohibited unless they are conducted in accordance with this Site Management Plan;

- Implementation of a Health and Safety Plan and an Excavation Work Plan prior to any ground intrusive activity (with the exception of normal landscaping to a maximum of 24 inches below ground surface or to top of groundwater table whichever is shallower) including utility work, boring completion, monitoring well installation, and excavation;

- The potential for vapor intrusion must be evaluated prior to any modification of the existing 31 Long Island Avenue property conditions and for any buildings developed on the 31 Long Island Avenue property, and any potential impacts that are identified must be mitigated;

- The 31 Long Island Avenue property may only be used for Restricted-Residential Use (i.e., multi residential unit) provided that the long-term Engineering Controls/Institutional Controls included in this Site Management Plan are employed;

- The 31 Long Island Avenue property may not be used for a higher level of use, such as Residential Use without additional remediation and amendment of the Environmental Easement, as approved by the New York State Department of Environmental Conservation irrespective of the local zoning laws; and

- National Grid will submit to the New York State Department of Environmental Conservation a written statement that certifies, under penalty of perjury, that: (1) controls employed at the 31 Long Island Avenue property are unchanged from the previous certification or that any changes to the controls were approved by the New York State Department of Environmental Conservation; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with this Site Management Plan. The New York State Department of Environmental Conservation retains the right to access the 31 Long Island Avenue property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that New York State Department of Environmental Conservation may allow and will be made by an expert that the New York State Department of Environmental Conservation finds acceptable.

The Site Management Plan requires various actions that will be implemented by the property owner(s) of 31 Long Island Avenue property, National Grid, and the New York State Department of Environmental Conservation. Table 2-2A includes a list of items that will trigger the various actions, identifies the parties responsible for implementing these actions, and provides a brief description of the actions.

2.4 11 Bridge Street Property

2.4.1 Engineering Controls

2.4.1.1 Engineering Control Systems

Composite Cover System

Exposure to remaining contamination in soil/fill at the 11 Bridge Street property is prevented by a Composite Cover System placed over most of the 11 Bridge Street property. Figure 2-1 provides a summary of the Composite Cover System present at the 11 Bridge Street property. The Composite Cover System is an Engineering Controls that provides a physical barrier that limits potential human and environmental exposures to contaminated subsurface soils and groundwater that remain at the 11 Bridge Street property. The Composite Cover System is comprised of a minimum of 24 inches of clean fill, asphalt pavement, brick-covered sidewalks, and concrete building slabs. The clean fill meets the requirements of 6 New York Codes Rules and Regulations 375 Restricted Residential Soil Cleanup Objectives (Figure 2-1). Additionally, in the northern portion of the 11 Bridge Street property not covered by the subsurface soil mix wall, the Composite Cover System comprises of a minimum of 10 feet of clean fill that meets the requirements of Restricted Residential Soil Cleanup Objectives. The Composite Cover System at the 11 Bridge Street property is a permanent control that must remain intact above the remaining contamination (Figure 2-1). The Excavation Work Plan that appears in Appendix A outlines the procedures required to be implemented in the event the Composite Cover System is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this Composite Cover System are provided in the Monitoring Plan included in Section 3 of this Site Management Plan.

Monitored Natural Attenuation

Groundwater monitoring activities to assess Monitored Natural Attenuation will be completed on a quarterly basis. The details of the groundwater monitoring program are provided in Section 3.

2.4.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the Record of Decision. The framework for determining when remedial processes are complete is provided in Section 6.6 of New York State Department of Environmental Conservation DER-10.

Composite Cover System

The Composite Cover System is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

<u>Monitored Natural Attenuation</u>

Groundwater monitoring activities to assess Monitored Natural Attenuation will continue, as determined by the New York State Department of Environmental Conservation, until groundwater concentrations are found to be consistently below New York State Department of Environmental Conservation standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the New York State Department of Environmental Conservation. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the New York State Department of Environmental Conservation, additional source removal, treatment and/or control measures will be evaluated.

2.4.2 Institutional Controls

A series of Institutional Controls is required by the Record of Decision to: (1) implement, maintain and monitor the Composite Cover System (Figure 2-1) and Monitored Natural Attenuation; (2) control disturbances of the subsurface contamination (Figures 1-9 and 1-10); and, (3) limit the use and development of the 11 Bridge Street property to Restricted Residential Use only. Adherence to these Institutional Controls on the 11 Bridge Street property is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement by the Grantor and the Grantor's successors and assigns with all elements of this Site Management Plan;

- All Engineering Controls must be operated and maintained as specified in this Site Management Plan by the respective Property owners and National Grid jointly;

- All Engineering Controls must be inspected and certified by National Grid at a frequency and in a manner defined in this Site Management Plan;

- Groundwater and indoor air monitoring must be performed by National Grid as defined in this Site Management Plan; and

- Data and information pertinent to site management must be reported by National Grid at the frequency and in a manner defined in this Site Management Plan.

Institutional Controls may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The 11 Bridge Street property has a series of Institutional Controls in the form of property restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Restrictions that apply to the 11 Bridge Street property are:

- Vegetable gardens and farming on the 11 Bridge Street property are prohibited;

- The use of the groundwater underlying the 11 Bridge Street property is prohibited without the approval of the New York State Department of Environmental Conservation;

- All future activities on the 11 Bridge Street property that will disturb remaining contamination are prohibited unless they are conducted in accordance with this Site Management Plan;

- Implementation of a Health and Safety Plan and an Excavation Work Plan prior to any ground intrusive activity (with the exception of normal landscaping to a maximum of 24 inches below ground surface or to top of groundwater table whichever is shallower) including utility work, boring completion, monitoring well installation, and excavation;

- The potential for vapor intrusion must be evaluated prior to any modification of the existing 11 Bridge Street property conditions and for any buildings developed on the 11 Bridge Street property, and any potential impacts that are identified must be mitigated;

- The 11 Bridge Street property may only be used for Restricted-Residential Use (i.e., multi residential unit) use provided that the long-term Engineering Controls/Institutional Controls included in this Site Management Plan are employed;

- The 11 Bridge Street property may not be used for a higher level of use, such as Residential Use without additional remediation and amendment of the Environmental Easement, as approved by the New York State Department of Environmental Conservation irrespective of the local zoning laws; and

- National Grid will submit to the New York State Department of Environmental Conservation a written statement that certifies, under penalty of perjury, that: (1) controls employed at the 11 Bridge Street property are unchanged from the previous certification or that any changes to the controls were approved by the New York State Department of Environmental Conservation; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the Site Management Plan. The New York State Department of Environmental Conservation retains the right to access the 11 Bridge Street property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that the New York State Department of Environmental Conservation may allow and will be made by an expert that the New York State Department of Environmental Conservation finds acceptable.

The Site Management Plan requires various actions that will be implemented by the property owner(s) of 11 Bridge Street property, National Grid, and the New York State Department of Environmental Conservation. Table 2-2B includes a list of items that will trigger the various actions, identifies the parties responsible for implementing these actions, and provides a brief description of the actions.

2.5 18 Bridge Street Property

Due to the limited nature of remaining contamination at this property, an access agreement may be executed between National Grid and the current and future owner(s) of the 18 Bridge Street property that will allow access on the property to National Grid to perform inspections and long-term monitoring as detailed below.

2.5.1 Engineering Controls

2.5.1.1 Engineering Control Systems

<u>Soil Cover System</u>

Exposure to remaining contamination in soil at the 18 Bridge Street property is prevented by a soil cover system present over the 18 Bridge Street property. The soil cover system is comprised of a minimum of two feet of clean fill that meets the requirements of 6 New York Codes Rules and Regulations 375 Restricted Residential Soil Cleanup Objectives on the most contaminated area of the 18 Bridge Street property (northern portion of the 18 Bridge Street property along Long Island Avenue, Figure 2-1). The Excavation Work Plan that appears in Appendix A outlines the procedures necessary to be implemented in the event the soil cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this soil cover system are provided in the Monitoring Plan included in Section 3 of this Site Management Plan.

Monitored Natural Attenuation

Groundwater monitoring activities to assess Monitored Natural Attenuation will be completed on a quarterly basis. The details of the groundwater monitoring program are provided in Section 3.

2.5.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the Record of Decision. The framework for determining when remedial processes are complete is provided in Section 6.6 of New York State Department of Environmental Conservation DER-10.

Soil Cover System

The soil cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals until a determination has been made by New York State Department of Environmental Conservation that the inspections are no longer required.

Monitored Natural Attenuation

Groundwater monitoring activities to assess Monitored Natural Attenuation will continue, as determined by the New York State Department of Environmental Conservation, until groundwater concentrations are found to be consistently below New York State Department of Environmental Conservation standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the New York State Department of Environmental Conservation. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the New York State Department of Environmental Conservation, additional source removal, treatment and/or control measures will be evaluated.

2.5.2 Institutional Controls

A series of Institutional Controls are recommended by New York State Department of Environmental Conservation and required by the access agreement executed between National Grid and the property owner(s)/board members to: (1) implement, maintain and monitor the soil cover system (Figure 2-1) and Monitored Natural Attenuation; (2) control disturbances of the subsurface contamination (Figures 1-9 and 1-10); and, (3) limit the use and development of the 18 Bridge Street property to Restricted Residential Use only. These Institutional Controls are:

- All Engineering Controls must be operated and maintained as specified in this Site Management Plan by National Grid and where appropriate by the 18 Bridge Street property owners;

- All Engineering Controls must be inspected and certified by National Grid at a frequency and in a manner defined in this Site Management Plan;

- Groundwater and indoor air monitoring must be performed by National Grid as defined in this Site Management Plan;

- Mitigation measures, if recommended by New York State Department of Environmental Conservation, will be implemented by National Grid for any potential impacts that are identified;

- Implementation of a Health and Safety Plan and an Excavation Work Plan prior to any ground intrusive activity (with the exception of normal landscaping to a maximum of 24 inches below ground surface or to top of groundwater table whichever is shallower) including utility work, boring completion, monitoring well installation, and excavation;

- The 18 Bridge Street property may only be used for Restricted-Residential Use (i.e., multi residential unit) provided that the long-term Engineering Controls/Institutional Controls included in this Site Management Plan are employed; and

- Data and information pertinent to site management must be reported by National Grid at the frequency and in a manner defined in this Site Management Plan.

Institutional Controls may not be discontinued without New York State Department of Environmental Conservation approval and extinguishment of any access agreements between National Grid and the current and future owner(s) of the 18 Bridge Street property.

The Property has a series of Institutional Controls in the form of notifications. Adherence to these Institutional Controls is recommended by New York State Department of Environmental Conservation and by any an access agreement executed between National Grid and the current and future owner(s) of the 18 Bridge Street property. Three week advance notification and prior approval from the New York Department of Environmental Conservation is required by the access agreement and the New York State Department of Environmental Conservation for the following events that apply to the 18 Bridge Street property:

- Vegetable gardens and farming on the 18 Bridge Street property;

- The use of the groundwater underlying the 18 Bridge Street property without the approval of New York State Department of Environmental Conservation with the exception of the use of groundwater pumped from the existing well located in the southern portion of the 18 Bridge Street property. The well, however, will be sampled by National Grid on a semi-annually basis and the results will be submitted to the New York State Department of Environmental Conservation, which will evaluate the status of the well. Unless instructed otherwise by the New York State Department of Environmental Conservation, the groundwater pumped from that well may be used for irrigation purposes only;

- All future activities on the 18 Bridge Street property that will disturb remaining contaminated material unless they are conducted in accordance with this Site Management Plan;

- Any modification of existing 18 Bridge Street property conditions and for any buildings developed on the 18 Bridge Street property; and

- The use of 18 Bridge Street property for a higher level of use such as Residential Use without additional remediation.

The advance notice will enable National Grid to observe and determine if the activities will pose any environmental risk to human health and the environment and provide oversight if necessary.

National Grid will submit to the New York State Department of Environmental Conservation a written statement that certifies, under penalty of perjury, that: (1) controls employed at the 18 Bridge Street property are unchanged from the previous certification or that any changes to the controls were approved by the New York State Department of Environmental Conservation; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with this Site Management Plan. The New York State Department of Environmental Conservation may request access to the 18 Bridge Street property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that New York State Department of Environmental Conservation may allow and will be made by an expert that the New York State Department of Environmental Conservation finds acceptable.

The Site Management Plan requires various actions that will be implemented by the property owner(s) of 18 Bridge Street property, National Grid, and the New York State Department of Environmental Conservation. Table 2-2C includes a list of items that will trigger the various actions, identifies the parties responsible for implementing these actions, and provides a brief description of the actions.

2.6 Village of Sag Harbor Properties

The Village of Sag Harbor properties include the following:

- Village of Sag Harbor Right of Way areas including –
  - Long Island Avenue from the west boundary of the United States Postal Service property to the west boundary of the 18 Bridge Street property
  - Bridge Street from the intersection with Long Island Avenue to the south boundary of 11 Bridge Street
  - West Water Street from the intersection with Long Island Avenue to the west boundary of 8 West Water Street
- The entire parking lot area south of the United States Postal Service property and East of the 5 Bridge Street and 11 Bridge Street properties

These Village of Sag Harbor properties will collectively be referred to as the Village of Sag Harbor Site Management Plan Areas. Due to the limited nature of remaining contamination at the Village of Sag Harbor parking lot area described above, an access agreement may be executed between National Grid and the Village of Sag Harbor that will allow access on the Village of Sag Harbor Right of Way areas and parking lot to National Grid to perform inspections and long-term monitoring as detailed below. National Grid will also enter a memorandum of understanding (MOU) with the Village of Sag Harbor for the Village of Sag Harbor Right of Way areas described above. The MOU will provide specific requirements for notifications to National Grid prior to any surface intrusive work on the Village of Sag Harbor Right of Way areas described above.

2.6.1 Engineering Controls

2.6.1.1 Engineering Control Systems

Composite Cover System

Exposure to remaining contamination in soil/fill on the Village of Sag Harbor Site Management Plan Areas is prevented by a Composite Cover System placed over most of the Village of Sag Harbor Site Management Plan Areas. Figure 2-1 provides a summary of the Composite Cover System present on the Village of Sag Harbor Site Management Plan Areas. The Composite Cover System is an Engineering Control that provides a physical barrier that limits potential human and environmental exposures to the remaining contaminated subsurface soils and groundwater that remain below the Village of Sag Harbor Site Management Plan Areas. The Composite Cover System is comprised of a minimum of 24 inches of clean fill, asphalt pavement, and concrete sidewalks. Additionally, the Composite Cover System on portions of Bridge Street and Long Island Avenue is comprised of a minimum of 7 feet of clean fill that meets the requirements of 6 New York Codes Rules and Regulations 375 Restricted Residential Soil Cleanup Objectives (Figure 2-1). The Composite Cover System on the Village of Sag Harbor Site Management Plan Areas is a permanent control that must remain intact above the remaining impacts (Figures 1-9 and 1-10). The Excavation Work Plan that appears in Appendix A outlines the procedures required to be implemented in the event the Composite Cover System is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of the Composite Cover System are provided in the Monitoring Plan included in Section 3 of this Site Management Plan.

Monitored Natural Attenuation

Groundwater monitoring activities to assess Monitored Natural Attenuation will be completed on a quarterly basis. The details of the groundwater monitoring program are provided in Section 3.

Passive Dense Non-Aqueous Phase Liquid Collection System

Migration of potential dense non-aqueous phase liquid will be prevented by a passive dense non-aqueous phase liquid collection system installed on Long Island Avenue along the north boundary of the 31 Long Island Avenue property. The dense non-aqueous phase liquid collection system consists of a groundwater monitoring well which is fitted with a sump to observe and passively collect any potential dense non-aqueous phase liquid that is remaining in the subsurface. The dense non-aqueous phase liquid collection well will be inspected quarterly for the presence of dense non-aqueous phase liquid. Any dense non-aqueous phase liquid collected in the sump and that is pumpable will be removed.

2.6.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the Record of Decision. The framework for determining when remedial processes are complete is provided in Section 6.6 of New York State Department of Environmental Conservation DER-10.

Composite Cover System

The Composite Cover System is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

Monitored Natural Attenuation

Groundwater monitoring activities to assess Monitored Natural Attenuation will continue, as determined by the New York State Department of Environmental Conservation, until groundwater concentrations are found to be consistently below New York State Department of Environmental Conservation standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the New York State Department of Environmental Conservation. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the New York State Department of Environmental Conservation, additional source removal, treatment and/or control measures will be evaluated.

Passive Dense Non-Aqueous Phase Liquid Collection System

The dense non-aqueous phase liquid collection system will continue until no pumpable dense non-aqueous phase liquid is observed in the collection well over four consecutive quarterly inspections and until permission to discontinue is granted in writing by the New York State Department of Environmental Conservation. If dense non-aqueous phase liquid is observed at levels that are not acceptable to the New York State Department of Environmental Conservation, additional source removal, treatment and/or control measures will be evaluated.

2.6.2 Institutional Controls

A series of Institutional Controls are recommended by New York State Department of Environmental Conservation to: (1) implement, maintain and monitor the Composite Cover System (Figure 2-1), Monitored Natural Attenuation, and the dense non-aqueous phase liquid collection system; (2) control disturbances of the subsurface contamination (Figures 1-9 and 1-10); and, (3) limit the use and development of the Village of Sag Harbor Site Management Plan Areas to Restricted-Residential Use only. These Institutional Controls are:

- All Engineering Controls must be operated and maintained as specified in this Site Management Plan by the Village of Sag Harbor and National Grid jointly;

- All Engineering Controls must be inspected and certified by National Grid at a frequency and in a manner defined in this Site Management Plan;

- Groundwater and indoor air monitoring must be performed by National Grid as defined in this Site Management Plan;

- Mitigation measures, if recommended by the New York State Department of Environmental Conservation, will be implemented by National Grid for any potential impacts that are identified;

- Implementation of a Health and Safety Plan and an Excavation Work Plan prior to any ground intrusive activity (with the exception of normal landscaping to a maximum of 24 inches below ground surface or to top of groundwater table whichever is shallower) including utility work, boring completion, monitoring well installation, and excavation;

- The Village of Sag Harbor Site Management Plan Areas may only be used for Restricted-Residential Use (i.e., multi residential unit) provided that the long-term Engineering Controls/Institutional Controls included in this Site Management Plan are employed; and

- Data and information pertinent to site management must be reported by National Grid at the frequency and in a manner defined in this Site Management Plan.

Institutional Controls may not be discontinued without New York State Department of Environmental Conservation approval and extinguishment of any MOUs and access agreements between National Grid and the Village of Sag Harbor.

The Village of Sag Harbor Site Management Plan Areas have a series of Institutional Controls in the form of notifications. Adherence to these Institutional Controls is recommended by the New York State Department of Environmental Conservation and by any MOUs and access agreement executed between National Grid and the Village of Sag Harbor. Three week advance notification and prior approval from the New York Department of Environmental Conservation is required by the access agreement and the New York State Department of Environmental Conservation for the following events that apply to the Village of Sag Harbor Site Management Plan Areas:

- Vegetable gardens and farming on the Village of Sag Harbor Site Management Plan Areas;
- The use of the groundwater underlying the Village of Sag Harbor Site Management Plan Areas without the approval of the New York State Department of Environmental Conservation;
- All future activities on the Village of Sag Harbor Site Management Plan Areas that will disturb remaining contamination unless they are conducted in accordance with this Site Management Plan;
- Any modification of existing Village of Sag Harbor Site Management Plan areas conditions and for any buildings developed on the Village of Sag Harbor Site Management Plan areas; and
- The use of Village of Sag Harbor Site Management Plan Areas for a higher level of use, such as Residential Use without additional remediation.

The advance notice will enable National Grid to observe and determine if the activities will pose any environmental risk to human health and the environment and provide oversight if necessary.

National Grid will submit to the New York State Department of Environmental Conservation a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Village of Sag Harbor Site Management Plan Areas are unchanged from the previous certification or that any changes to the controls were approved by the New York State Department of Environmental Conservation; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with this Site Management Plan. The New York State Department of Environmental Conservation may request access to the Village of Sag Harbor Site Management Plan Areas at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that the New York State Department of Environmental Conservation may allow and will be made by an expert that the New York State Department of Environmental Conservation finds acceptable.

The Site Management Plan requires various actions that will be implemented by the Village of Sag Harbor, National Grid, and the New York State Department of Environmental Conservation. Table 2-2D includes a list of items that will trigger the various actions, identifies the parties responsible for implementing these actions, and provides a brief description of the actions.

2.7 United States Postal Service Property

Due to the limited nature of remaining contamination at the United States Postal Service property, an access agreement may be executed between National Grid and United States Postal Service that will allow access on the property to National Grid to perform inspections and long-term monitoring as detailed below.

2.7.1 Engineering Controls

The United States Postal Service property is currently comprised of the Post Office building with concrete foundations and a paved parking lot that consists of bituminous pavement. Collectively the building foundations and the parking lot represent a Composite Cover System. The Composite Cover System is an Engineering Controls that provides a physical barrier that limits potential human and environmental exposures to remaining contamination that might be present at the United States Postal Service property. The Composite Cover System is a permanent control and the quality and integrity of this system will be inspected annually in accordance with the Monitoring Plan provided below in Section 3 and reported and certified annually as indicated below in Section 4. The Excavation Work Plan that appears in Appendix A outlines the procedures that are recommended to be implemented in the event the Composite Cover System is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this Composite Cover System are provided in the Monitoring Plan included in Section 3 of this Site Management Plan.

2.7.2 Institutional Controls

A series of Institutional Controls are recommended at the United States Postal Service property to (1) implement, maintain and monitor the Composite Cover System; (2) control disturbances of any potential contamination within the subsurface; and, (3) limit the use and development of the United States Postal Service property to Restricted-Residential Use only. These Institutional Controls are:

- All Engineering Controls must be operated and maintained as specified in this Site Management Plan by the United States Postal Service and National Grid jointly;
- All Engineering Controls must be inspected and certified by National Grid at a frequency and in a manner defined in this Site Management Plan;
- Indoor air monitoring must be performed by National Grid as defined in this Site Management Plan;
- Mitigation measures, if recommended by New York State Department of Environmental Conservation, will be implemented by National Grid for any potential impacts that are identified;
- Implementation of a Health and Safety Plan and an Excavation Work Plan prior to any ground intrusive activity (with the exception of normal landscaping to a maximum of 24 inches below ground surface or to top of groundwater table whichever is shallower) including utility work, boring completion, monitoring well installation, and excavation;
- The United States Postal Service property may only be used for Restricted-Residential Use (i.e., multi residential unit) provided that the long-term Engineering Controls/Institutional Controls included in this Site Management Plan are employed; and

- Data and information pertinent to site management must be reported by National Grid at the frequency and in a manner defined in this Site Management Plan.

Institutional Controls may not be discontinued without New York State Department of Environmental Conservation approval and extinguishment of any access agreements between National Grid and the United States Postal Service.

The United States Postal Service property has a series of Institutional Controls in the form of notifications. Adherence to these Institutional Controls restrictions is recommended by the New York State Department of Environmental Conservation and by an access agreement executed between National Grid and the United States Postal Service. Three week advance notification and prior approval from the New York Department of Environmental Conservation is required by the access agreement and the New York State Department of Environmental Conservation for the following events that apply to the United States Postal Service property:

- Vegetable gardens and farming on the United States Postal Service property;
- The use of the groundwater underlying the United States Postal Service property without the approval of New York State Department of Environmental Conservation;
- All future activities on the United States Postal Service property that will disturb subsurface material unless they are conducted in accordance with this Site Management Plan;
- Any modification of existing United States Postal Service property conditions and for any buildings developed on the United States Postal Service property; and
- The use of United Stated Postal Service property for a higher level of use, such as Residential Use without additional remediation.

The advance notice will enable National Grid to observe and determine if the activities will pose any environmental risk to human health and the environment and provide oversight if necessary.

National Grid will submit to the New York State Department of Environmental Conservation a written statement that certifies, under penalty of perjury, that: (1) controls employed at the United States Postal Service property are unchanged from the previous certification or that any changes to the controls were approved by the New York State Department of Environmental Conservation; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with this Site Management Plan. The New York State Department of Environmental Conservation may request access to the United States Postal Service property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that the New York State Department of Environmental Conservation may allow and will be made by an expert that the New York State Department of Environmental Conservation finds acceptable.

The Site Management Plan requires various actions that will be implemented by the United States Postal Service, National Grid, and the New York State Department of Environmental Conservation. Table 2-2E includes a list of items that will trigger the various actions, identifies the parties responsible for implementing these actions, and provides a brief description of the actions.

2.8 Properties North of the Long Island Avenue

Properties north of Long Island Avenue (the Properties) include:

- 22 Long Island Avenue
- 2 West Water Street
- 4 West Water Street
- 8 West Water Street

Due to the limited nature of remaining contamination at the Properties, an access agreement may be executed between National Grid and the current and future owners of the Properties that will allow access on the properties to National Grid to perform inspections and long-term monitoring as detailed below.

2.8.1 Engineering Controls

2.8.1.1 Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will be completed, as determined by the New York State Department of Environmental Conservation, until groundwater concentrations are found to be consistently below New York State Department of Environmental Conservation standards or have become asymptotic at an acceptable level over two consecutive years of monitoring. Monitoring will continue until permission to discontinue is granted in writing by the New York State Department of Environmental Conservation. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the New York State Department of Environmental Conservation, additional source removal, treatment and/or control measures will be evaluated.

2.8.2 Institutional Controls

A series of Institutional Controls are recommended at the Properties to (1) implement, maintain, and monitor Monitored Natural Attenuation; and (2) control disturbances of any potential impacts within the subsurface. These Institutional Controls are:

- All Engineering Controls will be operated and maintained as specified in this Site Management Plan by National Grid;
- All Engineering Controls must be inspected and certified by National Grid at a frequency and in a manner defined in this Site Management Plan;
- Indoor air monitoring must be performed by National Grid as defined in this Site Management Plan;
- Mitigation measures, if recommended by New York State Department of Environmental Conservation, will be implemented by National Grid for any potential impacts that are identified;
- Recommendation to implement the Health and Safety Plan and Excavation Work Plan prior to any ground intrusive activity (with the exception of normal landscaping to a maximum of 24

inches below ground surface or to top of groundwater table whichever is shallower) including utility work, boring completion, monitoring well installation, and excavation; and

- Data and information pertinent to site management must be reported by National Grid at the frequency and in a manner defined in this Site Management Plan.

Institutional Controls may not be discontinued without New York State Department of Environmental Conservation approval and extinguishment of any access agreements between National Grid and the current and future owners of the Properties. .

The Properties also have a series of Institutional Controls in the form of notifications. Adherence to these Institutional Controls is recommended by the New York State Department of Environmental Conservation and by any access agreement executed between National Grid and the individual owners of the Properties. Notification and prior approval from the New York Department of Environmental Conservation is required by the access agreement and the New York State Department of Environmental Conservation for the following events that apply to the Properties:

- Vegetable gardens and farming on the Properties;
- The use of the groundwater underlying the Properties without the approval of the New York State Department of Environmental Conservation;
- All future activities on the Properties that will disturb subsurface material unless they are conducted in accordance with this Site Management Plan; and
- Any modification of existing conditions on the Properties and for any buildings developed on the Properties.

The advance notice will enable National Grid to observe and determine if the activities will pose any environmental risk to human health and the environment and provide oversight if necessary.

National Grid will submit to the New York State Department of Environmental Conservation a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Properties are unchanged from the previous certification or that any changes to the controls were approved by the New York State Department of Environmental Conservation; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the Site Management Plan.

The Site Management Plan requires various actions that will be implemented by the property owner(s) of the Properties, National Grid, and the New York State Department of Environmental Conservation. Table 2-2F includes a list of items that will trigger the various actions, identifies the parties responsible for implementing these actions, and provides a brief description of the actions.

2.9 Excavation Work Plan

The Site has been fully remediated for Restricted-Residential Use. Any future intrusive work that will penetrate, encounter or disturb the remaining contamination, and any modifications or repairs to the existing cover system will be performed in compliance with the Excavation Work Plan that is attached as Appendix A to this Site Management Plan. Intrusive construction work must also be conducted in accordance with the procedures defined in a Health and Safety Plan and Community Air Monitoring Plan prepared for the Site. A Health and Safety Plan is attached as Appendix B to this Site Management Plan that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable federal, state and local regulations. Based on future changes to state and federal health and safety requirements, and specific methods employed by future contractors, the Health and Safety Plan and Community Air Monitoring Plan will be updated and re-submitted with the notification provided in Section A-1 of the Excavation Work Plan. Any intrusive construction work will be performed in compliance with the Excavation Work Plan, Health and Safety Plan, and Community Air Monitoring Plan, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The owner(s) of the various properties located within the limits of this Site Management Plan and discussed above, and associated parties preparing the remedial documents submitted to the New York State Department of Environmental Conservation, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings). The owner of each property located within the limits of this Site Management Plan will ensure that development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this Site Management Plan.

2.10 Indoor Air Evaluation

An indoor air evaluation will be performed over areas that contain remaining contamination to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors. Additionally, prior to the construction of any enclosed structures located over areas that contain remaining contamination, an indoor air evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure.

Prior to conducting an indoor air evaluation or installing a mitigation system, a work plan will be developed and submitted to the New York State Department of Environmental Conservation and the new York State Department of Health for approval. This work plan will be developed in accordance with the most recent New York State Department of Health “Guidance for Evaluating Vapor Intrusion in the State of New York.” Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the indoor air evaluation, the New York State Department of Health guidance, and construction details of the proposed structure.

Preliminary (unvalidated) indoor air sampling data will be forwarded to the New York State Department of Environmental Conservation and the New York State Department of Health for initial review and interpretation. Upon validation, the final data will be transmitted to the New York State Department of Environmental Conservation and the New York State Department of Health, along with a recommendation for follow-up action, such as mitigation. Validated indoor air data will also be transmitted to the property owner(s) within 30 days of validation. If any indoor air test results exceed New York State Department of Health guidelines, relevant New York State Department of Health fact sheets will be provided to all tenants and occupants of the properties within 15 days of receipt of validated data.

Indoor air sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

2.11 Inspections and Notifications

2.11.1 Inspections

Inspections of all remedial components installed at the Site and all Engineering Controls present on off-Site areas will be conducted at the frequency specified in the Site Management Plan Monitoring Plan schedule. A comprehensive inspection of the Site and off-Site areas will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this Site Management Plan and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If Site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this Site Management Plan (Section 3). The reporting requirements are outlined in the Site Management Reporting Plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the Engineering Controls occurs, an inspection of the Site and off-Site areas will be conducted within five days of the event to verify the effectiveness of the Engineering Controls/Institutional Controls implemented at the Site and off-Site areas by a qualified environmental professional as determined by the New York State Department of Environmental Conservation.

2.11.2 Notifications

The following notifications will be submitted by the property owner(s) to National Grid and the New York State Department of Environmental Conservation as needed for the following reasons:

- 60-day advance notice of any proposed changes in property use that are required under the terms of the Environmental Easement, access agreements, 6 New York Codes Rules and Regulations Part 375, and/or Environmental Conservation Law.
- 15-business day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundations and/or structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.

- Notice within 48-hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the affected property, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to National Grid and the New York State Department of Environmental Conservation within 45 days and shall describe and document actions taken to restore the effectiveness of the Engineering Controls.

National Grid will review and provide comments on all planned ground-intrusive activities proposed on properties located within the limits of Site Management Plan (Figure 1-2). National Grid may have a representative on-site, as appropriate, during any ground-intrusive work activities to observe activities and document compliance with this Site Management Plan.

Any change in the ownership of a property or the responsibility for implementing this Site Management Plan will include the following notifications:

- At least 60 days prior to the change, National Grid and the New York State Department of Environmental Conservation will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of this Site Management Plan, this Environmental Easement, applicable access agreements, and all approved work plans and reports.

- Within 15 days after the transfer of all or part of the property, the new owner's name, contact representative, and contact information will be confirmed in writing.

All notifications will be submitted to:

National Grid Project Manager:
Name: Theodore Leissing
Address: 175 E Old Country Road, Hicksville, New York 11801
Telephone: (516) 545-2563
Fax: (516) 545-2582
Email: theodore.leissing@us.ngrid.com

New York State Department of Environmental Conservation Project Manager:
Name: Doug MacNeal
Address: New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau C
625 Broadway Albany, New York 12233-7014
Telephone: (518) 402-9662
Fax: (518) 402-9679
Email: dkmacnea@gw.dec.state.ny.us

3.0 Monitoring Plan

3.1 Introduction

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site and off-Site areas, including all Engineering Controls and all affected Site media. Engineering Controls at the Site include soil cover system and Composite Cover System, Monitored Natural Attenuation, and dense non-aqueous phase liquid collection system. Engineering Controls on off-Site areas include soil cover system, Composite Cover System, and Monitored Natural Attenuation. This Monitoring Plan may only be revised with the approval of the New York State Department of Environmental Conservation.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air);
- Assessing compliance with the New York State Department of Environmental Conservation groundwater standards, Part 375 Soil Cleanup Objectives for soil, and the New York State Department of Health "Guidance for Evaluating Vapor Intrusion in the State of New York";
- Assessing achievement of the remedial performance criteria;
- Evaluating Site and off-Site area information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and

- Annual inspection and periodic certification.

Quarterly and annual monitoring of the performance of the remedy and overall reduction in contamination will be conducted for the first two years. The frequency thereafter will be determined by the New York State Department of Environmental Conservation. Trends in contaminant levels in groundwater in the affected areas will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in Table 3-1 and outlined in detail in Sections 3.2 and 3.3 below.

3.2 Cover System Monitoring

The Soil Cover System and Composite Cover System Engineering Controls will be inspected annually by a New York State licensed professional engineer or qualified environmental professional to confirm that the cover system is intact, remains unchanged, and continues to be protective of human health and the environment. The inspection will be completed by an individual who is familiar with the cover system and the Site and off-Site area. The annual inspections will be documented on the Annual Inspection and Certification Checklist provided in Appendix C. The form provides a checklist to document if there are any changes since the previous year's inspection and that the Engineering Controls continues to operate as intended. A survey of the composite cover will be completed if changes in the cover occur during the year or if changes are noted in the annual inspection. The survey will be completed by the New York State licensed surveyor and referenced NAVD 88 vertical datum to an accuracy of 0.01 ±foot and referenced to North American Datum (NAD 83).

If an emergency, such as a natural disaster or unforeseen failure of the Engineering Controls occurs, an inspection of the affected property will be conducted by a qualified environmental professional within five business days of the event to verify the effectiveness of the composite cover.

3.3 Passive Dense Non-aqueous Phase Liquid Collection System Monitoring

A passive dense non-aqueous phase liquid collection system was installed to mitigate the potential migration of any dense non-aqueous phase liquid left behind in the subsurface following the Remedial Action. The passive dense non-aqueous phase liquid collection system consists of a four inch (4") groundwater well with a two foot (2') sump installed on Long Island Avenue north of the 31 Long Island Avenue property and a four inch (4") groundwater well with a two foot (2') sump installed on the 5 Bridge Street Property. Well construction logs are included in Appendix D.

3.3.1 Monitoring Schedule

The passive dense non-aqueous phase liquid collection well will be monitored quarterly until dense non-aqueous phase liquid can no longer be recovered via pumps from the collection well over four consecutive quarterly inspections.

Inspection frequency is subject to change with the approval of the New York State Department of Environmental Conservation. Unscheduled inspections and/or sampling may take place when a suspected failure of the dense non-aqueous phase liquid collection system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the dense non-aqueous phase liquid collection system are specified later in this Site Management Plan.

3.3.2 Monitoring Procedures

A visual inspection of the complete system will be conducted during the monitoring event. The dense non-aqueous phase liquid collection system components to be monitored include, but are not limited to, the following:

- Integrity of the well including screens;
- Integrity and operation of the submersible pump; and
- Integrity of the dense non-aqueous phase liquid collection sump.

Standard Operating Procedures for the visual inspection, dense non-aqueous phase liquid sampling, and dense non-aqueous phase liquid collection are included in Appendix E.

3.4 Groundwater Monitoring

Groundwater monitoring will be performed quarterly to assess the effectiveness of natural attenuation. A network of monitoring wells, shown in Figure 3-1, has been designed to monitor both up-gradient and down-gradient groundwater conditions at the Site.

Four monitoring well clusters (SHMW-7S/SHMW-7I; SH MW-8S/SHMW-8I; SHMW-12S/SHMW-12I; and SHMW-13S/SHMW-13I), each consisting of one shallow aquifer well and one intermediate aquifer well, were installed in the shallow and intermediate overburden groundwater aquifer underlying the Site to determine the up-gradient groundwater conditions.

Two monitoring well clusters (SHMW-1S/SHMW-1I/SHMW-1D and SH MW-2S/SHMW-2I/ SHMW-2D), each consisting of one shallow aquifer well, intermediate aquifer well, and one deep aquifer well, were installed in the shallow, intermediate, and deep overburden groundwater aquifer underlying the Site to determine the Site groundwater conditions.

One monitoring well cluster (SHMW-9S/SHMW-9I) consisting of one shallow aquifer well and one intermediate aquifer well was installed in the shallow and intermediate overburden groundwater aquifer underlying the Site to determine the side-gradient groundwater conditions.

Five monitoring well clusters (SHMW-3S/SHMW-3I; SH MW-4S/SHMW-4I; SHMW-5S/SHMW-5I; SHMW-10S/SHMW-10I; and SHMW-11S/SHMW-11I), each consisting of one shallow aquifer well and one intermediate aquifer well, were installed in the shallow and intermediate overburden groundwater aquifer underlying the Site to determine the down-gradient groundwater conditions.

The well construction details are included in Table 3-2.

3.4.1 Monitoring Schedule

The monitoring well network will be monitored every quarter for a period of two to five years. Groundwater samples will be collected for a minimum of two years. Groundwater monitoring may be discontinued in monitoring wells if concentrations decrease below New York State Ambient Water Quality Standards (AWQSs) for two consecutive sampling events or as directed by the New York State Department of Environmental Conservation.

The sampling frequency may be modified with the approval of the New York State Department of Environmental Conservation. The Site Management Plan will be appended to reflect changes in sampling plans approved by the New York State Department of Environmental Conservation.

Deliverables for the groundwater monitoring program are specified below.

3.4.2 Sampling Protocol

All monitoring well sampling activities will be recorded in a field book and a groundwater-sampling log presented in Appendix E. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network. Each sample will be collected utilizing low flow groundwater sampling collection methods provided in the Field Sampling Plan (Appendix E). Each groundwater sample will be analyzed for benzene, toluene, ethylbenzene, and xylene via EPA Method 8260B, polycyclic aromatic hydrocarbons via EPA Method 8270, and applicable monitored natural attenuation parameters by a New York State Department of Health environmental laboratory approval program - certified laboratory. The groundwater samples will also be collected, handled, and analyzed according to the example Quality Assurance Project Plan [Appendix F].

3.4.3 Monitoring Well Repairs, Replacement and Decommissioning

If biofouling or silt accumulation occurs in any Site or off-Site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The New York State Department of Environmental Conservation will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of the New York State Department of Environmental Conservation. Well abandonment will be performed in accordance with the New York State Department of Environmental Conservation's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the New York State Department of Environmental Conservation.

3.5 Site and Off-Site Areas Inspection

Site and off-Site areas inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (Appendix C). The form will compile sufficient information to assess the following:

- Compliance with all Institutional Controls, including Site and off-Site areas usage;
- An evaluation of the condition and continued effectiveness of Engineering Controls;
- General Site and off-Site areas conditions at the time of the inspection;

- The Site and off-Site areas management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that Site and off-Site areas records are up to date.

3.6 Monitoring Quality Assurance/Quality Control

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan prepared for the Site and off-Site areas (Appendix F). Main Components of the Quality Assurance Project Plan include:

- Quality Assurance/Quality Control objectives for data measurement;
- Sampling program:
    - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
    - Sample holding times will be in accordance with the New York State Department of Environmental Conservation Analytical Services Protocol requirements.
    - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample tracking and custody;
- Calibration procedures:
    - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
    - The laboratory will follow all calibration procedures and schedules as specified in EPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical procedures;
- Preparation of a Data Usability Summary Report, which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and checks;
- QA performance and system audits;
- Preventative maintenance procedures and schedules;
- Corrective action measures.

3.7 Monitoring Reporting Requirements

Forms and any other information generated during regular monitoring events and inspections will be kept on file. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by the New York State Department of Environmental Conservation and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this Site Management Plan.

All monitoring results will be reported to the New York State Department of Environmental Conservation on a periodic basis in the Periodic Review Report. A letter report will also be prepared subsequent to each sampling event. The report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the New York State Department of Environmental Conservation-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by the New York State Department of Environmental Conservation.

4.0 Operation and Maintenance Plan

4.1 Introduction

The Site remedy does not rely on any mechanical systems, such as sub-slab depressurization systems or air sparge/ soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this Site Management Plan.If any such systems are developed, the operation and maintenance of the systems will be appended to the Site Management Plan.

5.0 Site Management Reporting Plan

5.1 Introduction

A Periodic Review Report will be submitted to the New York State Department of Environmental Conservation every year, beginning 18 months after the Certificate of Completion is issued. The Periodic Review Report will be prepared in accordance with the New York State Department of Environmental Conservation DER-10 "Technical Guidance for Site Investigation and Remediation" requirements. The frequency of submittal of the Periodic Review Report may be modified with the approval of the New York State Department of Environmental Conservation.

This report will include the following:

- Identification of all Engineering Controls/Institutional Controls required by the Remedial Design/Remedial Action Work Plan for the Site and off-Site areas;
- An assessment of the effectiveness of all Engineering Controls/Institutional Controls for the Site and off-Site areas;
- An evaluation of the Engineering and Institutional Control Plan and the Monitoring Plan for adequacy in meeting remedial goals;
- Results of the required annual Site and off-Site areas inspections and severe condition inspections, if any;
- A compilation of all deliverables generated during the reporting period, as specified in the Section 2 Engineering Controls/Institutional Controls Plan and the Section 3 Monitoring Plan; and
- Certification of the Engineering Controls/Institutional Controls.

A single Periodic Review Report will be prepared for the Site and off-Site areas.

5.2 Certification of Engineering and Institutional Controls

Information about Engineering Controls/Institutional Controls can be found in the Engineering and Institutional Control Plan portion of the Site Management Plan. Inspection of the Engineering Controls/Institutional Controls will occur at a frequency described in Section 3 Monitoring Plan. After the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State depending on the need to evaluate engineering systems will sign and certify the document. The document will certify that:

- Site and off-Site Engineering Controls/Institutional Controls are unchanged from the previous certification;
- Site use is compliant with the Environmental Easement;

- The Engineering Controls/Institutional Controls will remain in-place and are effective;
- The systems are performing as designed;
- Nothing has occurred that would impair the ability of the controls to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any operation and maintenance plan for such controls;
- Access is available to the site by the New York State Department of Environmental Conservation and the New York State Department of Health to evaluate continued maintenance of such controls;
- The inspection of the Site and off-Site areas to confirm the effectiveness of the Engineering Controls/Institutional Controls was performed under the direction of the individual making this certification;
- To the best of their knowledge and belief, the work and conclusions described in the certification are in accordance with the requirements of the Site remedial program; and
- The information presented is accurate and complete.

The signed certification will be included in the Periodic Review Report (see Section 5.4).

5.3 Inspections

5.3.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in the Section 3 Monitoring Plan of this Site Management Plan. At a minimum, an inspection of the Site and off-Site areas will be conducted annually.

5.3.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms which are contained in Appendix C. Additionally, a general Site and off-Site areas inspection form will be completed during the inspection (see Appendix C). These forms are subject to New York State Department of Environmental Conservation revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the Site and off-Site areas during the reporting period will be included in the Periodic Review Report.

5.3.3 Evaluation of Records and Reporting

The results of the inspection and Site and off-Site areas monitoring data will be evaluated as part of the Engineering Controls/Institutional Controls certification to confirm that the:

- Engineering Controls/Institutional Controls are in place, are performing properly, and remain effective;

- The Monitoring Plan is being implemented;

- Operation and maintenance activities are being conducted properly; and, based on the above items; and

- The Site remedy continues to be protective of public health and the environment and is performing as designed in the Remedial Design/Remedial Action Work Plan and the Final Engineering Report.

5.4 Periodic Review Report

A Periodic Review Report will be submitted every year, beginning 18 months after the Certificate od Completion or equivalent document is issued. The report will be submitted within 45 days of the end of each certification period. Other reports, such as validated groundwater and indoor air monitoring data, will be submitted quarterly for the first two years, and as determined by the New York State Department of Environmental Conservation thereafter. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Engineering Controls/Institutional Controls certification;

- All applicable inspection forms and other records generated for the Site and off-Site areas during the reporting period;

- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;

- Data summary tables and graphical representations of contaminants of concern by media (groundwater, indoor air), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data sufficient for the New York State Department of Environmental Conservation to evaluate contaminant concentration trends;

- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a New York State Department of Environmental Conservation-approved format;

- A Site and off-Site areas evaluation, which includes the following:

    - The compliance of the remedy with the requirements of the Site-specific Record of Decision;

    - Any new conclusions or observations regarding remaining contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;

    - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and

    - The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in hard-copy format, and in electronic format to the New York State Department of Environmental Conservation Central Office and the New York State Department of Health Bureau of Environmental Exposure Investigation.

5.5 Corrective Measures Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a corrective measures plan will be submitted to the New York State Department of Environmental Conservation for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the New York State Department of Environmental Conservation.

6.0 References

AECOM, 2008. Remedial Design/Remedial Action Work Plan, Sag Harbor Former Manufactured Gas Plant Site, Sag Harbor, NY, Prepared for National Grid, Hicksville, New York. August 2008

Dvirka and Barticulli, Consulting Engineers, 2002. *Sag Harbor former Manufactured Gas Plant Site Remedial Investigation Report*, Prepared for KeySpan, Brooklyn, New York. June 2002

Dvirka and Barticulli, Consulting Engineers, 2003. *Sag Harbor former Manufactured Gas Plant Site Final Remedial Investigation Report*, Prepared for KeySpan, Brooklyn, New York. December 2003

GEI Consultants, Inc., 2005. *Draft Supplemental Field Program Report*, Sag Harbor Former Manufactured Gas Plant Site, New York, Prepared for KeySpan, Hicksville, New York. February 2005

New York State Department of Environmental Conservation, 2005. *Order on Consent, Index No. D1-0002-98-11,* October 2005.

New York State Department of Environmental Conservation, 2006. *Record of Decision, Sag Harbor Manufactured Gas Plant Site, Suffolk County, New York,* March 2006.

New York State Department of Environmental Conservation, 2010. *Draft DER-10, Technical Guidance for Site Investigation and Remediation*.

Tables

AECOM

Table 1-1
Soil Analytical Data Summary - RI
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Chemical	6NYCRR Part 375 UNRESTRICTED USE (italics)	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (bold)	6NYCRR Part 375 RESTRICTED USE COMMERCIAL	SHCP-01 0-2" 1/5/1999	SHCP-02 0-2" 1/6/1999	SHCP-03 0 1/6/1999	SHCP-04 0 1/6/1999	SHMW-02D 78 4/18/2000	SHSB-01 0_5 3/20/2000	SHSB-01 26 3/20/2000	SHSB-01 5 3/20/2000	SHSB-02 0_5 3/20/2000	SHSB-02 16 3/20/2000	SHSB-02 52 3/22/2000	SHSB-02 6 3/20/2000	SHSB-03 1 3/20/2000	SHSB-03 10 3/20/2000	SHSB-03 34 3/20/2000	SHSB-04 0_5 3/13/2000	SHSB-04 24 3/15/2000	SHSB-04 4 3/13/2000	SHSB-05 0_5 3/13/2000
BTEX (mg/kg)																						
Benzene	0.06	4.8	44	*0.83*	**0.031**	12 U	**0.039**	0.005 U	0.006 U	**0.001**	**6.5**	0.006 U	92	0.001 U	140	**0.002 J**	0.15 U	**0.001**	0.001 U	0.001 U	*0.39*	0.001 U
Toluene	0.7	100	500	*0.92*	**0.029**	12 U	**0.018**	**0.011**	0.006 U	0.001 U	*2.5*	0.006 U	**270**	**0.001**	**370**	**0.006**	0.15 U	**0.003**	0.001 U	0.001 U	0.66	0.001 U
Ethylbenzene	1	41	390	**41**	*1.1*	**52**	**0.96**	**0.31**	0.006 U	**0.001**	**47**	0.006 U	**240**	**0.003**	**380**	0.006 U	*4.8*	**0.004**	0.001 U	0.001 U	*15*	0.001 U
Xylene, total	0.26	100	500	*51*	*1.7*	**120**	*0.87*	*0.58*	0.006 U	**0.002**	*70*	0.006 U	**380**	**0.005**	500	0.006 U	*5.2*	**0.005**	0.001 U	0.001 U	*19*	0.001 U
PAHs (mg/kg)																						
Acenaphthene	20	100	500	*57*	*22*	**110**	**0.045 J**	*30*	19 U	0.38 U	**270**	1.9 U	*38*	**0.12 J**	**370**	1.8 U	**16**	0.41 U	4.4 U	0.4 U	*27*	3.4 U
Acenaphthylene	100	100	500	**5.5 J**	**1.4 J**	4.4 J	**0.69 J**	**6.3**	**19 J**	0.38 U	25 J	**4.6**	**54**	**0.21 J**	**73**	**1.3 J**	**1 J**	0.41 U	**36**	0.4 U	2.9 J	**39**
Anthracene	100	100	500	**31**	**9.7**	58 J	**0.24 J**	**19**	**8.6 J**	0.38 U	**130**	**1.5 J**	**31**	**0.21 J**	**170**	**0.53 J**	**3 J**	0.41 U	**19**	0.4 U	17	**22**
Benz[a]anthracene	1	1	5.6	28	7.6	38 J	**0.73 J**	22	68	0.38 U	93	**1.7 J**	16 J	**0.15 J**	98	**1.8**	**1.3 J**	0.41 U	35	0.4 U	11	56 D
Benzo[a]pyrene	1	1	1	29	4.8 J	28 J	**0.84**	18	**70**	0.38 U	69	6.1	12 J	**0.13 J**	79	3.1	1 J	0.41 U	56	0.4 U	7.5	82 D
Benzo[b]fluoranthene	1	1	5.6	12 J	**1.8 J**	14 J	**1.3**	15	**77**	0.38 U	57	**5**	9.4 J	**0.11 J**	59 J	**3.3**	10 U	0.41 U	62	0.4 U	6.4	78 D
Benzo[g,h,i]perylene	100	100	500	29	**3.6 J**	16 J	**2.1**	10	**62**	0.38 U	25 J	**10**	**6.3 J**	**0.064 J**	**42 J**	4	10 U	0.41 U	**71 E**	0.4 U	3.5 J	**76 D**
Benzo[k]fluoranthene	0.8	3.9	56	**15 J**	*3.6 J*	**17 J**	***1.2***	**5.5**	**22**	0.38 U	**22 J**	*1.2 J*	**4 J**	0.39 U	**17 J**	*0.9 J*	10 U	0.41 U	**18**	0.4 U	*1.9 J*	**23**
Chrysene	1	3.9	56	**29**	**8**	**34 J**	*1.1*	**20**	**74**	0.38 U	89	*2.4*	**14 J**	**0.14 J**	86	*2*	*1 J*	0.41 U	**42**	0.4 U	**8.9**	59 D
Dibenz[a,h]anthracene	0.33	0.33	0.56	8.4 J	1 J	3.8 J	**0.49 J**	2 J	**11 J**	0.38 U	51 U	1.2 J	29 U	0.39 U	8.8 J	**0.32 J**	10 U	0.41 U	12	0.4 U	0.7 J	14
Dibenzofuran	7	59	350	NA	NA	NA	NA	**1.3 J**	19 U	0.38 U	51 U	1.9 U	29 U	0.39 U	**6.8 J**	**1.8 U**	10 U	0.41 U	4.4 U	0.4 U	0.66 J	3.4 U
Fluoranthene	100	100	500	**33**	**11**	**69 J**	**0.76 J**	**40**	**81**	0.38 U	**160**	**1.6 J**	**36**	**0.3 J**	**220**	**1.8**	**2.8 J**	0.41 U	**28**	0.4 U	23	**73 D**
Fluorene	30	100	500	**29**	**8.2**	*54 J*	**0.086 J**	**17**	19 U	0.38 U	**110**	1.9 U	29 U	**0.18 J**	**160**	1.8 U	**4.2 J**	0.41 U	4.4 U	0.4 U	13	3.4 U
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6	13 J	**2.2 J**	11 J	**1.6**	8.9	**51**	0.38 U	51 U	5.8	**5 J**	**0.053 J**	32 J	**2.8**	10 U	0.41 U	56	0.4 U	**3.1 J**	58 D
Methylnaphthalene,2-	NE	NE	NE	**89**	**13**	**98**	0.8 U	**26**	**2.4 J**	0.38 U	280	**0.76 J**	**120**	**0.27 J**	**540**	1.8 U	**32**	0.41 U	3.6 J	0.4 U	21	**1.9 J**
Naphthalene	12	100	500	**180**	*19*	**330**	**4.4**	*38*	**0.012 B**	0.38 U	580	0.006 U	**270**	**0.31 J**	1600 D	0.006 U	**160**	**0.045 J**	*14*	0.4 U	*29*	**4.2**
Phenanthrene	100	100	500	**120**	**37**	**210**	**0.77 J**	**58**	**12 J**	0.38 U	**460**	**0.84 J**	**160**	**0.83**	720	**0.44 J**	**13**	**0.094 J**	**5.1**	**0.064 J**	50	**23**
Pyrene	100	100	500	**160**	**37**	**130**	**2.6**	**51**	**180**	0.38 U	**330**	**4**	**49**	**0.42**	**310**	**3.1**	**4.3 J**	**0.056 J**	**60**	0.4 U	28	**130 D**

Notes:

U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Indicates exceedance of 6NYCRR Part 375 Unrestricted Use SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Residencial SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Commercial Use SCOs

Table 1-1
Soil Analytical Data Summary - RI
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical	6NYCRR Part 375 UNRESTRICTED USE (italics)	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (bold)	6NYCRR Part 375 RESTRICTED USE COMMERCIAL	SHSB-05 22 3/13/2000	SHSB-05 4 3/13/2000	SHSB-05 88 5/22/2000	SHSB-06 0_5 3/13/2000	SHSB-06 50 3/13/2000	SHSB-06 6 3/13/2000	SHSB-07 0_5 3/17/2000	SHSB-07 26 3/17/2000	SHSB-07 8 3/17/2000	SHSB-08 2 3/20/2000	SHSB-08 5 3/20/2000	SHSB-08 50 3/20/2000	SHSB-09 1 3/22/2000	SHSB-09 26 3/23/2000	SHSB-09 8 3/22/2000	SHSB-10 2 3/16/2000	SHSB-10 24 3/16/2000	SHSB-11 1_8 3/23/2000	SHSB-11 30 3/23/2000
BTEX (mg/kg)																						
Benzene	0.06	4.8	44	0.001 U	0.05 U	0.001 U	0.001 U	0.001 U	0.05 U	0.001 U	0.001	**6.2**	*1.9*	**26**	0.001 U	0.056 U	0.001 U	*0.39*	**11**	0.001 U	0.001 U	**0.002**
Toluene	0.7	100	500	0.001 U	0.05 U	0.001 U	0.001 U	0.001 U	0.05 U	0.001 U	0.001 U	0.1 U	1 U	0.5 U	0.001 U	**0.056**	**0.001**	0.065 U	*18*	0.001 U	**0.003**	0.001 U
Ethylbenzene	1	41	390	0.001 U	**0.28**	0.001 U	0.001 U	0.001 U	**0.23**	**0.003**	0.001 U	*5.4*	*21*	*34*	0.001 U	*1.4*	0.001 U	*1*	**63**	**0.002**	**0.005**	**0.018**
Xylene, total	0.26	100	500	0.001 U	***0.62***	0.001 U	0.001 U	0.001 U	*0.42*	**0.01**	0.002	*3.8*	*24*	*39*	0.001 U	*2.9*	0.001	*1.2*	*85*	**0.002**	**0.005**	**0.011**
PAHs (mg/kg)																						
Acenaphthene	20	100	500	0.38 U	520	0.38 U	3.9 U	0.39 U	**16**	0.39 U	0.4 U	2.4 U	*66 D*	**170**	0.38 U	**110**	0.4 U	**6.2**	500	0.41 U	0.38 U	**2.6**
Acenaphthylene	100	100	500	0.38 U	**54 J**	**0.081 J**	**25**	0.39 U	**1.8 J**	**0.26 J**	0.4 U	2.4 U	**11**	**11 J**	0.38 U	**11 J**	0.4 U	**0.66 J**	**71 J**	0.41 U	0.38 U	**0.41**
Anthracene	100	100	500	0.38 U	**260**	**0.12 J**	**15**	0.39 U	**7.9**	**0.097 J**	0.4 U	2.4 U	44 D	**78**	0.38 U	**56**	0.4 U	**3.4**	**270**	0.41 U	0.38 U	**1.3**
Benz[a]anthracene	1	1	5.6	0.38 U	180	**0.1 J**	51	0.39 U	**5.2**	**0.62**	0.4 U	2.4 U	49 D	52	0.38 U	31	0.4 U	**1.9**	160	0.41 U	**0.042 J**	**1.2**
Benzo[a]pyrene	1	1	1	0.38 U	130	**0.076 J**	58	0.39 U	4.2	**0.72**	0.4 U	2.4 U	36 D	32 J	0.38 U	19 J	0.4 U	1.4 J	110	0.41 U	**0.071 J**	1.1
Benzo[b]fluoranthene	1	1	5.6	0.38 U	110	**0.06 J**	59	0.39 U	**3.2 J**	**1**	0.4 U	2.4 U	37 D	27 J	0.38 U	15 J	0.4 U	**1.1 J**	88 J	0.41 U	**0.085 J**	**0.84**
Benzo[g,h,i]perylene	100	100	500	0.38 U	**63 J**	0.38 U	**47**	0.39 U	**1.8 J**	**0.86**	0.4 U	2.4 U	**16 DJ**	42 U	0.38 U	**8.3 J**	0.4 U	**0.7 J**	**58 J**	0.41 U	**0.1 J**	**0.66**
Benzo[k]fluoranthene	0.8	3.9	56	0.38 U	**32 J**	0.38 U	**20**	0.39 U	*1.1 J*	**0.3 J**	0.4 U	2.4 U	**9.6**	**10 J**	0.38 U	**5.2 J**	0.4 U	**0.44 J**	**29 J**	0.41 U	0.38 U	**0.26 J**
Chrysene	1	3.9	56	0.38 U	160	**0.11 J**	56	0.39 U	**4.4**	**0.82**	0.4 U	2.4 U	59 D	**47**	0.38 U	**27**	0.4 U	*1.7*	140	0.41 U	**0.048 J**	*1*
Dibenz[a,h]anthracene	0.33	0.33	0.56	*0.38 U*	14 J	0.38 U	8.1	0.39 U	**0.43 J**	0.39 U	0.4 U	2.4 U	4.1	42 U	0.38 U	22 U	0.4 U	1.7 U	94 U	0.41 U	0.38 U	**0.1 J**
Dibenzofuran	7	59	350	0.38 U	***20 J***	0.38 U	3.9 U	0.39 U	**0.51 J**	0.39 U	0.4 U	2.4 U	**1.6**	42 U	0.38 U	**4 J**	0.4 U	**0.21 J**	*24 J*	0.41 U	0.38 U	**0.046 J**
Fluoranthene	100	100	500	0.38 U	**380**	**0.2 J**	**54**	0.39 U	**10**	**0.63**	0.4 U	2.4 U	88 D	**98**	0.38 U	**63**	0.4 U	**4.2**	**350**	0.41 U	**0.046 J**	**2.6**
Fluorene	30	100	500	0.38 U	**270**	**0.084 J**	3.9 U	0.39 U	**7.4**	0.39 U	0.4 U	2.4 U	*36 D*	*65*	0.38 U	*49*	0.4 U	**2.8**	**250**	0.41 U	0.38 U	**1.3**
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6	0.38 U	53 J	0.38 U	39	0.39 U	**1.5 J**	**0.72**	0.4 U	2.4 U	14 DJ	42 U	0.38 U	7.3 J	0.4 U	**0.61 J**	47 J	0.41 U	**0.069 J**	**0.52**
Methylnaphthalene,2-	NE	NE	NE	0.38 U	**470**	0.38 U	**0.92 J**	0.39 U	**16**	0.39 U	0.4 U	2.4 U	56 D	**170**	0.38 U	**110**	0.4 U	**4.9**	**600**	0.41 U	0.38 U	**2.4**
Naphthalene	12	100	500	0.38 U	790	0.38 U	**1.9 J**	0.39 U	*35*	**0.05 J**	0.4 U	**4.8**	**170 D**	**480**	0.38 U	**180**	0.4 U	**9.1**	1300	0.41 U	0.38 U	**5.7**
Phenanthrene	100	100	500	**0.072 J**	960	**0.51**	**8.4**	0.39 U	**28**	**0.26 J**	0.4 U	2.4 U	**120 D**	**280**	0.38 U	**170**	0.4 U	**11**	900	**0.049 J**	0.38 U	**5.7**
Pyrene	100	100	500	0.38 U	**490**	**0.29 J**	**100 D**	0.39 U	**16**	**1.4**	0.4 U	2.4 U	**190 D**	**210**	0.38 U	**84**	0.4 U	**5.9**	**450**	0.41 U	**0.083 J**	**3.5**

Notes:
U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Indicates exceedance of 6NYCRR Part 375 Unrestricted Use SCOs
Indicates exceedance of 6NYCRR Part 375 Restricted Use Residencial SCOs
Indicates exceedance of 6NYCRR Part 375 Restricted Use Commercial Use SCOs

Table 1-1
Soil Analytical Data Summary - RI
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Chemical	6NYCRR Part 375 UNRESTRICTED USE (italics)	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (bold)	6NYCRR Part 375 RESTRICTED USE COMMERCIAL	SHSB-11 6 3/23/2000	SHSB-11 8 3/23/2000	SHSB-12 1 3/24/2000	SHSB-12 34 3/24/2000	SHSB-12 6 3/24/2000	SHSB-13 10 3/27/2000
BTEX (mg/kg)									
Benzene	0.06	4.8	44	0.063 U	44	0.064 U	0.001 U	0.003	7.8
Toluene	0.7	100	500	0.063 U	10	0.064 U	0.001 U	0.001 U	10
Ethylbenzene	1	41	390	0.22	160	0.86	0.001 U	0.031	59
Xylene, total	0.26	100	500	0.22	150	1.3	0.001 U	0.024	66
PAHs (mg/kg)									
Acenaphthene	20	100	500	39	16	11	0.4 U	21 J	19 U
Acenaphthylene	100	100	500	4 J	2.1	2.1 U	0.4 U	24 J	19 U
Anthracene	100	100	500	19	6.6	1 J	0.4 U	55	19 U
Benz[a]anthracene	1	1	5.6	13 J	6.5	2.1 U	0.4 U	96	19 U
Benzo[a]pyrene	1	1	1	9.3 J	5.3	2.1 U	0.4 U	100	19 U
Benzo[b]fluoranthene	1	1	5.6	7 J	4.2	2.1 U	0.4 U	84	19 U
Benzo[g,h,i]perylene	100	100	500	2.4 J	2.8	2.1 U	0.4 U	48	19 U
Benzo[k]fluoranthene	0.8	3.9	56	2.8 J	1.3 J	2.1 U	0.4 U	31 J	19 U
Chrysene	1	3.9	56	11 J	4.7	2.1 U	0.4 U	98	19 U
Dibenz[a,h]anthracene	0.33	0.33	0.56	16 U	0.53 J	2.1 U	0.4 U	34 U	19 U
Dibenzofuran	7	59	350	16 U	0.26 J	0.27 J	0.4 U	34 U	19 U
Fluoranthene	100	100	500	25	14	0.63 J	0.4 U	140	19 U
Fluorene	30	100	500	16 J	7.1	2.8	0.4 U	20 J	19 U
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6	3.7 J	2.4	2.1 U	0.4 U	42	19 U
Methylnaphthalene,2-	NE	NE	NE	48	17	11	0.4 U	10 J	4.9 J
Naphthalene	12	100	500	170	130 D	32	0.4 U	13 J	150
Phenanthrene	100	100	500	61	34 D	5.9	0.4 U	110	2.1 J
Pyrene	100	100	500	33	18	1.3 J	0.4 U	280	19 U

Chemical	SHSB-13 18 3/27/2000	SHSB-13 2 3/27/2000	SHSB-13 34 3/27/2000	SHSB-14 48 3/6/2000	SHSB-14 5 3/6/2000	SHSB-15 16 3/6/2000	SHSB-15 26 3/6/2000	SHSB-15 48 3/7/2000	SHSB-15 5 3/6/2000	SHSB-16 50 3/8/2000	SHSB-16 6 3/7/2000	SHSB-17 14 3/8/2000	SHSB-18 1 3/27/2000
BTEX (mg/kg)													
Benzene	0.005 U	0.013	0.001 U	0.001 U	3.1 U	0.001 U	0.012 U	0.001 U	1.2 U	0.001 U	1.2 U	0.001 U	0.001 U
Toluene	0.022	0.004	0.002	0.001 U	3.1 U	0.001 U	0.012 U	0.001 U	1.2 U	0.001 U	1.2 U	0.001 U	0.003
Ethylbenzene	0.11	0.007	0.002	0.001 U	22	0.001 U	0.086	0.001 U	12	0.001 U	17	0.001 U	0.001 U
Xylene, total	0.14	0.021	0.002	0.001 U	42	0.001 U	0.1	0.001 U	9.4	0.001 U	8.6	0.001 U	0.001 U
PAHs (mg/kg)													
Acenaphthene	0.39 U	1 U	0.4 U	0.39 U	89 D	0.38 U	1.8	0.39 U	3.2	0.41 U	19	0.37 U	1.8 U
Acenaphthylene	3.4	5.9	0.4 U	0.39 U	9.1	0.38 U	13	0.39 U	0.4 U	0.41 U	1.2 J	0.37 U	1.7 J
Anthracene	2.6	2.7	0.4 U	0.39 U	44 D	0.38 U	7.5	0.39 U	1.6	0.41 U	5.9	0.37 U	0.85 J
Benz[a]anthracene	2	2.8	0.4 U	0.39 U	29	0.38 U	5	0.39 U	1	0.41 U	5	0.37 U	3.3
Benzo[a]pyrene	1.6	4.1	0.4 U	0.39 U	19	0.38 U	3.8	0.39 U	0.87	0.41 U	3.8	0.37 U	3.1
Benzo[b]fluoranthene	1.2	4.8	0.4 U	0.39 U	15	0.38 U	3.1	0.39 U	0.69	0.41 U	3	0.37 U	4.3
Benzo[g,h,i]perylene	0.79	11	0.4 U	0.39 U	8.4	0.38 U	1.7	0.39 U	0.45	0.41 U	1.6	0.37 U	3.3
Benzo[k]fluoranthene	0.42	1.3	0.4 U	0.39 U	5.3	0.38 U	0.92 J	0.39 U	0.17 J	0.41 U	0.98 J	0.37 U	1.5 J
Chrysene	1.6	3.3	0.4 U	0.39 U	26	0.38 U	4.5	0.39 U	0.98	0.41 U	4.6	0.37 U	4.2
Dibenz[a,h]anthracene	0.14 J	0.91 J	0.4 U	0.39 U	2 J	0.38 U	0.36 J	0.39 U	0.11 J	0.41 U	0.41 J	0.37 U	0.48 J
Dibenzofuran	0.1 J	1 U	0.4 U	0.39 U	2.6	0.38 U	0.71 J	0.39 U	0.4 U	0.41 U	0.53 J	0.37 U	1.8 U
Fluoranthene	4.2	1.8	0.058 J	0.39 U	57 D	0.38 U	10	0.39 U	2	0.41 U	9.9	0.37 U	5.7
Fluorene	2.2	1 U	0.4 U	0.39 U	43 D	0.38 U	7.2	0.39 U	1.3	0.41 U	5.7	0.37 U	0.2 J
Indeno[1,2,3-cd]pyrene	0.66	5.7	0.4 U	0.39 U	7.3	0.38 U	1.5 J	0.39 U	0.33 J	0.41 U	1.4	0.37 U	2.7
Methylnaphthalene,2-	3.3	0.5 J	0.4 U	0.39 U	77 D	0.38 U	14	0.39 U	3.9	0.41 U	17	0.37 U	1.8 U
Naphthalene	5.9	0.21 J	0.4 U	0.39 U	100 D	0.22 J	22	0.39 U	1.8	0.41 U	83 D	0.37 U	1.8 U
Phenanthrene	10 D	0.38 J	0.1 J	0.39 U	130 D	0.38 U	23	0.08 J	5.6	0.41 U	23 D	0.37 U	1.7 J
Pyrene	5.4	3.2	0.079 J	0.39 U	75 D	0.38 U	14	0.052 J	3.5	0.41 U	14	0.37 U	9.1

Notes:

U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Indicates exceedance of 6NYCRR Part 375 Unrestricted Use SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Residencial SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Commercial Use SCOs

Table 1-1
Soil Analytical Data Summary - RI
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical	6NYCRR Part 375 UNRESTRICTED USE (italics)	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (bold)	6NYCRR Part 375 RESTRICTED USE COMMERCIAL	SHSB-18 30 3/27/2000	SHSB-18 6 3/27/2000	SHSB-19 2 3/20/2000	SHSB-19 5 3/20/2000	SHSB-19 50 3/20/2000	SHSB-20 31 3/22/2002	SHSB-20 79 3/25/2002	SHSB-20 9 3/21/2002	SHSB-20 99 3/25/2002	SHSB-21 15 3/27/2002	SHSB-21 7 3/27/2002	SHSB-21 71 3/28/2002	SHSB-21 95 3/29/2002	SHSB-22 20 4/1/2002	SHSB-22 52 4/2/2002	SHSB-22 6 4/1/2002	SHSB-22 98 4/2/2002	SHSB-23 17 4/4/2002	SHSB-23 37 4/4/2002
BTEX (mg/kg)																						
Benzene	0.06	4.8	44	0.001 U	0.62 U	**0.002 J**	*0.24*	**0.001**	**0.003**	0.001 U	*0.55*	0.001 U	**11**	*3.5*	0.001 U	0.001 U	0.001 U	0.001 U	**15**	0.001 U	0.001 U	0.001 U
Toluene	0.7	100	500	0.001 U	0.62 U	**0.011**	0.065 U	**0.002**	0.001 U	0.001 U	**0.23**	0.001 U	*16*	*3.7*	0.001 U	0.001 U	0.001 U	0.001 U	**0.2 J**	0.001 U	0.001 U	0.001 U
Ethylbenzene	1	41	390	0.001 U	*29*	**0.016**	*2.6*	0.001 U	**0.002**	0.001 U	*6.6*	0.001 U	*28*	*13*	0.001 U	0.001 U	0.001 U	0.001 U	*22*	0.001 U	0.001 U	0.001 U
Xylene, total	0.26	100	500	0.001 U	*34*	**0.018**	*2.6*	**0.002**	**0.004**	**0.002**	*11*	0.001 U	*37*	*15*	0.001 U	0.001 U	0.001 U	0.001 U	*22*	0.001 U	0.001 U	0.001 U
PAHs (mg/kg)																						
Acenaphthene	20	100	500	0.39 U	**220**	**0.34 J**	18 D	0.39 U	0.4 U	0.39 U	*30 D*	0.4 U	**5.7**	**130**	0.39 U	0.38 U	**0.048 J**	0.36 U	*65*	0.37 U	0.4 U	0.39 U
Acenaphthylene	100	100	500	0.39 U	25 J	**0.057 J**	**1.2**	0.39 U	0.4 U	0.39 U	**2.6**	0.4 U	**2.2**	**110**	0.39 U	0.38 U	0.4 U	0.36 U	**5.9 J**	0.37 U	0.4 U	0.39 U
Anthracene	100	100	500	0.39 U	**110**	**0.21 J**	**6.5**	0.39 U	0.4 U	0.39 U	17 D	0.4 U	**2.8**	**140**	0.39 U	0.38 U	**0.05 J**	0.36 U	35	0.37 U	0.4 U	0.39 U
Benz[a]anthracene	1	1	5.6	0.39 U	78	**0.2 J**	**4.6**	0.39 U	0.4 U	0.39 U	12 D	0.4 U	**1.4**	170	0.39 U	0.38 U	**0.058 J**	0.36 U	25	0.37 U	0.4 U	0.39 U
Benzo[a]pyrene	1	1	1	0.39 U	50	**0.13 J**	3	0.39 U	0.4 U	0.39 U	6.3	0.4 U	1.2	170	0.39 U	0.38 U	0.4 U	0.36 U	19	0.37 U	0.4 U	0.39 U
Benzo[b]fluoranthene	1	1	5.6	0.39 U	42	**0.07 J**	**2.4**	0.39 U	0.4 U	0.39 U	**4.9**	0.4 U	**0.89**	140	0.39 U	0.38 U	0.4 U	0.36 U	14	0.37 U	0.4 U	0.39 U
Benzo[g,h,i]perylene	100	100	500	0.39 U	25 J	**0.073 J**	**1.3**	0.39 U	0.4 U	0.39 U	**2.5**	0.4 U	**0.5**	**120**	0.39 U	0.38 U	0.4 U	0.36 U	**10**	0.37 U	0.4 U	0.39 U
Benzo[k]fluoranthene	0.8	3.9	56	0.39 U	**12 J**	0.4 U	*0.85*	0.39 U	0.4 U	0.39 U	*2.1*	0.4 U	**0.31 J**	74	0.39 U	0.38 U	0.4 U	0.36 U	**6**	0.37 U	0.4 U	0.39 U
Chrysene	1	3.9	56	0.39 U	67	**0.16 J**	**3.9**	0.39 U	0.4 U	0.39 U	**12 D**	0.4 U	***1.4***	180	0.39 U	0.38 U	**0.051 J**	0.36 U	**24**	0.37 U	0.4 U	0.39 U
Dibenz[a,h]anthracene	0.33	0.33	0.56	0.39 U	40 U	0.4 U	**0.31 J**	0.39 U	0.4 U	0.39 U	0.82	0.4 U	**0.14 J**	22 J	0.39 U	0.38 U	0.4 U	0.36 U	2.4 J	0.37 U	0.4 U	0.39 U
Dibenzofuran	7	59	350	0.39 U	5.8 J	0.4 U	**0.43**	0.39 U	0.4 U	0.39 U	**0.36 J**	0.4 U	0.4 U	*14 J*	0.39 U	0.38 U	0.4 U	0.36 U	**1.4 J**	0.37 U	0.4 U	0.39 U
Fluoranthene	100	100	500	0.39 U	**160**	**0.39 J**	12 D	0.39 U	**0.046 J**	0.39 U	20 D	0.4 U	**2.4**	**330**	**0.063 J**	**0.044 J**	**0.095 J**	0.36 U	**47**	0.37 U	0.4 U	0.39 U
Fluorene	30	100	500	0.39 U	**100**	**0.2 J**	8.8 D	0.39 U	0.4 U	0.39 U	15 D	0.4 U	**2.9**	**130**	0.39 U	0.38 U	0.4 U	0.36 U	**29**	0.37 U	0.4 U	0.39 U
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6	0.39 U	21 J	**0.056 J**	**1.2**	0.39 U	0.4 U	0.39 U	**1.9**	0.4 U	**0.41**	100	0.39 U	0.38 U	0.4 U	0.36 U	8	0.37 U	0.4 U	0.39 U
Methylnaphthalene,2-	NE	NE	NE	0.39 U	200	**0.051 J**	11 D	0.39 U	0.4 U	0.39 U	39 D	0.4 U	9.3 D	190	0.39 U	0.38 U	0.4 U	0.36 U	**59**	0.37 U	0.4 U	0.39 U
Naphthalene	12	100	500	0.39 U	**430**	**0.092 J**	*24 D*	0.39 U	0.4 U	0.39 U	*60 D*	0.4 U	12 D	**300**	0.39 U	0.38 U	0.4 U	0.36 U	**130 D**	0.37 U	0.4 U	0.39 U
Phenanthrene	100	100	500	0.39 U	**410**	**0.89**	32 D	0.39 U	**0.12 J**	0.39 U	60 D	0.4 U	16 D	**440**	**0.16 J**	**0.1 J**	**0.19 J**	0.36 U	**130 D**	0.37 U	0.4 U	0.39 U
Pyrene	100	100	500	0.39 U	**200**	**0.48**	14 D	0.39 U	**0.072 J**	0.39 U	34 D	0.4 U	**4.1**	**380**	**0.081 J**	**0.057 J**	**0.11 J**	0.36 U	**64**	0.37 U	0.4 U	0.39 U

Notes:
U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Indicates exceedance of 6NYCRR Part 375 Unrestricted Use SCOs
Indicates exceedance of 6NYCRR Part 375 Restricted Use Residencial SCOs
Indicates exceedance of 6NYCRR Part 375 Restricted Use Commercial Use SCOs

Table 1-1
Soil Analytical Data Summary - RI
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical	6NYCRR Part 375 UNRESTRICTED USE (italics)	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (bold)	6NYCRR Part 375 RESTRICTED USE COMMERCIAL	SHSB-23 58 4/4/2002	SHSB-23 8 4/4/2002	SHSB-24 12 4/16/2002	SHSB-24 20 4/16/2002	SHSB-24 40 4/16/2002	SHSB-24 56 4/17/2002	SHSB-25 21 4/5/2002	SHSB-25 42 4/8/2002	SHSB-25 57 4/8/2002	SHSB-25 6 4/5/2002	SHSB-26 16 4/8/2002	SHSB-26 40 4/8/2002	SHSB-26 5 4/8/2002	SHSB-26 58 4/9/2002	SHSB-27 28 4/11/2002	SHSB-27 5 4/11/2002	SHSB-28 10 4/2/2002	SHSB-28 20 4/2/2002	SHSB-28 38 4/2/2002
BTEX (mg/kg)																						
Benzene	0.06	4.8	44	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	**0.004**	0.001 U	0.001 U	0.001 U	**0.001 J**	**0.002**	0.001 U
Toluene	0.7	100	500	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	**0.017**	0.001 U	0.001 U	**0.002**	0.001 U	0.001 U	0.001 U
Ethylbenzene	1	41	390	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	**0.002**	0.001 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	**0.009**	0.001 U
Xylene, total	0.26	100	500	0.001 U	0.001 U	**0.003**	**0.002**	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	**0.041**	0.001 U	0.001 U	**0.006**	0.001 U	**0.005**	0.001 U
PAHs (mg/kg)																						
Acenaphthene	20	100	500	0.4 U	0.41 U	**0.09 J**	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	**0.13 J**	**0.12 J**	0.4 U	*96*	0.39 U	0.38 U	**0.34 J**	**0.3 J**	0.41 U	0.41 U
Acenaphthylene	100	100	500	0.4 U	**0.33 J**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.4 U	**76**	0.39 U	0.38 U	**0.64**	0.39 U	0.41 U	0.41 U
Anthracene	100	100	500	0.4 U	**0.12 J**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	**0.12 J**	**0.094 J**	0.4 U	**120**	0.39 U	0.38 U	**0.41**	0.39 U	0.41 U	0.41 U
Benz[a]anthracene	1	1	5.6	0.4 U	**0.8**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	0.38 U	**0.07 J**	0.4 U	110	0.39 U	0.38 U	**0.44**	0.39 U	0.41 U	0.41 U
Benzo[a]pyrene	1	1	1	0.4 U	**0.91**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.4 U	75	0.39 U	0.38 U	**0.57**	0.39 U	0.41 U	0.41 U
Benzo[b]fluoranthene	1	1	5.6	0.4 U	**0.89**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.4 U	61	0.39 U	0.38 U	**0.47**	0.39 U	0.41 U	0.41 U
Benzo[g,h,i]perylene	100	100	500	0.4 U	**0.5**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.4 U	**29**	0.39 U	0.38 U	**0.43**	0.39 U	0.41 U	0.41 U
Benzo[k]fluoranthene	0.8	3.9	56	0.4 U	**0.32 J**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.4 U	**34**	0.39 U	0.38 U	**0.19 J**	0.39 U	0.41 U	0.41 U
Chrysene	1	3.9	56	0.4 U	**0.93**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	0.38 U	**0.078 J**	0.4 U	110	0.39 U	0.38 U	**0.49**	0.39 U	0.41 U	0.41 U
Dibenz[a,h]anthracene	0.33	0.33	0.56	0.4 U	**0.1 J**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.4 U	9.4 J	0.39 U	0.38 U	**0.09 J**	0.39 U	0.41 U	0.41 U
Dibenzofuran	7	59	350	0.4 U	0.41 U	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.4 U	22 U	0.39 U	0.38 U	0.36 U	0.39 U	0.41 U	0.41 U
Fluoranthene	100	100	500	0.4 U	**0.86**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	**0.15 J**	**0.16 J**	0.4 U	**190**	0.39 U	0.38 U	**0.73**	0.39 U	0.41 U	0.41 U
Fluorene	30	100	500	0.4 U	0.41 U	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	**0.088 J**	**0.078 J**	0.4 U	**110**	0.39 U	0.38 U	**0.22 J**	**0.088 J**	0.41 U	0.41 U
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6	0.4 U	**0.39 J**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.4 U	26	0.39 U	0.38 U	**0.35 J**	0.39 U	0.41 U	0.41 U
Methylnaphthalene,2-	NE	NE	NE	0.4 U	0.41 U	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	**0.051 J**	0.4 U	0.4 U	**22 J**	0.39 U	0.38 U	**0.1 J**	**0.1 J**	0.41 U	0.41 U
Naphthalene	12	100	500	0.4 U	0.41 U	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	**0.14 J**	0.4 U	0.4 U	22 U	0.39 U	0.38 U	**0.18 J**	**1**	0.41 U	0.41 U
Phenanthrene	100	100	500	0.4 U	**0.042 J**	0.43 U	**0.14 J**	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	**0.44**	**0.32 J**	0.4 U	**240**	0.39 U	0.38 U	**0.28 J**	**0.071 J**	0.41 U	0.41 U
Pyrene	100	100	500	0.4 U	**1.4**	0.43 U	0.4 U	0.42 U	0.4 U	0.4 U	0.42 U	0.4 U	**0.22 J**	**0.22 J**	0.4 U	**280**	0.39 U	0.38 U	**1.4**	0.39 U	0.41 U	0.41 U

Notes:
U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Indicates exceedance of 6NYCRR Part 375 Unrestricted Use SCOs
Indicates exceedance of 6NYCRR Part 375 Restricted Use Residencial SCOs
Indicates exceedance of 6NYCRR Part 375 Restricted Use Commercial Use SCOs

Table 1-1
Soil Analytical Data Summary - RI
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Chemical	6NYCRR Part 375 UNRESTRICTED USE (italics)	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (bold)	6NYCRR Part 375 RESTRICTED USE COMMERCIAL	SHSB-28 58 4/2/2002	SHSB-29 12 4/11/2002	SHSB-29 30 4/11/2002	SHSB-29 5 4/11/2002	SHSB-29 58 4/11/2002	SHSB-30 28 4/1/2002	SHSB-30 5 4/1/2002	SHSB-31 16 3/28/2002
BTEX (mg/kg)											
Benzene	0.06	4.8	44	0.001 U	0.001 U	0.001 U	0.62 U	0.001 U	0.001 U	**0.002**	0.001 U
Toluene	0.7	100	500	0.001 U	0.001 U	0.001 U	**0.68**	0.001 U	0.001 U	0.002 U	0.001 U
Ethylbenzene	1	41	390	0.001 U	0.001 U	0.001 U	*27*	0.001 U	0.001 U	0.002 U	0.001 U
Xylene, total	0.26	100	500	0.001 U	0.001 U	0.001 U	*32*	0.001 U	0.001 U	**0.008**	0.001 U
PAHs (mg/kg)											
Acenaphthene	20	100	500	0.4 U	0.41 U	0.41 U	**440 D**	0.36 U	0.41 U	**0.5**	0.4 U
Acenaphthylene	100	100	500	0.4 U	0.41 U	0.41 U	**45**	0.36 U	0.41 U	0.49 U	0.4 U
Anthracene	100	100	500	0.4 U	0.41 U	0.41 U	**440 D**	0.36 U	0.41 U	0.49 U	0.4 U
Benz[a]anthracene	1	1	5.6	0.4 U	0.41 U	0.41 U	160 D	0.36 U	0.41 U	0.49 U	0.4 U
Benzo[a]pyrene	1	1	1	0.4 U	0.41 U	0.41 U	110 D	0.36 U	0.41 U	0.49 U	0.4 U
Benzo[b]fluoranthene	1	1	5.6	0.4 U	0.41 U	0.41 U	88 D	0.36 U	0.41 U	0.49 U	0.4 U
Benzo[g,h,i]perylene	100	100	500	0.4 U	0.41 U	0.41 U	**54**	0.36 U	0.41 U	0.49 U	0.4 U
Benzo[k]fluoranthene	0.8	3.9	56	0.4 U	0.41 U	0.41 U	**35**	0.36 U	0.41 U	0.49 U	0.4 U
Chrysene	1	3.9	56	0.4 U	0.41 U	0.41 U	150 D	0.36 U	0.41 U	0.49 U	0.4 U
Dibenz[a,h]anthracene	0.33	0.33	0.56	0.4 U	0.41 U	0.41 U	12	0.36 U	0.41 U	0.49 U	0.4 U
Dibenzofuran	7	59	350	0.4 U	0.41 U	0.41 U	*13*	0.36 U	0.41 U	0.49 U	0.4 U
Fluoranthene	100	100	500	0.4 U	0.41 U	0.41 U	**330 D**	**0.06 J**	0.41 U	0.49 U	**0.049 J**
Fluorene	30	100	500	0.4 U	0.41 U	0.41 U	**230 D**	0.36 U	0.41 U	0.49 U	0.4 U
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6	0.4 U	0.41 U	0.41 U	46	0.36 U	0.41 U	0.49 U	0.4 U
Methylnaphthalene,2-	NE	NE	NE	0.4 U	0.41 U	0.41 U	480 D	0.36 U	0.41 U	0.49 U	0.4 U
Naphthalene	12	100	500	0.4 U	0.41 U	0.41 U	900 D	0.36 U	0.41 U	**2.3**	0.4 U
Phenanthrene	100	100	500	0.4 U	0.41 U	0.41 U	840 D	**0.13 J**	0.41 U	0.49 U	**0.11 J**
Pyrene	100	100	500	0.4 U	0.41 U	0.41 U	**430 D**	**0.096 J**	0.41 U	0.49 U	**0.058 J**

Chemical	SHSB-31 28 3/28/2002	SHSB-31 4 3/28/2002	SHSB-32 16 4/15/2002	SHSB-32 5 4/15/2002	SHSB-33 12 4/15/2002	SHSB-33 5_5 4/15/2002	SHSB-34 28 4/9/2002	SHSB-34 8 4/9/2002	SHSB-35 28 4/10/2002	SHSB-35 8 4/10/2002	SHSB-36 14 3/29/2002
BTEX (mg/kg)											
Benzene	0.001 U	0.39 U	0.001 U	*0.57*	**0.034**	*1.1 J*	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.001 U	0.39 U	0.001 U	0.31 U	**0.002**	1.1 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	0.001 U	*16*	0.001 U	*23*	**0.001 J**	**65**	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylene, total	0.001 U	*13*	0.001 U	*11*	**0.004**	*58*	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
PAHs (mg/kg)											
Acenaphthene	NA	**120 D**	0.4 U	*65 D*	0.41 U	620 D	0.4 U	0.46 U	0.41 U	**0.11 J**	0.4 U
Acenaphthylene	NA	14	0.4 U	**5.7**	0.41 U	**45**	0.4 U	0.46 U	0.41 U	**0.16 J**	0.4 U
Anthracene	NA	**57**	0.4 U	34 D	0.41 U	**280 D**	0.4 U	0.46 U	0.41 U	**0.41 J**	0.4 U
Benz[a]anthracene	NA	40	0.4 U	21 D	0.41 U	180 D	0.4 U	0.46 U	0.41 U	**1.2**	0.4 U
Benzo[a]pyrene	NA	27	0.4 U	16 D	0.41 U	120 DJ	0.4 U	0.46 U	0.41 U	1.1	0.4 U
Benzo[b]fluoranthene	NA	24	0.4 U	13	0.41 U	110 DJ	0.4 U	0.46 U	0.41 U	**1.4**	0.4 U
Benzo[g,h,i]perylene	NA	**9.3**	0.4 U	**8.3**	0.41 U	**50**	0.4 U	0.46 U	0.41 U	**0.75**	0.4 U
Benzo[k]fluoranthene	NA	**10**	0.4 U	**5.7**	0.41 U	**33**	0.4 U	0.46 U	0.41 U	**0.56**	0.4 U
Chrysene	NA	**41**	0.4 U	**22 D**	0.41 U	180 D	0.4 U	0.46 U	0.41 U	*1.3*	0.4 U
Dibenz[a,h]anthracene	NA	2.5 J	0.4 U	1.9	0.41 U	11	0.4 U	0.46 U	0.41 U	**0.18 J**	0.4 U
Dibenzofuran	NA	**5.4**	0.4 U	**2.5**	0.41 U	*18*	0.4 U	0.46 U	0.41 U	**0.064 J**	0.4 U
Fluoranthene	NA	**68**	**0.052 J**	44 D	0.41 U	**380 D**	0.4 U	0.46 U	0.41 U	**2.9**	0.4 U
Fluorene	NA	*48*	0.4 U	28 D	0.41 U	**280 D**	0.4 U	0.46 U	0.41 U	**0.14 J**	0.4 U
Indeno[1,2,3-cd]pyrene	NA	9.2	0.4 U	7.3	0.41 U	45	0.4 U	0.46 U	0.41 U	**0.72**	0.4 U
Methylnaphthalene,2-	NA	130 D	0.4 U	60 D	0.41 U	680 D	0.4 U	0.46 U	0.41 U	0.47 U	0.4 U
Naphthalene	NA	**300 D**	**0.046 J**	**130 D**	0.41 U	1700 D	0.4 U	0.46 U	0.41 U	**0.09 J**	0.4 U
Phenanthrene	NA	**190 D**	**0.12 J**	**110 D**	0.41 U	1000 D	0.4 U	0.46 U	0.41 U	**1.7**	0.4 U
Pyrene	NA	**74**	**0.073 J**	57 D	0.41 U	**490 D**	0.4 U	0.063 J	0.41 U	**2.4**	0.4 U

Notes:

U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Indicates exceedance of 6NYCRR Part 375 Unrestricted Use SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Residencial SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Commercial Use SCOs

Table 1-1
Soil Analytical Data Summary - RI
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical	6NYCRR Part 375 UNRESTRICTED USE (italics)	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (bold)	6NYCRR Part 375 RESTRICTED USE COMMERCIAL	SHSB-36 8 3/29/2002	SHSB-37 10 4/12/2002	SHSB-37 14 4/12/2002	SHSB-37 6 4/12/2002	SHSB-38 12 4/8/2002	SHSB-38 22 4/8/2002	SHSB-38 8 4/8/2002	SHSB-39 16 3/27/2002	SHSB-39 8 3/27/2002	SHSB-40 13 4/9/2002	SHSB-40 8 4/9/2002	SHSB-41 16 4/11/2002	SHSB-41 9 4/11/2002	SHSB-42 20 4/15/2002	SHSB-42 8 4/15/2002	SHSB-43 16 4/16/2002	SHSB-43 8 4/16/2002	SHSB-44 28 4/17/2002	SHSB-44 6 4/17/2002
BTEX (mg/kg)																						
Benzene	0.06	4.8	44	**0.009**	*0.36*	0.001 U	**0.002**	0.065 U	0.001 U	**14**	0.001 U	0.003 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.26 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.7	100	500	0.001 U	0.005 U	0.001 U	0.001 U	**0.16**	0.001 U	*17*	0.001 U	0.003 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.26 U	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	1	41	390	0.001 U	**0.005**	0.001 U	**0.003**	**0.75**	0.001 U	**140**	0.001 U	0.003 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	*16*	0.001 U	0.001 U	0.001 U	0.001 U
Xylene, total	0.26	100	500	0.001 U	**0.009**	**0.006**	**0.008**	*0.78*	0.001 U	**130**	0.001 U	0.003 U	**0.002**	0.001 U	0.001 U	**0.007**	0.001 U	*17*	**0.002**	0.001 U	0.001 U	0.001 U
PAHs (mg/kg)																						
Acenaphthene	20	100	500	0.42 U	1.6 U	0.4 U	13 D	**1.2**	0.39 U	**330**	0.38 U	0.92 U	0.4 U	**0.053 J**	0.42 U	**0.4 J**	0.42 U	**110 D**	0.41 U	0.42 U	0.37 U	0.42 U
Acenaphthylene	100	100	500	0.42 U	1.6 U	0.4 U	**1.8**	**0.26 J**	0.39 U	**85 J**	0.38 U	0.92 U	0.4 U	**0.41 U**	0.42 U	0.43 U	0.42 U	**10**	0.41 U	0.42 U	0.37 U	0.42 U
Anthracene	100	100	500	0.42 U	1.6 U	0.4 U	11 D	**0.64**	0.39 U	**210**	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	58 D	0.41 U	0.42 U	0.37 U	0.42 U
Benz[a]anthracene	1	1	5.6	0.42 U	1.6 U	0.4 U	6.1	**0.45**	0.39 U	150	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	39 D	0.41 U	0.42 U	0.37 U	0.42 U
Benzo[a]pyrene	1	1	1	0.42 U	1.6 U	0.4 U	4	**0.35 J**	0.39 U	120	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	31 DJ	0.41 U	0.42 U	0.37 U	0.42 U
Benzo[b]fluoranthene	1	1	5.6	0.42 U	1.6 U	0.4 U	**3**	**0.22 J**	0.39 U	81 J	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	18	0.41 U	0.42 U	0.37 U	0.42 U
Benzo[g,h,i]perylene	100	100	500	0.42 U	1.6 U	0.4 U	**1.1**	**0.17 J**	0.39 U	**59 J**	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	**12**	0.41 U	0.42 U	0.37 U	0.42 U
Benzo[k]fluoranthene	0.8	3.9	56	0.42 U	1.6 U	0.4 U	*1.9*	**0.19 J**	0.39 U	60 J	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	**6.8**	0.41 U	0.42 U	0.37 U	0.42 U
Chrysene	1	3.9	56	0.42 U	1.6 U	0.4 U	**6.2 D**	**0.42 J**	0.39 U	150	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	**36 D**	0.41 U	0.42 U	0.37 U	0.42 U
Dibenz[a,h]anthracene	0.33	0.33	0.56	0.42 U	1.6 U	0.4 U	**0.39**	0.43 U	0.39 U	110 U	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	2.8	0.41 U	0.42 U	0.37 U	0.42 U
Dibenzofuran	7	59	350	0.42 U	1.6 U	0.4 U	**0.55**	0.43 U	0.39 U	110 U	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.14 J	0.42 U	**2.2**	0.41 U	0.42 U	0.37 U	0.42 U
Fluoranthene	100	100	500	0.42 U	1.6 U	0.4 U	**12 D**	**0.99**	0.39 U	**300**	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	82 D	0.41 U	0.42 U	0.37 U	0.42 U
Fluorene	30	100	500	0.42 U	1.6 U	0.4 U	8.3 D	**0.64**	0.39 U	**190**	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.12 J	0.42 U	*51 D*	0.41 U	0.42 U	0.37 U	0.42 U
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6	0.42 U	1.6 U	0.4 U	**1.2**	**0.14 J**	0.39 U	47 J	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	10	0.41 U	0.42 U	0.37 U	0.42 U
Methylnaphthalene,2-	NE	NE	NE	0.42 U	1.6 U	0.4 U	6.3 D	**1.5**	0.39 U	**420**	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	**0.33 J**	0.42 U	160 D	0.41 U	0.42 U	0.37 U	0.42 U
Naphthalene	12	100	500	0.42 U	1.6 U	0.4 U	7.9 D	**5.3**	0.39 U	1400	0.38 U	0.92 U	**0.29 J**	0.41 U	0.42 U	**1.7**	**0.047 J**	**390 D**	0.41 U	0.42 U	0.37 U	0.42 U
Phenanthrene	100	100	500	0.42 U	1.6 U	0.4 U	32 D	**2.3**	0.39 U	690	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	**210 D**	0.41 U	**0.045 J**	0.37 U	0.42 U
Pyrene	100	100	500	0.42 U	1.6 U	0.4 U	14 D	**1.3**	0.39 U	**410**	0.38 U	0.92 U	0.4 U	0.41 U	0.42 U	0.43 U	0.42 U	**120 D**	0.41 U	0.42 U	0.37 U	0.42 U

Notes:

U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Indicates exceedance of 6NYCRR Part 375 Unrestricted Use SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Residencial SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Commercial Use SCOs

Table 1-1
Soil Analytical Data Summary - RI
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical	6NYCRR Part 375 UNRESTRICTED USE (italics)	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (bold)	6NYCRR Part 375 RESTRICTED USE COMMERCIAL	SHSB-45 0 5/14/2002	SHSB-46 1_25 5/14/2002	SHSS-01 0 3/29/2000	SHSS-02 0 3/29/2000	SHSS-03 0 3/29/2000	SHSS-04 0 3/29/2000	SHSS-05 0 3/29/2000	SHSS-06 0 3/29/2000	SHSS-07 0 3/29/2000	SHSS-08 0 3/31/2000	SHSS-09 0 3/29/2000	SHSS-10 0 4/3/2000	SHSS-11 0 3/29/2000	SHSS-12 0 3/30/2000	SHSS-13 0 3/31/2000	SHSS-14 0 4/17/2002	SHSS-14 0 5/15/2002	SHSS-15 0 5/9/2002	SHSS-16 0 5/9/2002
BTEX (mg/kg)																						
Benzene	0.06	4.8	44	0.001 U	0.001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.006 U	0.001 U	0.001 U
Toluene	0.7	100	500	0.001 U	**0.001**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.006 U	0.001 U	0.001 U
Ethylbenzene	1	41	390	0.001 U	0.001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.006 U	0.001 U	0.001 U
Xylene, total	0.26	100	500	0.001 U	0.001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.006 U	**0.001**	**0.003**
PAHs (mg/kg)																						
Acenaphthene	20	100	500	0.38 U	3.8 U	1.8 U	1.8 U	1.9 U	1.8 U	0.34 U	1.8 U	1.90 U	0.37 U	1.90 U	3.8 U	2.1 U	**4.2**	**0.3 J**	4.1 U	3.9 U	0.41 U	0.4 U
Acenaphthylene	100	100	500	**0.1 J**	**4**	**4.2**	**12**	**18**	**9.4**	0.34 U	**10**	**2.9**	**0.047 J**	**7.6**	**21**	**8.6**	**20**	**4.5**	**1.6 J**	3.9 U	0.41 U	**0.16 J**
Anthracene	100	100	500	**0.11 J**	**1.4 J**	**1.4 J**	**5**	**7.5**	**2.9**	**0.04 J**	**4.6**	**0.95 J**	0.37 U	**2.4**	**10**	**2.5**	**12**	**2.5 J**	**0.69 J**	3.9 U	0.41 U	**0.061 J**
Benz[a]anthracene	1	1	5.6	**0.33 J**	7.2	9.4	32 D	49 D	17	**0.17 J**	23	**4.2**	**0.09 J**	12	26	8.4	82 D	13	**1.8 J**	3.9 U	0.41 U	**0.18 J**
Benzo[a]pyrene	1	1	1	**0.32 J**	9.3	8.7	27	45 D	28	**0.19 J**	21	5.4	**0.13 J**	19	36	15	100 D	14	2.1 J	3.9 U	0.41 U	**0.22 J**
Benzo[b]fluoranthene	1	1	5.6	**0.52**	10	13	39 D	66 D	30 D	**0.28 J**	29	8.1	**0.18 J**	22	44	18	97 D	21	**2.4 J**	3.9 U	0.41 U	**0.36 J**
Benzo[g,h,i]perylene	100	100	500	**0.23 J**	**6.5**	**11**	**37 D**	54 D	30 D	**0.15 J**	**25**	7.3	**0.18 J**	24	**44**	**20**	**110 D**	**11**	**2.6 J**	3.9 U	0.41 U	**0.16 J**
Benzo[k]fluoranthene	0.8	3.9	56	**0.23 J**	**5.1**	**5.2**	**17**	**20**	**13**	**0.13 J**	**14**	*2.4*	**0.082 J**	**9.4**	**14**	**8.4**	**50 D**	**6.8**	*1.3 J*	3.9 U	0.41 U	**0.19 J**
Chrysene	1	3.9	56	**0.48**	**8.4**	**9.9**	**26**	**47 D**	**18**	**0.21 J**	**23**	**4.9**	**0.11 J**	**12**	**33**	**9**	75 D	**12**	*2.5 J*	3.9 U	0.41 U	**0.32 J**
Dibenz[a,h]anthracene	0.33	0.33	0.56	0.38 U	1.4 J	1.9	6.6	9.9	5.7	0.34 U	4.7	1.2 J	0.37 U	3.6	7.3	3.2	15	2.5 J	4.1 U	3.9 U	0.41 U	0.4 U
Dibenzofuran	7	59	350	0.38 U	3.8 U	1.8 U	**0.27 J**	**0.42 J**	1.8 U	0.34 U	**0.26 J**	1.90 U	0.37 U	1.90 U	3.8 U	**0.25 J**	**0.29 J**	2.8 U	4.1 U	3.9 U	0.41 U	0.4 U
Fluoranthene	100	100	500	**0.72**	**6.1**	**11**	40 D	66 D	**15**	**0.52**	**21**	**5.6**	**0.14 J**	**10**	**37**	**8.7**	**120 D**	**16**	2.3 J	3.9 U	**0.054 J**	**0.3 J**
Fluorene	30	100	500	0.38 U	3.8 U	**0.34 J**	**1.2 J**	**1.8 J**	**0.9 J**	0.34 U	**1.4 J**	**0.31 J**	0.37 U	**0.71 J**	3.8 U	**0.96 J**	**3.1**	**0.91 J**	4.1 U	3.9 U	0.41 U	0.4 U
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6	**0.17 J**	**5**	9.4	33 D	49 D	27	**0.15 J**	22	5.9	**0.14 J**	20	34	16	97 D	11	**1.8 J**	3.9 U	0.41 U	**0.14 J**
Methylnaphthalene,2-	NE	NE	NE	0.38 U	3.8 U	**0.41 J**	**1.7 J**	**2.7**	**0.9 J**	0.34 U	**2.6**	**0.36 J**	0.37 U	**0.53 J**	**1.1 J**	**1.9**	**3.2**	**0.58 J**	4.1 U	3.9 U	0.41 U	0.4 U
Naphthalene	12	100	500	0.38 U	**0.58 J**	**0.83 J**	**3.6**	**6.1**	**1.5 J**	0.34 U	**5.7**	**0.75 J**	0.37 U	**1.4 J**	**3 J**	**2.7**	**8**	**0.92 J**	4.1 U	3.9 U	0.41 U	0.4 U
Phenanthrene	100	100	500	**0.46**	**1.8 J**	**2.5**	**10**	**15**	**3**	**0.3 J**	**12**	**2.0**	**0.044 J**	**2.1 J**	**6.6**	**4.0**	**14**	**8.6**	**0.65 J**	3.9 U	0.41 U	**0.11 J**
Pyrene	100	100	500	**0.88**	**13**	**17**	51 D	82 D	29 D	**0.34 J**	43 D	**10**	**0.25 J**	**21**	**61**	**15**	**140 D**	**21**	**4.3**	3.9 U	**0.073 J**	**0.42**

Notes:

U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Indicates exceedance of 6NYCRR Part 375 Unrestricted Use SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Residencial SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Commercial Use SCOs

Table 1-1
Soil Analytical Data Summary - RI
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Chemical	6NYCRR Part 375 UNRESTRICTED USE (italics)	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (bold)	6NYCRR Part 375 RESTRICTED USE COMMERCIAL	SHSS-17 0 5/9/2002	SHSS-18 0 5/17/2002	SHMGP-01 0 2/21/2006	SHSS-101 0 6/1/2004	SHSS-102 0 6/1/2004	SHSS-103 0 6/1/2004	SHSS-104 0 6/1/2004	SHSS-105 0 6/1/2004	SHSS-106 0 6/1/2004	SHSS-107 0 6/1/2004	SHSS-108 0 6/1/2004	SHSS-109 0 6/1/2004	SHSS-110 0 6/2/2004
BTEX (mg/kg)																
Benzene	0.06	4.8	44	0.002 U	0.001 U	0.012 U	0.012 U	0.017 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.011 U	0.01 UJ	0.015 U
Toluene	0.7	100	500	0.002 U	0.001 U	0.012 U	0.012 U	0.017 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.011 U	0.01 UJ	0.015 U
Ethylbenzene	1	41	390	0.002 U	0.001 U	0.012 U	0.012 U	0.017 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.011 U	**0.002 J**	0.015 U
Xylene, total	0.26	100	500	**0.004**	0.001 U	0.012 U	**0.003 J**	**0.006 J**	0.011 U	0.012 U	0.011 U	0.012 U	**0.002 J**	0.011 U	**0.01**	0.015 U
PAHs (mg/kg)																
Acenaphthene	20	100	500	0.54 U	0.35 U	0.41 U	0.39 U	0.56 U	**0.18 J**	**0.21 J**	**0.21 J**	0.39 U	**0.3 J**	0.36 U	0.34 U	**0.17 J**
Acenaphthylene	100	100	500	0.54 U	0.35 U	4.2	**0.28 J**	**0.61**	0.37 U	**0.69**	**0.54**	0.39 U	**0.11 J**	**0.073 J**	**0.12 J**	**0.79**
Anthracene	100	100	500	**0.061 J**	0.35 U	1.3	**0.17 J**	**0.27 J**	**0.38**	**0.95**	**0.88**	0.39 U	**0.72**	0.36 U	**0.089 J**	**0.48 J**
Benz[a]anthracene	1	1	5.6	**0.25 J**	**0.058 J**	8.4 D	**0.44**	**0.75**	**1.2**	**2**	**2.2**	**0.25 J**	**1.7**	**0.16 J**	**0.26 J**	**1.1**
Benzo[a]pyrene	1	1	1	**0.28 J**	**0.048 J**	16 D	**0.56**	1.2	1.1	2.5	2.3 J	**0.26 J**	1.5 J	**0.17 J**	**0.31 J**	1.5 J
Benzo[b]fluoranthene	1	1	5.6	**0.42 J**	**0.064 J**	14 D	**0.58**	**1.6**	**1.3**	**4.6**	**2.5 J**	**0.4**	**1.2 J**	**0.18 J**	**0.31 J**	**1.2 J**
Benzo[g,h,i]perylene	100	100	500	0.54 U	0.35 U	14 D	**0.38 J**	**0.93**	**0.36 J**	**0.86**	**0.83 J**	0.39 U	**0.25 J**	0.36 UJ	0.34 U	**0.54 J**
Benzo[k]fluoranthene	0.8	3.9	56	**0.28 J**	0.35 U	**6.5**	**0.43**	*1.3*	*1.5*	0.4 U	*3.8 J*	**0.37 J**	*2 J*	**0.35 J**	**0.74**	*2.1 J*
Chrysene	1	3.9	56	**0.4 J**	**0.067 J**	**9 D**	**0.51**	*1.2*	*1.5*	*2.8*	*2.9*	**0.42**	*1.5*	**0.21 J**	**0.46**	*1.2*
Dibenz[a,h]anthracene	0.33	0.33	0.56	0.54 U	0.35 U	1.8	0.39 U	0.56 U	0.37 U	0.4 U	0.36 UJ	0.39 U	0.37 UJ	0.36 UJ	0.34 U	0.49 UJ
Dibenzofuran	7	59	350	0.54 U	0.35 U	0.41 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	100	100	500	**0.57**	**0.1 J**	8.2 D	**0.72**	**0.95**	**3.1**	**4.2**	**4.2**	**0.7**	**2.9**	**0.27 J**	**0.57**	**1.4**
Fluorene	30	100	500	0.54 U	0.35 U	0.41 U	0.39 U	0.56 U	**0.24 J**	0.4 U	**0.28 J**	0.39 U	**0.29 J**	0.36 U	0.34 U	**0.23 J**
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6	**0.13 J**	0.35 U	6	**0.33 J**	**0.84**	**0.43**	**0.91**	**0.85 J**	0.39 U	**0.37 J**	**0.082 J**	**0.17 J**	**0.52 J**
Methylnaphthalene,2-	NE	NE	NE	0.54 U	0.35 U	0.64	0.39 U	**0.13 J**	0.37 U	**0.085 J**	**0.15 J**	0.39 U	**0.096 J**	0.36 U	0.34 U	**0.18 J**
Naphthalene	12	100	500	0.54 U	0.35 U	0.75	0.39 U	**0.2 J**	0.37 U	**0.12 J**	**0.26 J**	0.39 U	**0.13 J**	0.36 U	0.34 U	**0.5**
Phenanthrene	100	100	500	**0.24 J**	**0.054 J**	1.8	**0.25 J**	**0.42 J**	**2.2**	**2.9**	**2.8**	**0.45**	**2.3**	**0.13 J**	**0.3 J**	**1.1**
Pyrene	100	100	500	**0.64**	**0.12 J**	20 D	**0.91**	**1.5**	**2.7**	**5**	**4.5**	**0.73**	**4.4**	**0.42**	**0.72 J**	**3.1**

Notes:

U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Indicates exceedance of 6NYCRR Part 375 Unrestricted Use SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Residencial SCOs

Indicates exceedance of 6NYCRR Part 375 Restricted Use Commercial Use SCOs

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name: / Sample Interval (feet): / Sample Date:	NYSDEC Class GA Groundwater Criteria	MW-01 5/24/2004	MW-01 8/30/2004	MW-01 6/27/2005	MW-01 12/14/2007	MW-01 3/20/2008	MW-01 6/20/2008	MW-01 9/12/2008	MW-02 5/20/2004	MW-02 8/30/2004	MW-02 6/21/2005	MW-02 12/12/2007	MW-02 3/20/2008	MW-02 6/17/2008	MW-02 9/8/2008
BTEX (µg/L)															
Benzene	1	4 J	10 U	12	240	280	120	190	1700	460	1700	2 J	530	570	72
Toluene	5	10 U	10 U	10 U	6 J	10	5 J	5 J	87	60	110	10 U	25 J	45	8 J
Ethylbenzene	NE	10 U	10 U	10 U	8 J	15	9 J	7 J	6900	1300	6100	58	860	2500	800
Xylene, total	5	10 U	10 U	10 U	6 J	12	7 J	6 J	4600	1500	5100	38	830	2200	720
PAHs (µg/L)															
Acenaphthene	20	9 J	24	12	45 J	56	2 J	33	1700 J	140	5000 U	25	96	120	160
Acenaphthylene	NE	1 J	10 U	10 U	2 J	2 J	10 U	2 J	120	10 U	10 U	10 U	3 J	3 J	2 J
Anthracene	50	10 U	10 U	10 U	1 J	2 J	10 U	10 U	680	28	34	8	6	15	18
Benz[a]anthracene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	750	17	15	10 U	10 U	10 U	10 U
Benzo[a]pyrene	0	10 U	10 U	10 U	10 U	10 U	10 U	10 U	470	11	11	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene	0.002	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	390 J	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[g,h,i]perylene	NE	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	150 J	10 U	10 U	10 UJ	10 U	10 U	10 U
Benzo[k]fluoranthene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	180 J	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	580	14	12	10 U	10 U	10 U	10 U
Fluorene	50	2 J	10 U	10 U	11	14	10 U	10 U	560	50	58	10	22	43	52
Indeno[1,2,3-cd]pyrene	0.002	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	140	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	10 UJ	10 U	10 U
Methylnaphthalene,2-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2400	420	700	18	46	380	370
Naphthalene	10	18	10 U	49	33 J	63	10 U	10 U	11000	1500	9600	61	120	1100	1500
Phenanthrene	50	10 U	10 U	10 U	5 J	8	10 U	10 U	2900 J	97	5000 U	28	13	57	85 J
Pyrene	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1800 J	42	40	8	5	9	11

Sample Name: / Sample Interval (feet): / Sample Date:	MW-03 5/21/2004	MW-03 6/22/2005	MW-03 12/17/2007	MW-03 3/17/2008	MW-03 6/19/2008	MW-03 9/9/2008	MW-04 5/18/2004	MW-04 6/21/2005	MW-04 12/10/2007	MW-04 6/18/2008	MW-04 9/9/2008
BTEX (µg/L)											
Benzene	920	1100	780	960 E	760	930	94	100 U	37	11	40
Toluene	63	57	51 J	62	51	45 J	5 J	100 U	1 J	10 U	2 J
Ethylbenzene	810	850	620	710 E	590	520	69	100 U	17	3 J	17
Xylene, total	780	860	600 J	650 E	560	560	40	100 U	11	1 J	20
PAHs (µg/L)											
Acenaphthene	300 J	400	170	150 E	74	190	16	11	2 J	10 U	14
Acenaphthylene	5 J	10 U	5	6	5 J	7.0 J	2 J	10 U	10 U	10 U	1 J
Anthracene	15 J	17	11	10	10 U	20	6 J	10 U	10 U	10 U	10 U
Benz[a]anthracene	1 J	10 U	10 U	10 U	1 J	3 J	2 J	10 U	10 U	10 U	10 U
Benzo[a]pyrene	10 UJ	10 U	10 U	10 U	1 J	2 J	1 J	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene	10 UJ	10 U	10 U	10 U	10 U	10 U	1 J	10 U	10 U	10 U	10 U
Benzo[g,h,i]perylene	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10 UJ	10 U	10 U	10 U	10 U	3 J	2 J	10 U	10 U	10 U	10 U
Fluorene	50 J	44	48	47	10 U	72	6 J	10 U	10 U	10 U	2 J
Indeno[1,2,3-cd]pyrene	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	100 U	10 U	10 U	10 U
Methylnaphthalene,2-	470 J	500	350	65	10 U	180	10 U	10 U	10 U	10 U	10 U
Naphthalene	2600	3500	1300	53	10 U	170	25	11	10 U	10 U	10 U
Phenanthrene	64 J	73	58	43	10 U	99	16	10 U	10 U	10 U	10 U
Pyrene	9 J	12	6	7	8	18	7 J	10 U	2 J	10 U	3 J

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Sample Name: Sample Interval (feet): Sample Date:	NYSDEC Class GA Groundwater Criteria	MW-05 5/20/2004	MW-05 8/30/2004	MW-05 6/27/2005	MW-06 5/19/2004	MW-06 6/22/2005	MW-06 12/17/2007	MW-06 3/20/2008	MW-06 6/18/2008	MW-06 9/10/2008	SHMW-01S 5/21/2004	SHMW-01S 6/21/2005	SHMW-01S 12/17/2007	SHMW-01S 3/17/2008	SHMW-01S 6/19/2008	SHMW-01S 9/9/2008	SHMW-01I 5/21/2004	SHMW-02D 5/24/2004	SHMW-02D 12/17/2007	SHMW-02I 5/24/2004
BTEX (µg/L)																				
Benzene	1	**5500**	**740**	**9700**	**2 J**	10 U	10 U	10 U	**2 J**	10 U	**760**	**650**	**520**	**570**	**150**	**140**	10 U	10 U	10 U	10 U
Toluene	5	**1000**	**78**	**1800**	**1 J**	10 U	10 U	10 U	**1 J**	10 U	**52**	100 U	**24**	**35**	**5 J**	**4 J**	10 U	10 U	10 U	**29**
Ethylbenzene	NE	**2300**	**240**	**3200**	**21**	**26**	10 U	**1 J**	**14**	**3 J**	**700**	**630**	**360**	**410**	**77**	**49**	10 U	10 U	10 U	**300**
Xylene, total	5	**2800**	**320**	**4200**	**25**	**29**	10 UJ	10 U	**16**	**4 J**	**590**	**530**	**290 J**	**350**	**74**	**50**	10 U	10 U	10 UJ	**850**
PAHs (µg/L)																				
Acenaphthene	20	**31000**	**200**	**12000**	**28**	**66**	10 U	10 U	10 U	**10**	**77**	**57**	**31**	10 U	10 U	10 U	10 U	**6 J**	**2 J**	**9000 J**
Acenaphthylene	NE	**6500**	200 U	**2700**	**2 J**	10 U	10 U	10 U	10 U	10 U	**6 J**	10 U	**1 J**	10 U	10 U	10 U	10 U	**2 J**	10 U	**48000**
Anthracene	50	**17000**	200 U	**6700**	10 U	10 U	10 U	10 U	10 U	10 U	**5 J**	10 U	**1 J**	10 U	10 U	10 U	10 U	**4 J**	10 U	**29000**
Benz[a]anthracene	0.002	**15000**	200 U	**4100**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**5 J**	10 U	**22000 J**
Benzo[a]pyrene	0	**11000**	200 U	**3100**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**5 J**	10 U	**17000 J**
Benzo[b]fluoranthene	0.002	**8300 J**	200 U	2000 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	**4 J**	10 U	**12000 J**
Benzo[g,h,i]perylene	NE	**3400 J**	200 U	**2200**	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 UJ	**3 J**	10 UJ	**8600 J**
Benzo[k]fluoranthene	0.002	**3500 J**	200 U	2000 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U	**5800 J**
Chrysene	0.002	**12000**	200 U	**3300**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**4 J**	10 U	**18000 J**
Fluorene	50	**16000**	200 U	**6300**	**2 J**	**13**	10 U	10 U	10 U	10 U	**21**	**13**	**5**	10 U	10 U	10 U	10 U	**3 J**	10 U	**28000**
Indeno[1,2,3-cd]pyrene	0.002	**2800 J**	200 U	2000 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	**5800 J**
Methyl tert-butyl ether	NE	100 U	10 U	1000 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylnaphthalene,2-	NE	**61000**	**230**	**27000**	10 U	10 U	10 U	10 U	10 U	10 U	**190 J**	2000 U	10 U	10 U	10 U	10 U	10 U	**6 J**	**2 J**	**67000**
Naphthalene	10	**110000**	**820**	**68000**	10 U	10 U	10 U	10 U	10 U	10 U	**2100**	**2100**	10 U	10 U	10 U	10 U	10 U	**12**	**11**	**120000**
Phenanthrene	50	**79000**	**250**	**35000**	10 U	10 U	10 U	10 U	10 U	10 U	**21**	**15**	10 U	10 U	10 U	10 U	10 U	**13**	10 U	**99000**
Pyrene	50	**34000**	**200**	**10000**	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	**2 J**	10 U	10 U	10 U	10 U	**11**	10 U	**51000**

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name: Sample Interval (feet): Sample Date:	NYSDEC Class GA Groundwater Criteria	SHMW-02I 8/30/2004	SHMW-02I 6/27/2005	SHMW-02I 12/14/2007	SHMW-02I 3/21/2008	SHMW-02I 6/20/2008	SHMW-02I 9/12/2008	SHMW-03S 5/20/2004	SHMW-03S 6/22/2005	SHMW-03S 12/13/2007	SHMW-03S 3/20/2008	SHMW-03S 6/17/2008	SHMW-03S 9/10/2008	SHMW-03S 12/15/2008	SHMW-03S 3/17/2009	SHMW-03I 5/20/2004	SHMW-03I 12/13/2007	SHMW-03I 12/15/2008	SHMW-04S 5/20/2004	SHMW-04S 6/21/2005	SHMW-04S 12/12/2007	SHMW-04S 3/20/2008	SHMW-04S 6/19/2008	SHMW-04S 9/9/2008	SHMW-04I 5/20/2004	SHMW-04I 12/12/2007
BTEX (μg/L)																										
Benzene	1	10 U	10 U	10 U	10 U	2 J	10 U	12	10 U	7 J	10 U	10 U	10 U	1 J	13	10 U	10 U	10 U	6500	9900	3000	520	1700	1400	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2 J	10 U	10 U	10 U	80	130	78	67 J	59	61	10 U	10 U
Ethylbenzene	NE	10 U	10 U	10 U	2 J	4 J	2 J	59	31	25	2 J	10 U	3 J	9 J	52	10 U	10 U	10 U	2900	4000	2400	1100	1100	650	10 U	10 U
Xylene, total	5	16	20	15	16	34	27	39	22	18	1 J	10 U	2 J	3 J	44	10 U	10 U	10 U	2700	3700	2100	1200	1100	800	10 U	10 U
PAHs (μg/L)																										
Acenaphthene	20	10 U	10 U	3 J	3 J	3 J	5 J	28	20	20	10 U	10 U	6	16	10 U	10 U	10 U	10 U	360 J	5000 U	130 J	10 U	110	140	10 U	10 U
Acenaphthylene	NE	12	15	12	2 J	21	32	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11	10 U	5	10 U	7	6	10 U	10 U
Anthracene	50	10 U	10 U	2 J	10 U	2 J	3 J	3 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	54	10 U	9	10 U	8	11	10 U	10 U
Benz[a]anthracene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	35	10 U	1 J	10 U	10 U	10 U	10 U	10 U
Benzo[a]pyrene	0	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	26	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	24	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[g,h,i]perylene	NE	10 U	10 U	10 UJ	10 U	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	10 U	6 J	10 U	10 UJ	10 U	10 U	10 U	10 UJ	10 UJ
Benzo[k]fluoranthene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	8 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	26	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	50	10 U	10 U	5 J	10 U	5	8	9 J	10 U	5 J	10 U	10 U	1 J	4 J	10 U	10 U	10 U	10 U	65	28	34	10 U	28	43	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	5 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	NE	10 U	10 U	10 U	3 J	2 J	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylnaphthalene,2-	NE	10 U	14	10 U	10 U	7	33	18	10 U	6	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	600 J	5000 U	440	10 U	78	350	10 U	10 U
Naphthalene	10	29	95	10 U	2 J	10 U	92	220	110	92	10 U	10 U	9	6	10 U	10 U	10 U	10 U	4300	6600	3100	10 U	390	1100	10 U	10 U
Phenanthrene	50	10 U	10 U	4 J	10 U	10 U	14	14	10 U	3 J	10 U	10 U	1 J	3 J	10 U	10 U	10 U	10 U	320 J	41	46	10 U	18	66	10 U	10 U
Pyrene	50	10 U	10 U	3 J	10 U	2 J	2 J	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	75	10 U	6	10 U	5	7	10 U	10 U

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Sample Name: / Sample Interval (feet): / Sample Date:	NYSDEC Class GA Groundwater Criteria	SHMW-05S 5/21/2004	SHMW-05S 6/22/2005	SHMW-05S 12/13/2007	SHMW-05S 3/20/2008	SHMW-05S 6/18/2008	SHMW-05S 9/10/2008	SHMW-05I 5/21/2004	SHMW-05I 12/13/2007	SHMW-06S 5/18/2004	SHMW-06S 6/27/2005	SHMW-06S 12/11/2007	SHMW-06S 3/20/2008	SHMW-06S 6/18/2008	SHMW-06S 9/8/2008	SHMW-06I 5/18/2004	SHMW-06I 12/11/2007	SHMW-07S 5/18/2004	SHMW-07S 6/22/2005	SHMW-07S 12/17/2007	SHMW-07S 6/19/2008	SHMW-07S 9/8/2008
BTEX (µg/L)																						
Benzene	1	**21**	**240**	**60**	**21**	**35**	**24**	10 U	10 U	**410**	**310**	**460**	**290**	**260**	**380**	10 U	10 U	**79**	**740**	**140**	**280**	**290**
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**47**	100 U	**15**	**26**	**23**	**8 J**	10 U	10 U	**5 J**	100 U	**6 J**	**15**	**14**
Ethylbenzene	NE	**36**	**19**	**17**	**31**	**26**	**22**	10 U	10 U	**1400**	**970**	**700**	**520**	**640**	**350**	10 U	10 U	**190**	**1500**	**300**	**410**	**370**
Xylene, total	5	**26**	**23**	**21**	**25**	**22**	**18**	10 U	10 U	**1200**	**670**	**360**	**340**	**370**	**170**	10 U	10 U	**140**	**1100**	**200 J**	**290**	**280**
PAHs (µg/L)																						
Acenaphthene	20	**20**	**18**	**6**	**2 J**	10 U	**13**	10 U	10 U	**180**	**200**	**70**	10 U	**34**	**290**	10 U	10 U	**200 J**	**200**	10 U	**41**	**150**
Acenaphthylene	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**7 J**	10 U	10 U	10 U	**3 J**	**19**	10 U	10 U	**4 J**	10 U	**4 J**	**2 J**	**3 J**
Anthracene	50	**2 J**	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U	**10**	10 U	**3 J**	10 U	10 U	**110**	10 U	10 U	**16**	**12**	10 U	10 U	**12**
Benz[a]anthracene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**81**	10 U	10 U	**1 J**	10 U	10 U	10 U	10 U
Benzo[a]pyrene	0	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	**49**	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene	0.002	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 U	**37**	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[g,h,i]perylene	NE	10 UJ	10 U	10 UJ	10 U	10 U	10 U	10 UJ	10 UJ	10 UJ	10 U	10 U	10 U	10 U	**12**	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	**16**	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	**59**	10 U	10 U	**1 J**	10 U	10 U	10 U	10 U
Fluorene	50	**6 J**	10 U	**2 J**	10 U	10 U	**5**	10 U	10 U	**34 J**	**29**	**10**	10 U	10 U	**120**	10 U	10 U	**46**	**39**	10 U	**4 J**	**43**
Indeno[1,2,3-cd]pyrene	0.002	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 UJ	10 UJ	10 U	10 U	10 U	10 U	**11**	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	10 U	10 U
Methylnaphthalene,2-	NE	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**240**	**200**	10 U	10 U	10 U	**520**	10 U	10 U	**360 J**	**500**	10 U	10 U	**340**
Naphthalene	10	**55**	**73**	10 U	10 U	10 U	10 U	10 U	10 U	**2500**	**1900**	**180**	10 U	10 U	**1900**	10 U	10 U	**2000**	**3800**	10 U	10 U	**1600**
Phenanthrene	50	**8 J**	10 U	10 U	10 U	10 U	**3 J**	10 U	10 U	**41**	**37**	10 U	10 U	10 U	**350**	10 U	10 U	**63**	**53**	10 U	10 U	**50**
Pyrene	50	**1 J**	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U	**6**	10 U	**4 J**	10 U	**4 J**	**170**	10 U	10 U	**9**	10 U	10 U	**4 J**	**7**

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name: Sample Interval (feet): Sample Date:	NYSDEC Class GA Groundwater Criteria	SHMW-07I 5/18/2004	SHMW-07I 12/17/2007	SHMW-08S 5/21/2004	SHMW-08S 6/21/2005	SHMW-08S 12/10/2007	SHMW-08S 3/17/2008	SHMW-08S 6/17/2008	SHMW-08S 9/8/2008	SHMW-08I 5/21/2004	SHMW-08I 12/10/2007	SHMW-09S 5/18/2004	SHMW-09S 6/27/2005	SHMW-09S 12/13/2007	SHMW-09S 3/20/2008	SHMW-09S 6/19/2008	SHMW-09S 9/10/2008	SHMW-09S 12/16/2008	SHMW-09I 5/18/2004	SHMW-09I 12/13/2007	SHMW-09I 12/16/2008	SHMW-10S 5/19/2004	SHMW-10S 6/22/2005	SHMW-10S 12/11/2007
BTEX (µg/L)																								
Benzene	1	10 U	10 U	**9 J**	**14**	**12**	**8 J**	**9 J**	**5 J**	10 U	10 U	**320**	**370**	**240**	**290**	**390**	**250**	**180**	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**10**	10 U	10 U	**9 J**	**18**	**1 J**	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U	**530**	**440**	**240**	**420**	**510**	**260**	230 E	10 U	10 U	10 U	10 U	10 U	10 U
Xylene, total	5	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	**3 J**	10 U	10 U	**240**	**190**	**110 J**	**200**	**260**	**110**	**92**	10 U	10 U	10 U	10 U	10 U	10 U
PAHs (µg/L)																								
Acenaphthene	20	10 U	10 U	**19**	**16**	**9**	**10**	**11 J**	**15**	10 U	10 U	**71**	**69**	**77**	10 U	**67**	**120**	96 E	10 U	10 U	10 U	**6 J**	10 U	10 U
Acenaphthylene	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U
Anthracene	50	10 U	10 U	**3 J**	10 U	10 U	10 U	10 U	**3 J**	10 U	10 U	**2 J**	10 U	**2 J**	10 U	**2 J**	**4 J**	**3 J**	10 U	10 U	10 U	10 UJ	10 U	10 U
Benz[a]anthracene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U
Benzo[a]pyrene	0	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U
Benzo[b]fluoranthene	0.002	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U
Benzo[g,h,i]perylene	NE	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 U
Benzo[k]fluoranthene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U
Chrysene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U
Fluorene	50	10 U	10 U	**10**	10 U	10 U	10 U	**1 J**	**10**	10 U	10 U	**16**	**17**	**19**	10 U	**16**	**28**	**23**	10 U	10 U	10 U	10 UJ	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 UJ	10 U	10 U
Methyl tert-butyl ether	NE	10 U	10 U	**1 J**	10 U	**3 J**	10 U	**1 J**	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylnaphthalene,2-	NE	10 U	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**95 J**	**100**	**13**	10 U	10 U	**100**	85 E	10 U	10 U	10 U	10 UJ	10 U	10 U
Naphthalene	10	10 U	10 U	**35**	**33**	10 U	10 U	**3 J**	10 UJ	10 U	10 U	**1500**	**1400**	**3 J**	10 U	10 U	**180**	210 E	10 U	10 U	10 U	10 UJ	10 U	**1 J**
Phenanthrene	50	10 U	10 U	**18**	**21**	10 U	10 U	10 U	**20**	10 U	10 U	**13**	**14**	**15**	10 U	**7**	**23**	**17**	10 U	10 U	10 U	10 UJ	10 U	10 U
Pyrene	50	10 U	10 U	**4 J**	10 U	**2 J**	**2 J**	**3 J**	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name: Sample Interval (feet): Sample Date:	NYSDEC Class GA Groundwater Criteria	SHMW-10S 3/20/2008	SHMW-10S 6/18/2008	SHMW-10S 9/10/2008	SHMW-10S 12/16/2008	SHMW-10S 3/17/2009	SHMW-10I 5/19/2004	SHMW-10I 12/11/2007	SHMW-10I 12/16/2008	SHMW-11S 5/19/2004	SHMW-11S 6/21/2005	SHMW-11S 12/11/2007	SHMW-11S 3/20/2008	SHMW-11S 6/17/2008	SHMW-11S 9/10/2008	SHMW-11S 12/16/2008	SHMW-11S 3/17/2009	SHMW-11I 5/19/2004	SHMW-11I 12/11/2007	SHMW-11I 12/16/2008	SHMW-12S 5/19/2004	SHMW-12S 6/21/2005	SHMW-12S 12/12/2007
BTEX (µg/L)																							
Benzene	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**270**	**930**	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	100 U	10 U
Ethylbenzene	NE	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**35**	100 U	10 U
Xylene, total	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**38**	100 U	10 U
PAHs (µg/L)																							
Acenaphthene	20	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	**4 J**	10 U	**3 J**
Acenaphthylene	NE	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Anthracene	50	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Benz[a]anthracene	0.002	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Benzo[a]pyrene	0	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Benzo[b]fluoranthene	0.002	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Benzo[g,h,i]perylene	NE	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 UJ
Benzo[k]fluoranthene	0.002	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Chrysene	0.002	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Fluorene	50	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Methyl tert-butyl ether	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	100 U	10 U
Methylnaphthalene,2-	NE	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	**4 J**	10 U	**2 J**
Naphthalene	10	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	**4 J**	10 U	**210 J**	**600**	**110**
Phenanthrene	50	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U
Pyrene	50	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 UJ	10 U	10 U

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name: Sample Interval (feet): Sample Date:	NYSDEC Class GA Groundwater Criteria	SHMW-12S 3/17/2008	SHMW-12S 6/18/2008	SHMW-12S 9/9/2008	SHMW-12S 12/15/2008	SHMW-12S 3/17/2009	SHMW-12I 5/19/2004	SHMW-12I 12/12/2007	SHMW-12I 12/15/2008	SHMW-13S 5/20/2004	SHMW-13S 6/21/2005	SHMW-13S 12/10/2007	SHMW-13S 3/17/2008	SHMW-13S 6/17/2008	SHMW-13S 9/8/2008	SHMW-13S 12/15/2008	SHMW-13S 3/17/2009	SHMW-13I 5/20/2004	SHMW-13I 12/10/2007	SHMW-13I 12/15/2008	SHGP-01 1 3/14/2000	SHGP-01 32 3/14/2000	SHGP-02 1 3/14/2000	SHGP-02 32 3/14/2000	SHGP-02 48 4/20/2000	SHGP-02 58 4/20/2000	SHGP-03 2 3/14/2000
BTEX (µg/L)																											
Benzene	1	140	360	75	250 E	28	10 U	13	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	710	22	4800	8700	4	1	100 U
Toluene	5	10 U	2 J	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	200 U	3	1000 U	7900	10	4	100 U
Ethylbenzene	NE	8 J	30	8 J	11	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	540	34	1200	3300	9	5	150
Xylene, total	5	18	50	27	38	10 U	10 U	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	740	45	1400	4000	14	8	160
PAHs (µg/L)																											
Acenaphthene	20	3 J	4 J	50 DU	5 J	10 U	10 UJ	1 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1700	31	160	830	4 J	2 J	57
Acenaphthylene	NE	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	180 J	10 U	32 J	350 J	7 J	2 J	13 J
Anthracene	50	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	790	9 J	62	410 J	4 J	2 J	17 J
Benz[a]anthracene	0.002	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	500	3 J	33 J	230 J	10 U	10 U	18 J
Benzo[a]pyrene	0	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	340 J	2 J	29 J	190 J	10 U	10 U	29 J
Benzo[b]fluoranthene	0.002	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	250 J	1 J	20 J	140 J	10 U	10 U	26 J
Benzo[g,h,i]perylene	NE	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	140 J	10 U	18 J	98 J	10 U	10 U	42 J
Benzo[k]fluoranthene	0.002	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	94 J	10 U	6 J	500 U	10 U	10 U	9 J
Chrysene	0.002	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	430	2 J	32 J	200 J	1 J	10 U	15 J
Fluorene	50	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	730	13	70	400 J	5 J	2 J	20 J
Indeno[1,2,3-cd]pyrene	0.002	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	130 J	10 U	13 J	65 J	10 U	10 U	26 J
Methyl tert-butyl ether	NE	2 J	2 J	2 J	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA	NA
Methylnaphthalene,2-	NE	10 U	3 J	50 DU	5	10 U	10 UJ	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2000	38	430	1400	13	4 J	48 J
Naphthalene	10	6	96	250	220 E	10 U	10 UJ	17	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5600	160	2600 D	5000	44	19	1200 D
Phenanthrene	50	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2700	38	240	1600	22	7 J	51
Pyrene	50	10 U	10 U	50 DU	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1400	12	95	750	7 J	3 J	48 J

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name:	NYSDEC Class GA Groundwater Criteria	SHGP-03	SHGP-03	SHGP-04	SHGP-04	SHGP-05	SHGP-05	SHGP-05	SHGP-05	SHGP-06	SHGP-06	SHGP-07
Sample Interval (feet):		33	33	0	30	0	30	48	60	0_5	31	0
Sample Date:		3/14/2000	3/20/2000	3/15/2000	3/15/2000	3/15/2000	3/15/2000	3/22/2000	3/22/2000	3/15/2000	3/15/2000	3/15/2000
BTEX (µg/L)												
Benzene	1	**19**	NA	**66**	1 U	**78**	**310**	**17**	1 U	**170**	**3**	1 U
Toluene	5	**4**	NA	50 U	1 U	**25**	**950**	**12**	1 U	**390**	1 U	1 U
Ethylbenzene	NE	**24**	NA	50 U	1 U	**360**	**1200**	**40**	**4**	**1800**	**5**	1 U
Xylene, total	5	**30**	NA	50 U	1 U	**540**	**1800**	**82**	**9**	**4600**	**4**	1 U
PAHs (µg/L)												
Acenaphthene	20	NA	**36**	**3300 D**	**38 J**	**810**	80000 U	**100 J**	**13**	**190 J**	**4 J**	50 U
Acenaphthylene	NE	NA	**6 J**	**300**	**13 J**	**280**	**220000**	**330**	**57**	400 U	10 U	**11 J**
Anthracene	50	NA	**10**	**2300 D**	**36 J**	**590**	**110000**	**120 J**	**15**	**56 J**	**3 J**	50 U
Benz[a]anthracene	0.002	NA	**2 J**	**1100 D**	**25 J**	**570**	**72000 J**	**78 J**	**5 J**	400 U	10 U	**11 J**
Benzo[a]pyrene	0	NA	**2 J**	**560**	**17 J**	**500**	**56000 J**	**63 J**	**4 J**	400 U	10 U	**16 J**
Benzo[b]fluoranthene	0.002	NA	**2 J**	**450**	**15 J**	**430**	**44000 J**	**46 J**	**3 J**	400 U	10 U	**17 J**
Benzo[g,h,i]perylene	NE	NA	**1 J**	**240**	**9 J**	**290**	**25000 J**	**33 J**	**2 J**	400 U	10 U	**21 J**
Benzo[k]fluoranthene	0.002	NA	10 U	**170**	**5 J**	**170**	**14000 J**	200 U	**1 J**	400 U	10 U	**6 J**
Chrysene	0.002	NA	**2 J**	**1100 D**	**24 J**	**580**	**63000 J**	**69 J**	**4 J**	400 U	10 U	**12 J**
Fluorene	50	NA	**17**	**1800 D**	**25 J**	**550**	**100000**	**150 J**	**24**	**67 J**	**3 J**	50 U
Indeno[1,2,3-cd]pyrene	0.002	NA	10 U	**220**	**7 J**	**230**	**23000 J**	**29 J**	**2 J**	400 U	10 U	**13 J**
Methyl tert-butyl ether	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylnaphthalene,2-	NE	NA	**41**	**3000 D**	**10 J**	**600**	**270000**	**460**	**77**	**400**	**3 J**	50 U
Naphthalene	10	NA	**120**	**6500 D**	**12 J**	**1500**	**790000**	**1800**	**320 D**	**4100**	**12**	**8 J**
Phenanthrene	50	NA	**42**	**6300 D**	**94**	**1600**	**380000**	**480**	**64**	**210 J**	**13**	**6 J**
Pyrene	50	NA	**9 J**	**2900 D**	**62**	**1500**	**200000**	**230**	**19**	**100 J**	**5 J**	**23 J**

Sample Name:	SHGP-07	SHGP-08	SHGP-08	SHGP-09	SHGP-09	SHGP-10	SHGP-10	SHGP-10	SHGP-10	SHGP-11	SHGP-11	SHGP-12	SHGP-12	SHGP-13	SHGP-13
Sample Interval (feet):	30	0	30	0	30	0	32	48	58	0	30	0	30	0	30
Sample Date:	3/15/2000	3/14/2000	3/14/2000	3/14/2000	3/14/2000	3/14/2000	3/14/2000	4/20/2000	4/20/2000	3/15/2000	3/15/2000	3/15/2000	3/15/2000	3/15/2000	3/15/2000
BTEX (µg/L)															
Benzene	**4**	**100**	**2**	**5500**	**10**	**4500**	**170**	1 U	**2**	**12**	**16**	**85**	1 U	**49**	**2**
Toluene	1 U	**15**	1 U	100 U	1 U	**570**	**28**	1 U	**1**	5 U	1 U	**11**	1 U	1 U	1 U
Ethylbenzene	**2**	**230**	**4**	**670**	**8**	**920**	**270**	**2**	**3**	**410**	**23**	**120**	**1**	**13**	**3**
Xylene, total	1 U	**270**	**4**	**690**	**8**	**1100**	**330**	**1**	**5**	**370**	**18**	**130**	1 U	**13**	**2**
PAHs (µg/L)															
Acenaphthene	**1 J**	**170**	**18**	**460**	**10**	**510**	**330**	**5 J**	**20**	**400**	**70**	**440**	**46**	10 U	**2 J**
Acenaphthylene	10 U	**20 J**	**2 J**	**27 J**	10 U	**65 J**	**78 J**	10 U	**2 J**	**50**	**4 J**	**120**	**9 J**	**2 J**	**6 J**
Anthracene	10 U	**55 J**	**6 J**	**170**	**5 J**	**200 J**	**110 J**	**2 J**	**11**	**200**	**19 J**	**220**	**22**	10 U	**3 J**
Benz[a]anthracene	10 U	**35 J**	10 U	**96**	10 U	**99 J**	**50 J**	**1 J**	**6 J**	**160**	**10 J**	**130**	**14**	**3 J**	**1 J**
Benzo[a]pyrene	10 U	**21 J**	10 U	**62**	10 U	**72 J**	**35 J**	10 U	**3 J**	**130**	**8 J**	**160**	**15**	**2 J**	10 U
Benzo[b]fluoranthene	10 U	**22 J**	10 U	**46 J**	10 U	**57 J**	**29 J**	10 U	**3 J**	**100**	**7 J**	**140**	**13**	**4 J**	**1 J**
Benzo[g,h,i]perylene	10 U	**12 J**	10 U	**26 J**	10 U	400 U	**30 J**	10 U	10 U	**63**	**4 J**	**160**	**11**	**3 J**	10 U
Benzo[k]fluoranthene	10 U	80 U	10 U	**18 J**	10 U	400 U	250 U	10 U	10 U	**30 J**	**2 J**	**37 J**	**4 J**	**1 J**	10 U
Chrysene	10 U	**39 J**	10 U	**86**	10 U	**98 J**	**45 J**	**1 J**	**6 J**	**130**	**9 J**	**140**	**14**	**3 J**	**1 J**
Fluorene	10 U	**87**	10 U	**170**	**5 J**	**230 J**	**130 J**	**2 J**	**11**	**170**	**30**	**210**	**22**	10 U	**4 J**
Indeno[1,2,3-cd]pyrene	10 U	80 U	10 U	**23 J**	10 U	400 U	250 U	10 U	10 U	**52**	**4 J**	**130**	**9 J**	**3 J**	10 U
Methyl tert-butyl ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	120 U	5 U	NA	NA
Methylnaphthalene,2-	10 U	**200**	**10**	**580**	**8 J**	**810**	**580**	**6 J**	**22**	**450**	**70**	**620**	**43**	10 U	**8 J**
Naphthalene	**4 J**	**890**	**24**	**2800 D**	**20**	**3900**	**3000**	**19**	**60**	**1500 D**	**270**	**2500**	**55**	**12**	**31**
Phenanthrene	**3 J**	**180**	**29**	**510**	**19**	**680**	**380**	**8 J**	**40**	**580**	**91**	**640**	**72**	**1 J**	**12**
Pyrene	**1 J**	**110**	**5 J**	**240**	**4 J**	**320 J**	**160 J**	**4 J**	**18**	**400**	**34**	**340**	**39**	**6 J**	**5 J**

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name: Sample Interval (feet): Sample Date:	NYSDEC Class GA Groundwater Criteria	SHGP-14 3 3/10/2000	SHGP-14 33 3/10/2000	SHGP-15 26 3/9/2000	SHGP-15 3 3/9/2000	SHGP-15 33 3/9/2000	SHGP-16 26 3/9/2000	SHGP-16 3 3/9/2000	SHGP-16 33 3/9/2000	SHGP-17 3 3/10/2000	SHGP-17 33 3/10/2000	SHGP-18 3 3/7/2000	SHGP-18 30 3/7/2000	SHGP-19 3 3/9/2000	SHGP-19 33 3/9/2000	SHGP-20 2 3/7/2000	SHGP-20 33 3/8/2000	SHGP-21 2 3/10/2000	SHGP-21 31 3/10/2000	SHGP-22 1 3/10/2000	SHGP-22 30 3/10/2000	SHGP-23 2 3/8/2000	SHGP-23 32 3/8/2000	SHGP-24 1 3/9/2000	SHGP-24 33 3/8/2000	SHGP-25 2 3/16/2000
BTEX (µg/L)																										
Benzene	1	**40**	1 U	**500**	**50**	**5**	**14**	**140**	1 U	**66**	1 U	**370**	**17**	**1200**	**42**	**2000**	**30**	**50**	1 U	**800**	1 U	**680 D**	5 U	1 U	5 U	**230**
Toluene	5	10 U	1 U	10 U	2 U	1 U	**79**	2 U	**1**	1 U	1 U	**30**	**1**	44 U	**2**	100 U	1 U	2 U	1 U	**48**	1 U	**36**	5 U	1 U	5 U	**25**
Ethylbenzene	NE	**320**	**4**	**220**	**120**	**2**	**370**	**48**	**5**	**48**	1 U	**300**	**9**	**640**	**49**	**680**	**8**	**110**	1 U	**820**	**11**	**620 D**	5 U	1 U	5 U	**820**
Xylene, total	5	**250**	**3 B**	**170**	**53**	**2**	**260**	**24**	**4**	**36**	1 U	**250**	**7**	**740**	**60**	**570**	**7**	**68**	1 U	**400**	**4 B**	**530**	5 U	1 U	5 U	**810**
PAHs (µg/L)																										
Acenaphthene	20	**580 D**	**89**	**36**	**59**	10 U	**69 J**	**35**	**10**	**44**	**2 J**	**230**	**15**	**550**	**220**	**170 J**	**12**	**58**	**2 J**	**110**	**49**	**140**	**2 J**	10 U	10 U	**750**
Acenaphthylene	NE	**40**	**7 J**	20 U	40 U	10 U	**12 J**	10 U	**8 J**	10 U	10 U	**11 J**	**1 J**	100 U	**18 J**	200 U	**2 J**	**2 J**	10 U	**3 J**	**2 J**	**9 J**	10 U	10 U	10 U	**62 J**
Anthracene	50	**120**	**24**	20 U	**5 J**	10 U	80 U	**2 J**	10 U	**3 J**	10 U	**44 J**	**4 J**	**210**	**48 J**	**58 J**	**6 J**	**2 J**	10 U	**7 J**	**18**	**44**	**1 J**	10 U	10 U	**250 J**
Benz[a]anthracene	0.002	**89**	**7 J**	20 U	40 U	10 U	80 U	10 U	10 U	10 U	10 U	**25 J**	**2 J**	**130**	**24 J**	**42 J**	**3 J**	10 U	10 U	10 U	**5 J**	**25**	10 U	10 U	10 U	**180 J**
Benzo[a]pyrene	0	**60**	**6 J**	20 U	40 U	10 U	80 U	10 U	10 U	10 U	10 U	**16 J**	**1 J**	**91 J**	**16 J**	**32 J**	**2 J**	10 U	10 U	10 U	**4 J**	**18**	10 U	10 U	10 U	**120 J**
Benzo[b]fluoranthene	0.002	**52**	**5 J**	20 U	40 U	10 U	80 U	10 U	10 U	10 U	10 U	**12 J**	10 U	**72 J**	**12 J**	**22 J**	**2 J**	10 U	10 U	10 U	**3 J**	**14**	10 U	10 U	10 U	**98 J**
Benzo[g,h,i]perylene	NE	**30**	**3 J**	20 U	40 U	10 U	80 U	10 U	10 U	10 U	10 U	**7 J**	10 U	**44 J**	100 U	200 U	**2 J**	10 U	10 U	10 U	**2 J**	**8 J**	10 U	10 U	10 U	**56 J**
Benzo[k]fluoranthene	0.002	**21**	**2 J**	20 U	40 U	10 U	80 U	10 U	10 U	10 U	10 U	50 U	10 U	**18 J**	100 U	200 U	10 U	10 U	10 U	10 U	**2 J**	**6 J**	10 U	10 U	10 U	**45 J**
Chrysene	0.002	**75**	**7 J**	20 U	40 U	10 U	80 U	10 U	10 U	10 U	10 U	**23 J**	**2 J**	**110**	**20 J**	**36 J**	**3 J**	10 U	10 U	10 U	**5 J**	**23**	10 U	10 U	10 U	**160 J**
Fluorene	50	**140**	**43**	**6 J**	**13 J**	10 U	**12 J**	**9 J**	10 U	**13**	10 U	**77**	**7 J**	**230**	**76 J**	**64 J**	**7 J**	**14**	10 U	**33**	**26**	**64**	**2 J**	10 U	10 U	**310 J**
Indeno[1,2,3-cd]pyrene	0.002	**27**	**3 J**	20 U	40 U	10 U	80 U	10 U	10 U	10 U	10 U	**6 J**	10 U	**31 J**	100 U	200 U	**1 J**	10 U	10 U	10 U	**2 J**	**9 J**	10 U	10 U	10 U	**46 J**
Methyl tert-butyl ether	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**93**	5 U	NA	5 U	NA
Methylnaphthalene,2-	NE	**800 D**	**100**	**17 J**	**18 J**	10 U	**55 J**	**18**	**2 J**	**47**	**1 J**	**180**	**3 J**	**660**	**360**	**320**	**18**	**73**	**1 J**	**340 D**	**25**	**300 D**	10 U	10 U	10 U	**930**
Naphthalene	10	**2700 D**	**180 D**	**290**	**430**	**4 J**	**930**	**160**	**26**	**260 D**	**9 J**	**770**	**25**	**1600**	**1000**	**1900**	**40**	**450 D**	**10**	**2800 D**	**130**	**2300 D**	**8 J**	10 U	10 U	**4500**
Phenanthrene	50	**700 D**	**82**	**7 J**	**27 J**	10 U	**14 J**	**13**	**2 J**	**17**	**1 J**	**160**	**18**	**790**	**200**	**230**	**26**	**10**	**2 J**	**37**	**62**	**130**	**8 J**	10 U	10 U	**1000**
Pyrene	50	**280 D**	**22**	20 U	**5 J**	10 U	80 U	**1 J**	10 U	10 U	10 U	**62**	**7 J**	**350**	**68 J**	**120 J**	**9 J**	**1 J**	10 U	**3 J**	**17**	**56**	**2 J**	10 U	10 U	**470**

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name:	NYSDEC Class GA Groundwater Criteria	SHGP-25	SHGP-26	SHGP-26	SHGP-26	SHGP-26	SHGP-27	SHGP-27	SHGP-28	SHGP-28	SHGP-29	SHGP-29
Sample Interval (feet):		32	0	0	30	30	0	30	34	4	30	7
Sample Date:		3/16/2000	3/16/2000	3/20/2000	3/16/2000	3/20/2000	3/24/2000	3/24/2000	5/22/2000	5/22/2000	4/10/2000	4/10/2000
BTEX (µg/L)												
Benzene	1	**1**	1 U	NA	1 U	NA	**96**	**1**	1 U	1 U	1 U	1 U
Toluene	5	1 U	1 U	NA	1 U	NA	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	NE	**2**	**3**	NA	**1**	NA	**4**	1 U	1 U	1 U	1 U	1 U
Xylene, total	5	**2**	**2**	NA	1 U	NA	**12**	1 U*	1 U	1 U	1 U	1 U
PAHs (µg/L)												
Acenaphthene	20	**7 J**	NA	**3 J**	NA	**12**	**30**	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	NE	10 U	NA	**2 J**	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	50	**2 J**	NA	**2 J**	NA	**5 J**	10 U	10 U	10 U	10 U	10 U	10 U
Benz[a]anthracene	0.002	10 U	NA	**2 J**	NA	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[a]pyrene	0	10 U	NA	**2 J**	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene	0.002	10 U	NA	**3 J**	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[g,h,i]perylene	NE	10 U	NA	**3 J**	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	0.002	10 U	NA	**1 J**	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002	10 U	NA	**2 J**	NA	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	50	**3 J**	NA	**2 J**	NA	**6 J**	**7 J**	10 U	10 U	10 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002	10 U	NA	**2 J**	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylnaphthalene,2-	NE	**6 J**	NA	10 U	NA	**7 J**	**6 J**	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	**12**	NA	10 U	NA	**16**	**140**	**2 J**	10 U	10 U	10 U	10 U
Phenanthrene	50	**11**	NA	**6 J**	NA	**22**	**4 J**	**1 J**	10 U	10 U	10 U	10 U
Pyrene	50	**3 J**	NA	**4 J**	NA	**7 J**	10 U	10 U	10 U	10 U	10 U	10 U

Sample Name:	SHGP-30	SHGP-30	SHGP-30	SHGP-31	SHGP-31	SHGP-32	SHGP-32	SHGP-33	SHGP-33	SHGP-34	SHGP-34	SHGP-34	SHGP-34	SHGP-34	SHGP-35
Sample Interval (feet):	30	46	6	30	4	30	6_5	30	4	30	4	41	56	71	30
Sample Date:	4/23/2001	4/23/2001	4/23/2001	4/5/2002	4/5/2002	4/17/2002	4/17/2002	4/12/2002	4/12/2002	4/3/2002	4/3/2002	4/24/2002	4/24/2002	4/24/2002	4/3/2002
BTEX (µg/L)															
Benzene	1 U	1 U	1 U	1 U	1 U	**2**	1 U	1 U	1 U	**3**	**24**	1 U	1 U	1 U	**52**
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**4**	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**140**	**37**	1 U	1 U	1 U	**89**
Xylene, total	1 U	1 U	1 U	1 U	1 U	**1**	1 U	1 U	**2**	**49**	**14**	1 U	1 U	1 U	**20**
PAHs (µg/L)															
Acenaphthene	**2 J**	10 U	10 U	10 U	**7 J**	**5 J**	10 U	10 U	**33**	**58**	**30**	10 U	10 U	10 U	**76**
Acenaphthylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**3 J**	**45**	10 U	10 U	10 U	10 U	**3 J**
Anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**5 J**	**1 J**	**2 J**	10 U	10 U	10 U	**5 J**
Benz[a]anthracene	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[a]pyrene	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[g,h,i]perylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**8 J**	**19**	**8 J**	10 U	10 U	10 U	**20**
Indeno[1,2,3-cd]pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylnaphthalene,2-	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**20**	**1 J**	10 U	10 U	10 U	**10**
Naphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	**370 D**	**40**	10 U	10 U	10 U	**390 D**
Phenanthrene	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	**13**	**29**	**3 J**	10 U	10 U	10 U	**20**
Pyrene	10 U	10 U	10 U	10 U	10 U	10 U	**3 J**	10 U	**14**	**2 J**	10 U	10 U	10 U	10 U	10 U

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name: Sample Interval (feet): Sample Date:	NYSDEC Class GA Groundwater Criteria	SHGP-35 6 4/3/2002	SHGP-36 30 4/10/2002	SHGP-36 4 4/10/2002	SHGP-37 2 3/29/2002	SHGP-37 30 3/29/2002	SHGP-38 2 4/9/2002	SHGP-38 30 4/9/2002	SHGP-39 30 4/10/2002	SHGP-39 4 4/10/2002	SHGP-40 30 4/12/2002	SHGP-40 5 4/12/2002	SHGP-41 30 4/9/2002	SHGP-41 6 4/9/2002	SHGP-42 2 4/1/2002	SHGP-42 30 4/1/2002	SHGP-43 2 3/28/2002	SHGP-43 30 3/28/2002	SHGP-44 30 4/11/2002	SHGP-44 4 4/11/2002	SHGP-45 2 4/16/2002	SHGP-45 30 4/16/2002	SHGP-46 2 4/17/2002	SHGP-46 30 4/2/2002	SHGP-47 30 4/25/2002
BTEX (µg/L)																									
Benzene	1	**28**	1 U	1 U	**510**	1 U	**3**	1 U	1 U	**30**	1 U	**84**	1 U	**560**	1 U	1 U	1 U	1 U	1 U	**3**	**1**	1 U	1 U	1 U	1 U
Toluene	5	1 U	1 U	1 U	**17**	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	NE	**4**	1 U	1 U	**800**	1 U	1 U	1 U	1 U	1 U	1 U	**27**	1 U	**1100**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene, total	5	**6**	1 U	1 U	**500**	1 U	1 U	1 U	1 U	**3**	1 U	**37**	1 U	**550**	**1**	1 U	1 U	1 U	1 U	**2**	1 U	1 U	**2**	1 U	1 U
PAHs (µg/L)																									
Acenaphthene	20	**14**	10 U	10 U	**360 DJ**	**11**	10 U	10 U	10 U	**4 J**	10 U	**6 J**	**1 J**	**100**	10 U	10 U	10 U	10 U	10 U	**19**	**1 J**	10 U	10 U	10 U	10 U
Acenaphthylene	NE	10 U	10 U	10 U	**9 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U	**23**	10 U	10 U	10 U	10 U
Anthracene	50	10 U	10 U	10 U	**54**	**5 J**	10 U	10 U	10 U	10 U	10 U	10 U	**4 J**	**6 J**	10 U	10 U	10 U	10 U	10 U	10 U	**9 J**	10 U	10 U	10 U	10 U
Benz[a]anthracene	0.002	10 U	10 U	10 U	**23**	**2 J**	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**13**	10 U	**2 J**	10 U	10 U
Benzo[a]pyrene	0	10 U	10 U	10 U	**15**	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**22**	10 U	**2 J**	10 U	10 U
Benzo[b]fluoranthene	0.002	10 U	10 U	10 U	**13**	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**22**	10 U	**2 J**	10 U	10 U
Benzo[g,h,i]perylene	NE	10 U	10 U	10 U	**8 J**	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**24**	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	0.002	10 U	10 U	10 U	**6 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**16**	10 U	10 U	10 U	10 U
Chrysene	0.002	10 U	10 U	10 U	**29**	**2 J**	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**18**	10 U	**2 J**	10 U	10 U
Fluorene	50	**2 J**	10 U	10 U	**80**	**5 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**26**	10 U	10 U	10 U	10 U	10 U	**3 J**	10 U	10 U	10 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	0.002	10 U	10 U	10 U	**7 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**20**	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylnaphthalene,2-	NE	**28**	10 U	10 U	**670 D**	**12**	10 U	10 U	10 U	10 U	10 U	**5 J**	10 U	**180 DJ**	10 U	10 U	10 U	10 U	10 U	**6 J**	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	**390 D**	10 U	10 U	**5200 D**	**32**	**4 J**	10 U	10 U	**38**	10 U	**790 D**	**2 J**	**2500 D**	**1 J**	10 U	10 U	10 U	10 U	**70**	**8 J**	10 U	10 U	10 U	10 U
Phenanthrene	50	10 U	10 U	10 U	**150**	**19**	10 U	10 U	10 U	10 U	10 U	10 U	**4 J**	**36**	10 U	10 U	10 U	10 U	10 U	**2 J**	**5 J**	10 U	**2 J**	10 U	**5 J**
Pyrene	50	10 U	10 U	10 U	**57**	**7 J**	**4 J**	10 U	10 U	10 U	10 U	10 U	**1 J**	**4 J**	10 U	10 U	10 U	10 U	10 U	10 U	**28**	10 U	**3 J**	10 U	**2 J**

Notes:

U Non Detect

J Result is Estimated

Table 1-2
Groundwater Analytical Data Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name:	NYSDEC Class GA Groundwater Criteria	SHGP-47	SHGP-48	SHGP-48	SHGP-49	SHGP-49	SHGP-50	SHGP-50	SHGP-51	SHGP-51	SHGP-52	SHGP-52	SHGP-52	SHGP-53
Sample Interval (feet):		4	30	7_5	2	30	30	4	30	4	41	56	71	30
Sample Date:		4/25/2002	4/24/2002	4/24/2002	4/26/2002	4/26/2002	4/30/2002	4/30/2002	4/25/2002	4/25/2002	4/26/2002	4/26/2002	4/26/2002	5/3/2002
BTEX (µg/L)														
Benzene	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**62**
Toluene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene, total	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**5**
PAHs (µg/L)														
Acenaphthene	20	**25**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**13 J**
Acenaphthylene	NE	**24**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Anthracene	50	**7 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Benz[a]anthracene	0.002	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Benzo[a]pyrene	0	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Benzo[b]fluoranthene	0.002	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Benzo[g,h,i]perylene	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Benzo[k]fluoranthene	0.002	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Chrysene	0.002	**4 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Fluorene	50	**13**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Indeno[1,2,3-cd]pyrene	0.002	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Methyl tert-butyl ether	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U
Methylnaphthalene,2-	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**4 J**
Naphthalene	10	**22**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**310**
Phenanthrene	50	**38**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U
Pyrene	50	**14**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U

Sample Name:	SHGP-53	SHGP-53	SHGP-54	SHGP-54	SHGP-55	SHGP-55	SHGP-56	SHGP-56	SHGP-57	SHGP-57	SHGP-58	SHGP-58	SHGP-58	SHGP-59	SHGP-59	SHGP-59
Sample Interval (feet):	46	6	30	4	30	6	2_5	30	30	5	30	46	8	11	34	50
Sample Date:	5/23/2002	5/3/2002	5/9/2002	5/9/2002	5/3/2002	5/3/2002	5/1/2002	5/1/2002	5/9/2002	5/9/2002	5/31/2002	5/31/2002	5/31/2002	5/30/2002	5/30/2002	5/30/2002
BTEX (µg/L)																
Benzene	1 U	1 U	1 U	1 U	1 U	**1**	1 U	1 U	1 U	1 U	**20**	1 U	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1**	**2**	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1**	1 U	1 U	1 U	1 U	1 U
Xylene, total	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PAHs (µg/L)																
Acenaphthene	10 U	**4 J**	10 U	10 U	10 U	**5 J**	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U	10 U	10 U	**4 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benz[a]anthracene	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[a]pyrene	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[g,h,i]perylene	10 U	10 U	10 U	10 U	10 U	10 U	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U	10 U	10 U	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno[1,2,3-cd]pyrene	10 U	10 U	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	1 U	1 U	**1**	**8**	1 U	1 U	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U
Methylnaphthalene,2-	10 U	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10 U	10 U	10 U	10 U	10 U	**80**	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenanthrene	10 U	10 U	10 U	10 U	10 U	10 U	**6 J**	**2 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U	10 U	10 U	10 U	**4 J**	**1 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

U Non Detect

J Result is Estimated

Table 1-3
Remedial Action Waste Removal Summary
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Material Type	Weight	Volume
C&D Debris	505 tons	253 cubic yards
Total MGP Soils	36,584 tons	18,292 cubic yards
Hazardous Lead Soils	734 tons	367 cubic yards
Totals Soils Removed	**37,824** tons	**18,912** cubic yards
Total Water Removed	--	**15,654,508** gallons

Table 1-4
Summary of Remaining Soil Contanimation Exceeding Unrestricted SCOs
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name Sample Depth Date Collected	6NYCRR Part 375 UNRESTRICTED USE (italics)	SHSB-01 26-28' 3/20/2000	SHSB-01* 8-10' 10/25/2010	SHSB-01* 74-75' 10/25/2010	SHSB-02 16-18' 3/20/2000	SHSB-02 52-54' 3/22/2000	SHSB-02* 4-5' 10/26/2010	SHSB-02* 11-11.5' 10/26/2010	SHSB-02* 20-22' 10/26/2010	SHSB-02* 30-30.5' 10/26/2010	SHSB-02* 70-72' 10/26/2010	Duplicate of: SHSB-02* 70-72' 10/26/2010	SHSB-03 34-36' 3/20/2000	SHSB-04 24-26' 3/15/2000	SHSB-04* 6-8' 10/26/2010	SHSB-04* 13-15' 10/26/2010	SHSB-04A* 5-5.5' 11/1/2010	SHSB-04A* 6-9' 11/1/2010	SHSB-04A* 10.5-13.5' 11/1/2010
Location		MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	SHROW	SHROW	SHROW	SHROW	SHROW
BTEX (mg/kg)																			
Benzene	0.06	0.001	0.011 U	0.011 UJ	***92***	0.001 U	0.011 U	***0.086***	0.013 U	0.057 UJ	0.012 U	0.008	0.001	0.001 U	0.002 J	0.012 U	***0.067***	0.056 U	***4.9***
Toluene	0.7	0.001 U	0.011 U	0.011 UJ	***270***	0.001	0.011 U	0.15	0.013 U	0.68	0.012 U	0.004 J	0.003	0.001 U	0.004 J	0.012 U	0.037	0.022 J	0.005 J
Ethylbenzene	1	0.001	0.011 U	0.011 UJ	***240***	0.003	0.011 U	0.86	0.013 U	***17***	0.006	0.02	0.004	0.001 U	0.77	0.012 U	***1.1***	***17***	***25***
Xylene, total	0.26	0.002	0.011 U	0.011 UJ	***380***	0.005	0.011 U	***2.4***	0.013 U	***32***	0.013 J	0.044 J	0.005	0.001 U	***1.4***	0.012 U	***1.1***	***15***	0.22
PAHs (mg/kg)																			
Acenaphthene	20	0.38 U	0.37 U	0.37 U	***38***	0.12 J	0.36 U	***22***	0.41 U	***87 J***	0.4 U	0.38 U	0.41 U	0.4 U	18	18	***59***	***240***	***31***
Acenaphthylene	100	0.38 U	0.37 U	0.37 U	54	0.21 J	0.36 U	3	0.41 U	***390***	0.4 U	0.38 U	0.41 U	0.4 U	1.3	1.3	12	14	2
Anthracene	100	0.38 U	0.37 U	0.37 U	31	0.21 J	0.36 U	11	0.41 U	***220***	0.4 U	0.38 U	0.41 U	0.4 U	7.3	7.6	84	90	12
Benz[a]anthracene	1	0.38 U	0.37 U	0.37 U	***16 J***	0.15 J	0.36 U	***11***	0.41 U	***150***	0.4 U	0.38 U	0.41 U	0.4 U	***5.3***	***5.8***	***60***	***54***	***7.6***
Benzo[a]pyrene	1	0.38 U	0.37 U	0.37 U	***12 J***	0.13 J	0.36 U	***10***	0.41 U	***130***	0.4 U	0.38 U	0.41 U	0.4 U	***4.1***	***4.4***	***24***	***46***	***5.4***
Benzo[b]fluoranthene	1	0.38 U	0.37 U	0.37 U	***9.4 J***	0.11 J	0.36 U	***7.8***	0.41 U	***82 J***	0.4 U	0.38 U	0.41 U	0.4 U	***3.3***	***4***	***37***	***28***	***6.1 J***
Benzo[g,h,i]perylene	100	0.38 U	0.37 U	0.37 U	6.3 J	0.064 J	0.36 U	5.4	0.41 U	35	0.4 U	0.38 U	0.41 U	0.4 U	1.9	2	13	14	1.8 J
Benzo[k]fluoranthene	0.8	0.38 U	0.37 U	0.37 U	***4 J***	0.39 U	0.36 U	***2.5***	0.41 U	***32***	0.4 U	0.38 U	0.41 U	0.4 U	***1.5***	***1.2***	***12 J***	***18***	***1.8 J***
Chrysene	1	0.38 U	0.37 U	0.37 U	***14 J***	0.14 J	0.36 U	***10***	0.41 U	***140***	0.4 U	0.38 U	0.41 U	0.4 U	***4.3***	***4.3***	***56***	***46***	***6.7***
Dibenz[a,h]anthracene	0.33	0.38 U	0.37 U	0.37 U	29 U	0.39 U	0.36 U	***1.2***	0.41 U	***8.7 J***	0.4 U	0.38 U	0.41 U	0.4 U	***0.5***	***0.6***	***3.5 J***	***4.3 J***	***0.48 J***
Dibenzofuran	7	0.38 U	0.37 U	0.37 U	29 U	0.39 U	0.36 U	0.81	0.41 U	***15***	0.4 U	0.38 U	0.41 U	0.4 U	0.42	0.43	3.6 J	6.8	0.97
Fluoranthene	100	0.38 U	0.37 U	0.37 U	36	0.3 J	0.36 U	22	0.41 U	***320***	0.4 U	0.14 J	0.41 U	0.4 U	9.6	10	98	***120***	16
Fluorene	30	0.38 U	0.37 U	0.37 U	29 U	0.18 J	0.36 U	10	0.41 U	***210***	0.4 U	0.38 U	0.41 U	0.4 U	6.3	7	***58***	***90***	***12***
Indeno[1,2,3-cd]pyrene	0.5	0.38 U	0.37 U	0.37 U	***5 J***	0.053 J	0.36 U	***3.7***	0.41 U	***27***	0.4 U	0.38 U	0.41 U	0.4 U	***1.3***	***1.3***	***9.7***	***11***	***1.3 J***
Methylnaphthalene,2-	0.41+	0.38 U	0.37 U	0.37 U	***120***	0.27 J	0.36 U	***20***	0.41 U	***590***	0.4 U	0.38 U	0.41 U	0.4 U	***20***	***20***	3.8 U	***270***	***31***
Naphthalene	12	0.38 U	0.37 U	0.37 U	***270***	0.31 J	0.36 U	***37***	0.41 U	***1600***	0.4 U	0.38 U	0.045 J	0.4 U	***31***	***31***	10	***760***	***85***
Phenanthrene	100	0.38 U	0.37 U	0.37 U	***160***	0.83	0.36 U	51	0.41 U	***970***	0.14 J	0.29	0.094 J	0.064 J	35	37	***320***	***400***	53
Pyrene	100	0.38 U	0.37 U	0.37 U	49	0.42	0.36 U	31	0.41 U	***440***	0.092 J	0.18 J	0.056 J	0.4 U	13	14	***130***	***160***	22

Notes:

92 Result exceeds Unrestructed Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* samples collected from borings completed in 2010.

+ Value adapted from Residential Use SCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-4
Summary of Remaining Soil Contamination Exceeding Unrestricted SCOs
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name Sample Depth Date Collected	6NYCRR Part 375 UNRESTRICTED USE (italics)	SHSB-05 22-24' 3/13/2000	SHSB-05 88-90' 5/22/2000	SHSB-05* 5-7' 10/27/2010	SHSB-05* 10-10.5' 10/27/2010	SHSB-05* 15-16' 10/27/2010	SHSB-05 * 40-42' 10/28/2010	SHSB-06 50-52' 3/13/2000	SHSB-07 26-28' 3/17/2000	SHSB-07* 4-5' 11/1/2010	SHSB-07* 6.5-8.5' 11/1/2010	SHSB-07* 16-18' 11/1/2010	SHSB-08 50-52' 3/20/2000	SHSB-09 26-28' 3/23/2000	SHSB-10 24-26' 3/16/2000	SHSB-11 30-32' 3/23/2000	SHSB-12 34-36' 3/24/2000	SHSB-13 18-20' 3/27/2000	SHSB-13 34-36' 3/27/2000
Location		MGP	MGP	SHROW	SHROW	SHROW	SHROW	MGP	MGP	SHROW	SHROW	SHROW	MGP	MGP	MGP	MGP	MGP	MGP	MGP
BTEX (mg/kg)																			
Benzene	0.06	0.001 U	0.001 U	0.012 U	0.005 J	0.012 U	0.012 U	0.001 U	0.001	0.012 U	***0.45***	0.012 U	0.001 U	0.001 U	0.001 U	0.002	0.001 U	0.005 U	0.001 U
Toluene	0.7	0.001 U	0.001 U	0.012 U	0.012 U	0.012 U	0.012 U	0.001 U	0.001 U	0.012 U	**0.61**	0.012 U	0.001 U	0.001	0.001 U	0.001 U	0.001 U	0.022	0.002
Ethylbenzene	1	0.001 U	0.001 U	0.012 U	0.026	0.012 U	0.012 U	0.001 U	0.001 U	0.012 U	***23***	0.012 U	0.001 U	0.001 U	0.002	0.018	0.001 U	0.11	0.002
Xylene, total	0.26	0.001 U	0.001 U	0.012 U	0.023	0.012 U	0.012 U	0.001 U	0.002	0.012 U	***16***	0.012 U	0.001 U	0.001	0.002	0.011	0.001 U	0.14	0.002
PAHs (mg/kg)																			
Acenaphthene	20	0.38 U	0.38 U	0.38 U	0.37	0.39 U	0.39 U	0.39 U	0.4 U	0.18 J	***410***	0.15 J	0.38 U	0.4 U	0.41 U	2.6	0.4 U	0.39 U	0.4 U
Acenaphthylene	100	0.38 U	0.081 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	6	30	0.38 U	0.38 U	0.4 U	0.41 U	0.41	0.4 U	3.4	0.4 U
Anthracene	100	0.38 U	0.12 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	32	***180***	0.085 J	0.38 U	0.4 U	0.41 U	1.3	0.4 U	2.6	0.4 U
Benz[a]anthracene	1	0.38 U	0.1 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	***20***	***120***	0.38 U	0.38 U	0.4 U	0.41 U	***1.2***	0.4 U	***2***	0.4 U
Benzo[a]pyrene	1	0.38 U	0.076 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	***26***	***91 J***	0.38 U	0.38 U	0.4 U	0.41 U	***1.1***	0.4 U	***1.6***	0.4 U
Benzo[b]fluoranthene	1	0.38 U	0.06 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	***25***	***59 J***	0.38 U	0.38 U	0.4 U	0.41 U	0.84	0.4 U	***1.2***	0.4 U
Benzo[g,h,i]perylene	100	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	16	26	0.38 U	0.38 U	0.4 U	0.41 U	0.66	0.4 U	0.79	0.4 U
Benzo[k]fluoranthene	0.8	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	***15***	***37***	0.38 U	0.38 U	0.4 U	0.41 U	0.26 J	0.4 U	0.42	0.4 U
Chrysene	1	0.38 U	0.11 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	***24***	***100***	0.38 U	0.38 U	0.4 U	0.41 U	***1***	0.4 U	***1.6***	0.4 U
Dibenz[a,h]anthracene	0.33	*0.38 U*	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	***3.7 J***	***7.9 J***	0.38 U	0.38 U	0.4 U	0.41 U	0.1 J	0.4 U	0.14 J	0.4 U
Dibenzofuran	7	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	0.4 U	***19***	0.38 U	0.38 U	0.4 U	0.41 U	0.046 J	0.4 U	0.1 J	0.4 U
Fluoranthene	100	0.38 U	0.2 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	29	***220***	0.11 J	0.38 U	0.4 U	0.41 U	2.6	0.4 U	4.2	0.058 J
Fluorene	30	0.38 U	0.084 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	0.63	***170***	0.078 J	0.38 U	0.4 U	0.41 U	1.3	0.4 U	2.2	0.4 U
Indeno[1,2,3-cd]pyrene	0.5	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	***12***	***22***	0.38 U	0.38 U	0.4 U	0.41 U	***0.52***	0.4 U	***0.66***	0.4 U
Methylnaphthalene,2-	0.41+	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	***0.83***	***460***	0.1 J	0.38 U	0.4 U	0.41 U	***2.4***	0.4 U	***3.3***	0.4 U
Naphthalene	12	0.38 U	0.38 U	0.38 U	0.57	0.39 U	0.39 U	0.39 U	0.4 U	1.9	***1400***	0.13 J	0.38 U	0.4 U	0.41 U	5.7	0.4 U	5.9	0.4 U
Phenanthrene	100	0.072 J	0.51	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	9.2	***690***	0.35	0.38 U	0.4 U	0.049 J	5.7	0.4 U	10 D	0.1 J
Pyrene	100	0.38 U	0.29 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	46	***310***	0.17 J	0.38 U	0.4 U	0.41 U	3.5	0.4 U	5.4	0.079 J

Notes:

92 Result exceeds Unrestructed Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* samples collected from borings completed in 2010.

\+ Value adapted from Residential Use SCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-4
Summary of Remaining Soil Contanimation Exceeding Unrestricted SCOs
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Sample Name Sample Depth Date Collected	6NYCRR Part 375 UNRESTRICTED USE (italics)	SHSB-14 48-52' 3/6/2000	SHSB-15 16-18' 3/6/2000	SHSB-15 26-28' 3/6/2000	SHSB-15 48-50' 3/7/2000	SHSB-16 50-52' 3/8/2000	SHSB-16 6-8' 3/7/2000	SHSB-17 14-16' 3/8/2000	SHSB-18 30-32' 3/27/2000	SHSB-19 50-52' 3/20/2000	SHSB-20 31-33' 3/22/2002	SHSB-20 79-81' 3/25/2002	SHSB-20 9-11' 3/21/2002	SHSB-20 99-101' 3/25/2002	SHSB-21 15-17' 3/27/2002	SHSB-21 71-73' 3/28/2002	SHSB-21 95-97' 3/29/2002	SHSB-22 20-22' 4/1/2002	SHSB-22 52-54' 4/2/2002
Location		31 Long Island Avenue	31 Long Island Avenue	31 Long Island Avenue	31 Long Island Avenue	SHROW	SHROW	SHROW	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP
BTEX (mg/kg)																			
Benzene	0.06	0.001 U	0.001 U	0.012 U	0.001 U	0.001 U	1.2 U	0.001 U	0.001 U	0.001	0.003	0.001 U	***0.55***	0.001 U	***11***	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.7	0.001 U	0.001 U	0.012 U	0.001 U	0.001 U	1.2 U	0.001 U	0.001 U	0.002	0.001 U	0.001 U	0.23	0.001 U	***16***	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	1	0.001 U	0.001 U	0.086	0.001 U	0.001 U	***17***	0.001 U	0.001 U	0.001 U	0.002	0.001 U	***6.6***	0.001 U	***28***	0.001 U	0.001 U	0.001 U	0.001 U
Xylene, total	0.26	0.001 U	0.001 U	0.1	0.001 U	0.001 U	***8.6***	0.001 U	0.001 U	0.002	0.004	0.002	***11***	0.001 U	***37***	0.001 U	0.001 U	0.001 U	0.001 U
PAHs (mg/kg)																			
Acenaphthene	20	0.39 U	0.38 U	1.8	0.39 U	0.41 U	19	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	***30 D***	0.4 U	5.7	0.39 U	0.38 U	0.048 J	0.36 U
Acenaphthylene	100	0.39 U	0.38 U	13	0.39 U	0.41 U	1.2 J	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	2.6	0.4 U	2.2	0.39 U	0.38 U	0.4 U	0.36 U
Anthracene	100	0.39 U	0.38 U	7.5	0.39 U	0.41 U	5.9	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	17 D	0.4 U	2.8	0.39 U	0.38 U	0.05 J	0.36 U
Benz[a]anthracene	1	0.39 U	0.38 U	***5***	0.39 U	0.41 U	***5***	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	***12 D***	0.4 U	***1.4***	0.39 U	0.38 U	0.058 J	0.36 U
Benzo[a]pyrene	1	0.39 U	0.38 U	***3.8***	0.39 U	0.41 U	***3.8***	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	***6.3***	0.4 U	***1.2***	0.39 U	0.38 U	0.4 U	0.36 U
Benzo[b]fluoranthene	1	0.39 U	0.38 U	***3.1***	0.39 U	0.41 U	***3***	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	***4.9***	0.4 U	0.89	0.39 U	0.38 U	0.4 U	0.36 U
Benzo[g,h,i]perylene	100	0.39 U	0.38 U	1.7	0.39 U	0.41 U	1.6	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	2.5	0.4 U	0.5	0.39 U	0.38 U	0.4 U	0.36 U
Benzo[k]fluoranthene	0.8	0.39 U	0.38 U	***0.92 J***	0.39 U	0.41 U	***0.98 J***	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	***2.1***	0.4 U	0.31 J	0.39 U	0.38 U	0.4 U	0.36 U
Chrysene	1	0.39 U	0.38 U	***4.5***	0.39 U	0.41 U	***4.6***	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	***12 D***	0.4 U	***1.4***	0.39 U	0.38 U	0.051 J	0.36 U
Dibenz[a,h]anthracene	0.33	0.39 U	0.38 U	***0.36 J***	*0.39 U*	0.41 U	***0.41 J***	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	***0.82***	0.4 U	0.14 J	0.39 U	0.38 U	0.4 U	0.36 U
Dibenzofuran	7	0.39 U	0.38 U	0.71 J	0.39 U	0.41 U	0.53 J	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	0.36 J	0.4 U	0.4 U	0.39 U	0.38 U	0.4 U	0.36 U
Fluoranthene	100	0.39 U	0.38 U	10	0.39 U	0.41 U	9.9	0.37 U	0.39 U	0.39 U	0.046 J	0.39 U	20 D	0.4 U	2.4	0.063 J	0.044 J	0.095 J	0.36 U
Fluorene	30	0.39 U	0.38 U	7.2	0.39 U	0.41 U	5.7	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	15 D	0.4 U	2.9	0.39 U	0.38 U	0.4 U	0.36 U
Indeno[1,2,3-cd]pyrene	0.5	0.39 U	0.38 U	***1.5 J***	0.39 U	0.41 U	***1.4***	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	***1.9***	0.4 U	0.41	0.39 U	0.38 U	0.4 U	0.36 U
Methylnaphthalene,2-	0.41+	0.39 U	0.38 U	***14***	0.39 U	0.41 U	***17***	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	***39 D***	0.4 U	***9.3 D***	0.39 U	0.38 U	0.4 U	0.36 U
Naphthalene	12	0.39 U	0.22 J	***22***	0.39 U	0.41 U	***83 D***	0.37 U	0.39 U	0.39 U	0.4 U	0.39 U	***60 D***	0.4 U	***12 D***	0.39 U	0.38 U	0.4 U	0.36 U
Phenanthrene	100	0.39 U	0.38 U	23	0.08 J	0.41 U	23 D	0.37 U	0.39 U	0.39 U	0.12 J	0.39 U	60 D	0.4 U	16 D	0.16 J	0.1 J	0.19 J	0.36 U
Pyrene	100	0.39 U	0.38 U	14	0.052 J	0.41 U	14	0.37 U	0.39 U	0.39 U	0.072 J	0.39 U	34 D	0.4 U	4.1	0.081 J	0.057 J	0.11 J	0.36 U

Notes:

92 Result exceeds Unrestructed Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* samples collected from borings completed in 2010.

+ Value adapted from Residential Use SCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-4
Summary of Remaining Soil Contanimation Exceeding Unrestricted SCOs
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name Sample Depth Date Collected	6NYCRR Part 375 UNRESTRICTED USE (italics)	SHSB-22 98-100' 4/2/2002	SHSB-23 8-10' 4/4/2002	SHSB-23 17-19' 4/4/2002	SHSB-23 37-39' 4/4/2002	SHSB-23 58-60' 4/4/2002	SHSB-24 12-14' 4/16/2002	SHSB-24 20-22' 4/16/2002	SHSB-24 40-42' 4/16/2002	SHSB-24 56-58' 4/17/2002	SHSB-25 6-8 4/5/2002	SHSB-25 21-23' 4/5/2002	SHSB-25 42-44' 4/8/2002	SHSB-25 57-59' 4/8/2002	SHSB-26 5-6' 4/8/2002	SHSB-26 16-18' 4/8/2002	SHSB-26 40-42' 4/8/2002	SHSB-26 58-60' 4/9/2002	SHSB-27 5-7' 4/11/2002
Location		MGP	8 W Water Street	8 W Water Street	8 W Water Street	8 W Water Street	2 W West Water Street	2 W West Water Street	2 W West Water Street	2 W West Water Street	4 W West Water Street	4 W West Water Street	4 W West Water Street	4 W West Water Street	SHROW	SHROW	SHROW	SHROW	SHROW
BTEX (mg/kg)																			
Benzene	0.06	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.004	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.7	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017	0.001 U	0.001 U	0.001 U	0.002
Ethylbenzene	1	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002 U	0.002	0.001 U	0.001 U	0.001 U
Xylene, total	0.26	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.003	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.041	0.001 U	0.001 U	0.001 U	0.006
PAHs (mg/kg)																			
Acenaphthene	20	0.37 U	0.41 U	0.4 U	0.39 U	0.4 U	0.09 J	0.4 U	0.42 U	0.4 U	0.13 J	0.4 U	0.42 U	0.4 U	***96***	0.12 J	0.4 U	0.39 U	0.34 J
Acenaphthylene	100	0.37 U	0.33 J	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	76	0.4 U	0.4 U	0.39 U	0.64
Anthracene	100	0.37 U	0.12 J	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.12 J	0.4 U	0.42 U	0.4 U	***120***	0.094 J	0.4 U	0.39 U	0.41
Benz[a]anthracene	1	0.37 U	0.8	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	***110***	0.07 J	0.4 U	0.39 U	0.44
Benzo[a]pyrene	1	0.37 U	0.91	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	***75***	0.4 U	0.4 U	0.39 U	0.57
Benzo[b]fluoranthene	1	0.37 U	0.89	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	***61***	0.4 U	0.4 U	0.39 U	0.47
Benzo[g,h,i]perylene	100	0.37 U	0.5	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	29	0.4 U	0.4 U	0.39 U	0.43
Benzo[k]fluoranthene	0.8	0.37 U	0.32 J	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	***34***	0.4 U	0.4 U	0.39 U	0.19 J
Chrysene	1	0.37 U	0.93	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	***110***	0.078 J	0.4 U	0.39 U	0.49
Dibenz[a,h]anthracene	0.33	0.37 U	0.1 J	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	***9.4 J***	0.4 U	0.4 U	0.39 U	0.09 J
Dibenzofuran	7	0.37 U	0.41 U	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	22 U	0.4 U	0.4 U	0.39 U	0.36 U
Fluoranthene	100	0.37 U	0.86	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.15 J	0.4 U	0.42 U	0.4 U	***190***	0.16 J	0.4 U	0.39 U	0.73
Fluorene	30	0.37 U	0.41 U	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.088 J	0.4 U	0.42 U	0.4 U	***110***	0.078 J	0.4 U	0.39 U	0.22 J
Indeno[1,2,3-cd]pyrene	0.5	0.37 U	0.39 J	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	***26***	0.4 U	0.4 U	0.39 U	0.35 J
Methylnaphthalene,2-	0.41+	0.37 U	0.41 U	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.051 J	0.4 U	0.42 U	0.4 U	***22 J***	0.4 U	0.4 U	0.39 U	0.1 J
Naphthalene	12	0.37 U	0.41 U	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.14 J	0.4 U	0.42 U	0.4 U	22 U	0.4 U	0.4 U	0.39 U	0.18 J
Phenanthrene	100	0.37 U	0.042 J	0.4 U	0.39 U	0.4 U	0.43 U	0.14 J	0.42 U	0.4 U	0.44	0.4 U	0.42 U	0.4 U	***240***	0.32 J	0.4 U	0.39 U	0.28 J
Pyrene	100	0.37 U	1.4	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.22 J	0.4 U	0.42 U	0.4 U	***280***	0.22 J	0.4 U	0.39 U	1.4

Notes:

92 Result exceeds Unrestructed Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* samples collected from borings completed in 2010.

+ Value adapted from Residential Use SCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-4
Summary of Remaining Soil Contanimation Exceeding Unrestricted SCOs
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name Sample Depth Date Collected	6NYCRR Part 375 UNRESTRICTED USE (italics)	SHSB-27 28-30' 4/11/2002	SHSB-28 10-12' 4/2/2002	SHSB-28 20-22' 4/2/2002	SHSB-28 38-40' 4/2/2002	SHSB-28 58-60' 4/2/2002	SHSB-29 30-32' 4/11/2002	SHSB-29 58-60' 4/11/2002	SHSB-30 5-6' 4/1/2002	SHSB-30 28-30' 4/1/2002	SHSB-31 4-6' 3/28/2002	SHSB-31 16-18' 3/28/2002	SHSB-31 28-30' 3/28/2002	SHSB-32 16-20' 4/15/2002	SHSB-34 8-10' 4/9/2002	SHSB-34 28-30' 4/9/2002	SHSB-35 8-10 4/10/2002	SHSB-35 28-30 4/10/2002	SHSB-36 8-10' 3/29/2002
Location		SHROW	SHROW	SHROW	SHROW	SHROW	SHROW	SHROW	18 Bridge Street	18 Bridge Street	SHROW	SHROW	SHROW	11 Bridge Street	SHROW	SHROW	18 Bridge Street	18 Bridge Street	SHROW
BTEX (mg/kg)																			
Benzene	0.06	0.001 U	0.001 J	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.001 U	0.39 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.009
Toluene	0.7	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002 U	0.001 U	0.39 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	1	0.001 U	0.001 U	0.009	0.001 U	0.001 U	0.001 U	0.001 U	0.002 U	0.001 U	***16***	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylene, total	0.26	0.001 U	0.001 U	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.008	0.001 U	***13***	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
PAHs (mg/kg)																			
Acenaphthene	20	0.38 U	0.3 J	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.5	0.41 U	***120 D***	0.4 U	NS	0.4 U	0.46 U	0.4 U	0.11 J	0.41 U	0.42 U
Acenaphthylene	100	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	14	0.4 U	NS	0.4 U	0.46 U	0.4 U	0.16 J	0.41 U	0.42 U
Anthracene	100	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	57	0.4 U	NS	0.4 U	0.46 U	0.4 U	0.41 J	0.41 U	0.42 U
Benz[a]anthracene	1	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	***40***	0.4 U	NS	0.4 U	0.46 U	0.4 U	***1.2***	0.41 U	0.42 U
Benzo[a]pyrene	1	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	***27***	0.4 U	NS	0.4 U	0.46 U	0.4 U	***1.1***	0.41 U	0.42 U
Benzo[b]fluoranthene	1	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	***24***	0.4 U	NS	0.4 U	0.46 U	0.4 U	***1.4***	0.41 U	0.42 U
Benzo[g,h,i]perylene	100	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	9.3	0.4 U	NS	0.4 U	0.46 U	0.4 U	0.75	0.41 U	0.42 U
Benzo[k]fluoranthene	0.8	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	***10***	0.4 U	NS	0.4 U	0.46 U	0.4 U	0.56	0.41 U	0.42 U
Chrysene	1	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	***41***	0.4 U	NS	0.4 U	0.46 U	0.4 U	***1.3***	0.41 U	0.42 U
Dibenz[a,h]anthracene	0.33	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	***2.5 J***	0.4 U	NS	0.4 U	0.46 U	0.4 U	0.18 J	0.41 U	0.42 U
Dibenzofuran	7	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	5.4	0.4 U	NS	0.4 U	0.46 U	0.4 U	0.064 J	0.41 U	0.42 U
Fluoranthene	100	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.06 J	0.49 U	0.41 U	68	0.049 J	NS	0.052 J	0.46 U	0.4 U	2.9	0.41 U	0.42 U
Fluorene	30	0.38 U	0.088 J	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	***48***	0.4 U	NS	0.4 U	0.46 U	0.4 U	0.14 J	0.41 U	0.42 U
Indeno[1,2,3-cd]pyrene	0.5	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	***9.2***	0.4 U	NS	0.4 U	0.46 U	0.4 U	***0.72***	0.41 U	0.42 U
Methylnaphthalene,2-	0.41+	0.38 U	0.1 J	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	**130 D**	0.4 U	NS	0.4 U	0.46 U	0.4 U	0.47 U	0.41 U	0.42 U
Naphthalene	12	0.38 U	1	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	2.3	0.41 U	**300 D**	0.4 U	NS	0.046 J	0.46 U	0.4 U	0.09 J	0.41 U	0.42 U
Phenanthrene	100	0.38 U	0.071 J	0.41 U	0.41 U	0.4 U	0.41 U	0.13 J	0.49 U	0.41 U	**190 D**	0.11 J	NS	0.12 J	0.46 U	0.4 U	1.7	0.41 U	0.42 U
Pyrene	100	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.096 J	0.49 U	0.41 U	74	0.058 J	NS	0.073 J	0.063 J	0.4 U	2.4	0.41 U	0.42 U

Notes:

92 Result exceeds Unrestructed Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* samples collected from borings completed in 2010.

\+ Value adapted from Residential Use SCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-4
Summary of Remaining Soil Contanimation Exceeding Unrestricted SCOs
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name Sample Depth Date Collected	6NYCRR Part 375 UNRESTRICTED USE (italics)	SHSB-36 14-16' 3/29/2002	SHSB-37 6-8' 4/12/2002	SHSB-37 10-12' 4/12/2002	SHSB-37 14-16' 4/12/2002	SHSB-38 8-10' 4/8/2002	SHSB-38 12-14' 4/8/2002	SHSB-38 22-24' 4/8/2002	SHSB-39 8-10' 3/27/2002	SHSB-39 16-18' 3/27/2002	SHSB-40 8-10' 4/9/2002	SHSB-40 13-15' 4/9/2002	SHSB-41 9-11' 4/11/2002	SHSB-41 16-18' 4/11/2002	SHSB-42 8-10' 4/15/2002	SHSB-42 20-22' 4/15/2002	SHSB-43 8-10' 4/16/2002	SHSB-43 16-18' 4/16/2002	SHSB-44 6-8' 4/17/2002
Location		SHROW	11 Bridge Street	11 Bridge Street	11 Bridge Street	SHROW	SHROW	SHROW	SHROW	SHROW	USPS	USPS	SHROW	SHROW	SHROW	SHROW	11 Bridge Street	11 Bridge Street	SHROW
BTEX (mg/kg)																			
Benzene	0.06	0.001 U	0.002	***0.36***	0.001 U	***14***	0.065 U	0.001 U	0.003 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.26 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.7	0.001 U	0.001 U	0.005 U	0.001 U	***17***	**0.16**	0.001 U	0.003 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.26 U	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	1	0.001 U	0.003	0.005	0.001 U	***140***	0.75	0.001 U	0.003 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	***16***	0.001 U	0.001 U	0.001 U	0.001 U
Xylene, total	0.26	0.001 U	0.008	0.009	0.006	***130***	***0.78***	0.001 U	0.003 U	0.001 U	0.001 U	0.002	0.007	0.001 U	***17***	0.001 U	0.001 U	0.002	0.001 U
PAHs (mg/kg)																			
Acenaphthene	20	0.4 U	13 D	1.6 U	0.4 U	***330***	1.2	0.39 U	0.92 U	0.38 U	0.053 J	0.4 U	0.4 J	0.42 U	***110 D***	0.42 U	0.42 U	0.41 U	0.42 U
Acenaphthylene	100	0.4 U	1.8	1.6 U	0.4 U	85 J	0.26 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	10	0.42 U	0.42 U	0.41 U	0.42 U
Anthracene	100	0.4 U	11 D	1.6 U	0.4 U	***210***	0.64	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	58 D	0.42 U	0.42 U	0.41 U	0.42 U
Benz[a]anthracene	1	0.4 U	***6.1***	1.6 U	0.4 U	***150***	0.45	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	***39 D***	0.42 U	0.42 U	0.41 U	0.42 U
Benzo[a]pyrene	1	0.4 U	***4***	1.6 U	0.4 U	***120***	0.35 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	***31 DJ***	0.42 U	0.42 U	0.41 U	0.42 U
Benzo[b]fluoranthene	1	0.4 U	***3***	1.6 U	0.4 U	***81 J***	0.22 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	***18***	0.42 U	0.42 U	0.41 U	0.42 U
Benzo[g,h,i]perylene	100	0.4 U	1.1	1.6 U	0.4 U	59 J	0.17 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	12	0.42 U	0.42 U	0.41 U	0.42 U
Benzo[k]fluoranthene	0.8	0.4 U	***1.9***	1.6 U	0.4 U	***60 J***	0.19 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	***6.8***	0.42 U	0.42 U	0.41 U	0.42 U
Chrysene	1	0.4 U	***6.2 D***	1.6 U	0.4 U	***150***	0.42 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	***36 D***	0.42 U	0.42 U	0.41 U	0.42 U
Dibenz[a,h]anthracene	0.33	0.4 U	***0.39***	1.6 U	0.4 U	110 U	0.43 U	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	***2.8***	0.42 U	0.42 U	0.41 U	0.42 U
Dibenzofuran	7	0.4 U	0.55	1.6 U	0.4 U	110 U	0.43 U	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.14 J	0.42 U	2.2	0.42 U	0.42 U	0.41 U	0.42 U
Fluoranthene	100	0.4 U	12 D	1.6 U	0.4 U	***300***	0.99	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	82 D	0.42 U	0.42 U	0.41 U	0.42 U
Fluorene	30	0.4 U	8.3 D	1.6 U	0.4 U	***190***	0.64	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.12 J	0.42 U	***51 D***	0.42 U	0.42 U	0.41 U	0.42 U
Indeno[1,2,3-cd]pyrene	0.5	0.4 U	***1.2***	1.6 U	0.4 U	***47 J***	0.14 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	***10***	0.42 U	0.42 U	0.41 U	0.42 U
Methylnaphthalene,2-	0.41+	0.4 U	***6.3 D***	1.6 U	0.4 U	***420***	***1.5***	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.33 J	0.42 U	***160 D***	0.42 U	0.42 U	0.41 U	0.42 U
Naphthalene	12	0.4 U	7.9 D	1.6 U	0.4 U	***1400***	5.3	0.39 U	0.92 U	0.38 U	0.41 U	0.29 J	1.7	0.42 U	***390 D***	0.047 J	0.42 U	0.41 U	0.42 U
Phenanthrene	100	0.4 U	32 D	1.6 U	0.4 U	***690***	2.3	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	***210 D***	0.42 U	0.045 J	0.41 U	0.42 U
Pyrene	100	0.4 U	14 D	1.6 U	0.4 U	***410***	1.3	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	***120 D***	0.42 U	0.42 U	0.41 U	0.42 U

Notes:

92 Result exceeds Unrestructed Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* samples collected from borings completed in 2010.

+ Value adapted from Residential Use SCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-4
Summary of Remaining Soil Contanimation Exceeding Unrestricted SCOs
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Sample Name Sample Depth Date Collected	6NYCRR Part 375 UNRESTRICTED USE (italics)	SHSB-44 28-30' 4/17/2002	SHSS-15 0-2" 5/9/2002	SHSS-16 0-2" 5/9/2002	SHSS-17 0-2" 5/9/2002	SHSS-18 0-2" 5/17/2002	SHMGP-01 0 2/21/2006	SHSS-102 0-2" 6/1/2004	SHSS-103 0-2" 6/1/2004	SHSS-106 0-2" 6/1/2004	SHSS-107 0-2" 6/1/2004	SHSS-108 0-2" 6/1/2004	SHSS-110 0-2" 6/2/2004	SB-204 4-10' 4/26/2007	SB-204 16-18' 4/26/2007	SB-219 2-8' 4/26/2007	SB-220 4-9' 5/1/2007	SB-221 5-8' 5/1/2007	SB-222 5-9' 5/1/2007
Location		SHROW	SHROW	SHROW	SHROW	2 W West Water Street	SHROW	SHROW	Schiavoni	2 W West Water Street	2 W West Water Street	4 W West Water Street	SHROW	SHROW	SHROW	SHROW	SHROW	SHROW	SHROW
BTEX (mg/kg)																			
Benzene	0.06	0.001 U	0.001 U	0.001 U	0.002 U	0.001 U	0.012 U	0.017 U	0.011 U	0.012 U	0.011 U	0.011 U	0.015 U	0.0058 U	0.0059 U	0.0062	0.097 J	***0.35 J***	***1.9***
Toluene	0.7	0.001 U	0.001 U	0.001 U	0.002 U	0.001 U	0.012 U	0.017 U	0.011 U	0.012 U	0.011 U	0.011 U	0.015 U	0.0058 U	0.0059 U	0.0062	***7.4***	***7.2***	***27***
Ethylbenzene	1	0.001 U	0.001 U	0.001 U	0.002 U	0.001 U	0.012 U	0.017 U	0.011 U	0.012 U	0.011 U	0.011 U	0.015 U	0.0058 U	0.0059 U	0.0062	0.39 U	0.2 J	0.91 J
Xylene, total	0.26	0.001 U	0.001	0.003	0.004	0.001 U	0.012 U	0.006 J	0.011 U	0.012 U	0.002 J	0.011 U	0.015 U	0.017 U	0.018 U	0.019 U	***7.4***	***5.9***	***24***
PAHs (mg/kg)																			
Acenaphthene	20	0.37 U	0.41 U	0.4 U	0.54 U	0.35 U	0.41 U	0.56 U	0.18 J	0.39 U	0.3 J	0.36 U	0.17 J	0.38 U	15 J	0.22 J	***58***	***270***	***43***
Acenaphthylene	100	0.37 U	0.41 U	0.16 J	0.54 U	0.35 U	4.2	0.61	0.37 U	0.39 U	0.11 J	0.073 J	0.79	0.38 U	0.39 U	0.41 U	11 J	35 J	5.8
Anthracene	100	0.37 U	0.41 U	0.061 J	0.061 J	0.35 U	1.3	0.27 J	0.38	0.39 U	0.72	0.36 U	0.48 J	0.38 U	0.39 U	0.41 U	40	***130***	24 J
Benz[a]anthracene	1	0.37 U	0.41 U	0.18 J	0.25 J	0.058 J	***8.4 D***	0.75	***1.2***	0.25 J	***1.7***	0.16 J	***1.1***	0.38 U	0.39 U	0.41 U	***30 J***	***95***	***21 J***
Benzo[a]pyrene	1	0.37 U	0.41 U	0.22 J	0.28 J	0.048 J	***16 D***	***1.2***	***1.1***	0.26 J	***1.5 J***	0.17 J	***1.5 J***	0.38 U	0.39 U	0.41 U	***25 J***	***64***	***15 J***
Benzo[b]fluoranthene	1	0.37 U	0.41 U	0.36 J	0.42 J	0.064 J	***14 D***	***1.6***	***1.3***	0.4	***1.2 J***	0.18 J	***1.2 J***	0.38 U	0.39 U	0.41 U	***16 J***	***44 J***	***12***
Benzo[g,h,i]perylene	100	0.37 U	0.41 U	0.16 J	0.54 U	0.35 U	14 D	0.93	0.36 J	0.39 U	0.25 J	0.36 UJ	0.54 J	0.38 U	0.39 U	0.41 U	15 J	33 J	10
Benzo[k]fluoranthene	0.8	0.37 U	0.41 U	0.19 J	0.28 J	0.35 U	***6.5***	***1.3***	***1.5***	0.37 J	***2 J***	0.35 J	***2.1 J***	0.38 U	0.39 U	0.41 U	39 U	***17 J***	***4.3***
Chrysene	1	0.37 U	0.41 U	0.32 J	0.4 J	0.067 J	***9 D***	***1.2***	***1.5***	0.42	***1.5***	0.21 J	***1.2***	0.38 U	0.39 U	0.41 U	***24 J***	***82***	***17 J***
Dibenz[a,h]anthracene	0.33	0.37 U	0.41 U	0.4 U	0.54 U	0.35 U	***1.8***	0.56 U	0.37 U	0.39 U	0.37 UJ	0.36 UJ	0.49 UJ	0.38 U	0.39 U	0.41 U	39 U	***4 J***	***1.7 J***
Dibenzofuran	7	0.37 U	0.41 U	0.4 U	0.54 U	0.35 U	0.41 U	NA	NA	NA	NA	NA	NA	0.38 U	0.39 U	0.41 U	39 U	***11 J***	2 U
Fluoranthene	100	0.37 U	0.054 J	0.3 J	0.57	0.1 J	8.2 D	0.95	3.1	0.7	2.9	0.27 J	1.4	0.38 U	0.39 U	0.41 U	35 J	***170***	34
Fluorene	30	0.37 U	0.41 U	0.4 U	0.54 U	0.35 U	0.41 U	0.56 U	0.24 J	0.39 U	0.29 J	0.36 U	0.23 J	0.38 U	0.39 U	0.41 U	***30 J***	***100***	18 J
Indeno[1,2,3-cd]pyrene	0.5	0.37 U	0.41 U	0.14 J	0.13 J	0.35 U	***6***	***0.84***	0.43	0.39 U	0.37 J	0.082 J	***0.52 J***	0.38 U	0.39 U	0.41 U	***8 J***	***23 J***	***7***
Methylnaphthalene,2-	0.41+	0.37 U	0.41 U	0.4 U	0.54 U	0.35 U	***0.64***	0.13 J	0.37 U	0.39 U	0.096 J	0.36 U	0.18 J	0.38 U	0.39 U	0.41 U	***140***	***310***	***40***
Naphthalene	12	0.37 U	0.41 U	0.4 U	0.54 U	0.35 U	0.75	0.2 J	0.37 U	0.39 U	0.13 J	0.36 U	0.5	0.38 U	0.048 J	0.41 U	***160***	***790***	***110***
Phenanthrene	100	0.37 U	0.41 U	0.11 J	0.24 J	0.054 J	1.8	0.42 J	2.2	0.45	2.3	0.13 J	1.1	0.025 J	0.39 U	0.049	***160***	***450***	89
Pyrene	100	0.37 U	0.073 J	0.42	0.64	0.12 J	20 D	1.5	2.7	0.73	4.4	0.42	3.1	0.016 J	0.39 U	0.021 J	91	***250***	52

Notes:

92 Result exceeds Unrestructed Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* samples collected from borings completed in 2010.

+ Value adapted from Residential Use SCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-4
Summary of Remaining Soil Contanimation Exceeding Unrestricted SCOs
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Sample Name	6NYCRR Part 375	SB-223	SB-224	SB-230	SB-230	SB-231	SB-231	SB-234	SB-234	SB-235	SB-235	SB-236	SB-236	SB-237	SB-237	SHHC-E1	SHHC-N1
Sample Depth	UNRESTRICTED	4-8'	8-10'	5-6'	7.5-10'	5-6'	8-10'	5-6'	10-12'	6.5-7.5'	10-12'	6-7'	10-12'	2-3'	7-8'	1.5'	1.5'
Date Collected	USE (italics)	5/1/2007	5/8/2007	7/11/2007	7/11/2007	7/11/2007	7/11/2007	7/17/2007	7/17/2007	7/17/2007	7/17/2007	7/17/2007	7/17/2007	7/17/2007	7/17/2007	7/28/2010	7/28/2010
Location		SHROW	SHROW	18 Bridge Street	18 Bridge Street	18 Bridge Street	18 Bridge Street	SHROW	SHROW	SHROW	SHROW	SHROW	SHROW	SHROW	SHROW	18 Bridge Street	18 Bridge Street
BTEX (mg/kg)																	
Benzene	0.06	0.0059 U	0.0057 U	0.0059 U	0.0061 U	0.0059 U	0.0061 U	0.0061 U	0.0058 U	0.006 U	0.006 U	0.0078 U	0.0058 U	0.0061 U	0.0074 U	0.0063 U	0.0063 U
Toluene	0.7	0.0059 U	0.0057 U	0.0059 U	0.0061 U	0.0059 U	0.0061 U	0.0061 U	0.0058 U	0.006 U	0.006 U	0.0078 U	0.0058 U	0.0061 U	0.0074 U	0.0063 U	0.0063 U
Ethylbenzene	1	0.0059 U	0.0057 U	0.0059 U	0.0061 U	0.0059 U	0.0061 U	0.0061 U	0.0058 U	0.006 U	0.006 U	0.0078 U	0.0058 U	0.0061 U	0.0074 U	0.0063 U	0.0063 U
Xylene, total	0.26	0.018 U	0.017 U	0.018 U	0.018 U	0.018 U	0.013 J	0.018 U	0.017 U	0.018 U	0.018 U	0.023 U	0.017 U	0.018 U	0.022 U	0.0063 U	0.0063 U
PAHs (mg/kg)																	
Acenaphthene	20	0.07 J	0.086 J	0.39 U	0.023 J	0.35 J	0.4 U	0.4 U	0.38 U	0.09 J	0.063 J	1.8 J	0.052 J	0.4 U	0.49 U	5.6 D	0.38 U
Acenaphthylene	100	0.89 J	0.38 U	0.39 U	0.4 U	0.39 U	0.4 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	2.2	0.38 U
Anthracene	100	0.4 J	0.039 J	0.39 U	0.4 U	0.39 U	0.4 U	0.4 U	0.38 U	0.39 U	0.39 U	0.15 J	0.38 U	0.4 U	0.49 U	2.9	0.38 U
Benz[a]anthracene	1	***2.5***	0.38 U	0.034 J	0.4 U	0.071 J	0.4 U	0.4 U	0.38 U	0.39 U	0.39 U	0.16 J	0.38 U	0.4 U	0.49 U	***6.8 D***	0.38 U
Benzo[a]pyrene	1	***2.2***	0.38 UJ	0.39 U	0.4 U	0.39 U	0.4 U	0.014 J	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	***7.5 D***	0.38 U
Benzo[b]fluoranthene	1	***2.7***	0.38 UJ	0.39 U	0.4 U	0.39 U	0.4 U	0.024 J	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	***5.0***	0.38 U
Benzo[g,h,i]perylene	100	2.9	0.38 UJ	0.39 U	0.4 U	0.39 U	0.4 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	3.2	0.38 U
Benzo[k]fluoranthene	0.8	***1 J***	0.38 U	0.39 U	0.4 U	0.39 U	0.4 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	***6.0***	0.38 U
Chrysene	1	**2.4**	0.38 UJ	0.037 J	0.4 U	0.39 U	0.4 U	0.24 J	0.38 U	0.39 U	0.39 U	0.12 J	0.38 U	0.4 U	0.49 U	***6.5 D***	0.38 U
Dibenz[a,h]anthracene	0.33	**0.43 J**	0.38 U	0.39 U	0.4 U	0.39 U	0.4 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	***0.8***	0.38 U
Dibenzofuran	7	1.6 U	0.38 U	0.39 U	0.4 U	0.39 U	0.4 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	NA	NA
Fluoranthene	100	3.7	0.017 J	0.042 J	0.4 U	0.39 U	0.4 U	0.4 U	0.38 U	0.041 J	0.021 J	0.4 J	0.033 J	0.4 U	0.49 U	13.0 D	0.38 U
Fluorene	30	1.6 U	0.041 J	0.39 U	0.4 U	0.14 J	0.4 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	1.7	0.38 U
Indeno[1,2,3-cd]pyrene	0.5	***2.1 J***	0.38 UJ	0.39 U	0.4 U	0.39 U	0.4 U	0.4 U	0.38 U	0.56	0.47	***2.3 J***	0.38 U	0.4 U	0.49 U	***2.6***	0.38 U
Methylnaphthalene,2-	0.41+	***0.88 J***	***0.42 J***	0.54 J	0.4 U	0.32 J	0.4 U	0.4 U	0.38 U	0.39 U	0.39 U	***1.4 J***	0.38 U	0.4 U	0.49 U	0.42 U	0.38 U
Naphthalene	12	0.14 J	0.1 J	0.39	0.059 J	0.86	0.43	0.4 U	0.38 U	0.56	0.47	2.3 J	0.38 U	0.4 U	0.49 U	0.42 U	0.38 U
Phenanthrene	100	0.61 J	0.18 J	0.39 U	0.4 U	0.36 J	0.4 U	0.019 J	0.38 U	0.39 U	0.39 U	0.68 J	0.035 J	0.4 U	0.49 U	6.4	0.38 U
Pyrene	100	6.4	0.027 J	0.073 J	0.4 U	0.39 U	0.4 U	0.4 U	0.38 U	0.39 U	0.39 U	0.25 J	0.38 U	0.4 U	0.49 U	22.0 D	0.38 U

Notes:

92 Result exceeds Unrestructed Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* samples collected from borings completed in 2010.

+ Value adapted from Residential Use SCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-5
Comparison of Remaining Soil Analytical Data to Restricted Residential Soil Cleanup Objectives
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical / Location	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (Bold)	SHSB-01 26-28' 3/20/2000	SHSB-01* 8-10' 10/25/2010	SHSB-01* 74-75' 10/25/2010	SHSB-02 16-18' 3/20/2000	SHSB-02 52-54' 3/22/2000	SHSB-02* 4-5' 10/26/2010	SHSB-02* 11-11.5' 10/26/2010	SHSB-02* 20-22' 10/26/2010	SHSB-02* 30-30.5' 10/26/2010	SHSB-02* 70-72' 10/26/2010	Duplicate of: SHSB-02* 70-72' 10/26/2010	SHSB-03 34-36' 3/20/2000	SHSB-04 24-26' 3/15/2000	SHSB-04* 6-8' 10/26/2010	SHSB-04* 13-15' 10/26/2010	SHSB-04A* 5-5.5' 11/1/2010	SHSB-04A* 6-9' 11/1/2010	SHSB-04A* 10.5-13.5' 11/1/2010
Location		MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	SHROW	SHROW	SHROW	SHROW	SHROW
BTEX (mg/kg)																			
Benzene	4.8	0.001	0.011 U	0.011 UJ	**92**	0.001 U	0.011 U	0.086	0.013 U	0.057 UJ	0.012 U	0.008	0.001	0.001 U	0.002 J	0.012 U	0.067	0.056 U	**4.9**
Toluene	100	0.001 U	0.011 U	0.011 UJ	**270**	0.001	0.011 U	0.15	0.013 U	0.68	0.012 U	0.004 J	0.003	0.001 U	0.004 J	0.012 U	0.037	0.022 J	0.005 J
Ethylbenzene	41	0.001	0.011 U	0.011 UJ	**240**	0.003	0.011 U	0.86	0.013 U	17	0.006	0.02	0.004	0.001 U	0.77	0.012 U	1.1	17	25
Xylene, total	100	0.002	0.011 U	0.011 UJ	**380**	0.005	0.011 U	2.4	0.013 U	32	0.013 J	0.044 J	0.005	0.001 U	1.4	0.012 U	1.1	15	0.22
PAHs (mg/kg)																			
Acenaphthene	100	0.38 U	0.37 U	0.37 U	38	0.12 J	0.36 U	22	0.41 U	87 J	0.4 U	0.38 U	0.41 U	0.4 U	18	18	59	**240**	31
Acenaphthylene	100	0.38 U	0.37 U	0.37 U	54	0.21 J	0.36 U	3	0.41 U	**390**	0.4 U	0.38 U	0.41 U	0.4 U	1.3	1.3	12	14	2
Anthracene	100	0.38 U	0.37 U	0.37 U	31	0.21 J	0.36 U	11	0.41 U	**220**	0.4 U	0.38 U	0.41 U	0.4 U	7.3	7.6	84	90	12
Benz[a]anthracene	1	0.38 U	0.37 U	0.37 U	**16 J**	0.15 J	0.36 U	**11**	0.41 U	**150**	0.4 U	0.38 U	0.41 U	0.4 U	**5.3**	**5.8**	**60**	**54**	**7.6**
Benzo[a]pyrene	1	0.38 U	0.37 U	0.37 U	**12 J**	0.13 J	0.36 U	**10**	0.41 U	**130**	0.4 U	0.38 U	0.41 U	0.4 U	**4.1**	**4.4**	**24**	**46**	**5.4**
Benzo[b]fluoranthene	1	0.38 U	0.37 U	0.37 U	**9.4 J**	0.11 J	0.36 U	**7.8**	0.41 U	**82 J**	0.4 U	0.38 U	0.41 U	0.4 U	**3.3**	**4**	**37**	**28**	**6.1 J**
Benzo[g,h,i]perylene	100	0.38 U	0.37 U	0.37 U	6.3 J	0.064 J	0.36 U	5.4	0.41 U	35	0.4 U	0.38 U	0.41 U	0.4 U	1.9	2	13	14	1.8 J
Benzo[k]fluoranthene	3.9	0.38 U	0.37 U	0.37 U	**4 J**	0.39 U	0.36 U	2.5	0.41 U	**32**	0.4 U	0.38 U	0.41 U	0.4 U	1.5	1.2	**12 J**	**18**	1.8 J
Chrysene	3.9	0.38 U	0.37 U	0.37 U	**14 J**	0.14 J	0.36 U	**10**	0.41 U	**140**	0.4 U	0.38 U	0.41 U	0.4 U	**4.3**	**4.3**	**56**	**46**	**6.7**
Dibenz[a,h]anthracene	0.33	0.38 U	0.37 U	0.37 U	29 U	0.39 U	0.36 U	**1.2**	0.41 U	**8.7 J**	0.4 U	0.38 U	0.41 U	0.4 U	**0.5**	**0.6**	**3.5 J**	**4.3 J**	**0.48 J**
Dibenzofuran	59	0.38 U	0.37 U	0.37 U	29 U	0.39 U	0.36 U	0.81	0.41 U	15	0.4 U	0.38 U	0.41 U	0.4 U	0.42	0.43	3.6 J	6.8	0.97
Fluoranthene	100	0.38 U	0.37 U	0.37 U	36	0.3 J	0.36 U	22	0.41 U	**320**	0.4 U	0.14 J	0.41 U	0.4 U	9.6	10	98	**120**	16
Fluorene	100	0.38 U	0.37 U	0.37 U	29 U	0.18 J	0.36 U	10	0.41 U	**210**	0.4 U	0.38 U	0.41 U	0.4 U	6.3	7	58	90	12
Indeno[1,2,3-cd]pyrene	0.5	0.38 U	0.37 U	0.37 U	**5 J**	0.053 J	0.36 U	**3.7**	0.41 U	**27**	0.4 U	0.38 U	0.41 U	0.4 U	**1.3**	**1.3**	**9.7**	**11**	**1.3 J**
Methylnaphthalene,2-	0.41+	0.38 U	0.37 U	0.37 U	**120**	0.27 J	0.36 U	**20**	0.41 U	**590**	0.4 U	0.38 U	0.41 U	0.4 U	**20**	**20**	3.8 U	**270**	**31**
Naphthalene	100	0.38 U	0.37 U	0.37 U	**270**	0.31 J	0.36 U	37	0.41 U	**1600**	0.4 U	0.38 U	0.045 J	0.4 U	31	31	10	**760**	85
Phenanthrene	100	0.38 U	0.37 U	0.37 U	**160**	0.83	0.36 U	51	0.41 U	**970**	0.14 J	0.29	0.094 J	0.064 J	35	37	**320**	**400**	53
Pyrene	100	0.38 U	0.37 U	0.37 U	49	0.42	0.36 U	31	0.41 U	**440**	0.092 J	0.18 J	0.056 J	0.4 U	13	14	**130**	**160**	22

Notes:

270 Result exceeds Restricted Residential Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* Samples collected from borings completed in 2010.

+ Value adapted from Residential Use SSCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-5
Comparison of Remaining Soil Analytical Data to Restricted Residential Soil Cleanup Objectives
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical / Location	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (Bold)	SHSB-05 22-24' 3/13/2000 MGP	SHSB-05 88-90' 5/22/2000 MGP	SHSB-05* 5-7' 10/27/2010 SHROW	SHSB-05* 10-10.5' 10/27/2010 SHROW	SHSB-05* 15-16' 10/27/2010 SHROW	SHSB-05 * 40-42' 10/28/2010 SHROW	SHSB-06 50-52' 3/13/2000 MGP	SHSB-07 26-28' 3/17/2000 MGP	SHSB-07* 4-5' 11/1/2010 SHROW	SHSB-07* 6.5-8.5' 11/1/2010 SHROW	SHSB-07* 16-18' 11/1/2010 SHROW	SHSB-08 50-52' 3/20/2000 MGP	SHSB-09 26-28' 3/23/2000 MGP	SHSB-10 24-26' 3/16/2000 MGP	SHSB-11 30-32' 3/23/2000 MGP	SHSB-12 34-36' 3/24/2000 MGP	SHSB-13 18-20' 3/27/2000 MGP	SHSB-13 34-36' 3/27/2000 MGP
BTEX (mg/kg)																			
Benzene	4.8	0.001 U	0.001 U	0.012 U	0.005 J	0.012 U	0.012 U	0.001 U	0.001	0.012 U	0.45	0.012 U	0.001 U	0.001 U	0.001 U	0.002	0.001 U	0.005 U	0.001 U
Toluene	100	0.001 U	0.001 U	0.012 U	0.012 U	0.012 U	0.012 U	0.001 U	0.001 U	0.012 U	0.61	0.012 U	0.001 U	0.001	0.001 U	0.001 U	0.001 U	0.022	0.002
Ethylbenzene	41	0.001 U	0.001 U	0.012 U	0.026	0.012 U	0.012 U	0.001 U	0.001 U	0.012 U	23	0.012 U	0.001 U	0.001 U	0.002	0.018	0.001 U	0.11	0.002
Xylene, total	100	0.001 U	0.001 U	0.012 U	0.023	0.012 U	0.012 U	0.001 U	0.002	0.012 U	16	0.012 U	0.001 U	0.001	0.002	0.011	0.001 U	0.14	0.002
PAHs (mg/kg)																			
Acenaphthene	100	0.38 U	0.38 U	0.38 U	0.37	0.39 U	0.39 U	0.39 U	0.4 U	0.18 J	**410**	0.15 J	0.38 U	0.4 U	0.41 U	2.6	0.4 U	0.39 U	0.4 U
Acenaphthylene	100	0.38 U	0.081 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	6	30	0.38 U	0.38 U	0.4 U	0.41 U	0.41	0.4 U	3.4	0.4 U
Anthracene	100	0.38 U	0.12 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	32	**180**	0.085 J	0.38 U	0.4 U	0.41 U	1.3	0.4 U	2.6	0.4 U
Benz[a]anthracene	1	0.38 U	0.1 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	**20**	**120**	0.38 U	0.38 U	0.4 U	0.41 U	**1.2**	0.4 U	**2**	0.4 U
Benzo[a]pyrene	1	0.38 U	0.076 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	**26**	**91 J**	0.38 U	0.38 U	0.4 U	0.41 U	**1.1**	0.4 U	**1.6**	0.4 U
Benzo[b]fluoranthene	1	0.38 U	0.06 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	**25**	**59 J**	0.38 U	0.38 U	0.4 U	0.41 U	0.84	0.4 U	**1.2**	0.4 U
Benzo[g,h,i]perylene	100	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	16	26	0.38 U	0.38 U	0.4 U	0.41 U	0.66	0.4 U	0.79	0.4 U
Benzo[k]fluoranthene	3.9	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	**15**	**37**	0.38 U	0.38 U	0.4 U	0.41 U	0.26 J	0.4 U	0.42	0.4 U
Chrysene	3.9	0.38 U	0.11 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	**24**	**100**	0.38 U	0.38 U	0.4 U	0.41 U	1	0.4 U	1.6	0.4 U
Dibenz[a,h]anthracene	0.33	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	**3.7 J**	**7.9 J**	0.38 U	0.38 U	0.4 U	0.41 U	0.1 J	0.4 U	0.14 J	0.4 U
Dibenzofuran	59	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	0.4 U	19	0.38 U	0.38 U	0.4 U	0.41 U	0.046 J	0.4 U	0.1 J	0.4 U
Fluoranthene	100	0.38 U	0.2 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	29	**220**	0.11 J	0.38 U	0.4 U	0.41 U	2.6	0.4 U	4.2	0.058 J
Fluorene	100	0.38 U	0.084 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	0.63	**170**	0.078 J	0.38 U	0.4 U	0.41 U	1.3	0.4 U	2.2	0.4 U
Indeno[1,2,3-cd]pyrene	0.5	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	**12**	**22**	0.38 U	0.38 U	0.4 U	0.41 U	**0.52**	0.4 U	**0.66**	0.4 U
Methylnaphthalene,2-	0.41+	0.38 U	0.38 U	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	**0.83**	**460**	0.1 J	0.38 U	0.4 U	0.41 U	**2.4**	0.4 U	**3.3**	0.4 U
Naphthalene	100	0.38 U	0.38 U	0.38 U	0.57	0.39 U	0.39 U	0.39 U	0.4 U	1.9	**1400**	0.13 J	0.38 U	0.4 U	0.41 U	5.7	0.4 U	5.9	0.4 U
Phenanthrene	100	0.072 J	0.51	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	9.2	**690**	0.35	0.38 U	0.4 U	0.049 J	5.7	0.4 U	10 D	0.1 J
Pyrene	100	0.38 U	0.29 J	0.38 U	0.41 U	0.39 U	0.39 U	0.39 U	0.4 U	46	**310**	0.17 J	0.38 U	0.4 U	0.41 U	3.5	0.4 U	5.4	0.079 J

Notes:

270 Result exceeds Restricted Residential Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* Samples collected from borings completed in 2010.

+ Value adapted from Residential Use SSCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

AECOM

Table 1-5
Comparison of Remaining Soil Analytical Data to Restricted Residential Soil Cleanup Objectives
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Chemical / Location	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (Bold)	SHSB-14 48-52' 3/6/2000	SHSB-15 16-18' 3/6/2000	SHSB-15 26-28 3/6/2000	SHSB-15 48-50' 3/7/2000	SHSB-16 6-8' 3/7/2000	SHSB-16 50-52' 3/8/2000	SHSB-17 14-16' 3/8/2000	SHSB-18 30-32 3/27/2000	SHSB-19 50-52' 3/20/2000	SHSB-20 9-11' 3/21/2002	SHSB-20 31-33' 3/22/2002	SHSB-20 79-81' 3/25/2002	SHSB-20 99-101' 3/25/2002	SHSB-21 15-17' 3/27/2002	SHSB-21 71-73' 3/28/2002	SHSB-21 95-97' 3/29/2002	SHSB-22 20-22' 4/1/2002	SHSB-22 52-54' 4/2/2002
Location		31 Long Island Avenue	31 Long Island Avenue	31 Long Island Avenue	31 Long Island Avenue	SHROW	SHROW	SHROW	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP	MGP
BTEX (mg/kg)																			
Benzene	4.8	0.001 U	0.001 U	0.012 U	0.001 U	1.2 U	0.001 U	0.001 U	0.001 U	0.001	0.55	0.003	0.001 U	0.001 U	**11**	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	100	0.001 U	0.001 U	0.012 U	0.001 U	1.2 U	0.001 U	0.001 U	0.001 U	0.002	0.23	0.001 U	0.001 U	0.001 U	16	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	41	0.001 U	0.001 U	0.086	0.001 U	17	0.001 U	0.001 U	0.001 U	0.001 U	6.6	0.002	0.001 U	0.001 U	28	0.001 U	0.001 U	0.001 U	0.001 U
Xylene, total	100	0.001 U	0.001 U	0.1	0.001 U	8.6	0.001 U	0.001 U	0.001 U	0.002	11	0.004	0.002	0.001 U	37	0.001 U	0.001 U	0.001 U	0.001 U
PAHs (mg/kg)																			
Acenaphthene	100	0.39 U	0.38 U	1.8	0.39 U	19	0.41 U	0.37 U	0.39 U	0.39 U	30 D	0.4 U	0.39 U	0.4 U	5.7	0.39 U	0.38 U	0.048 J	0.36 U
Acenaphthylene	100	0.39 U	0.38 U	13	0.39 U	1.2 J	0.41 U	0.37 U	0.39 U	0.39 U	2.6	0.4 U	0.39 U	0.4 U	2.2	0.39 U	0.38 U	0.4 U	0.36 U
Anthracene	100	0.39 U	0.38 U	7.5	0.39 U	5.9	0.41 U	0.37 U	0.39 U	0.39 U	17 D	0.4 U	0.39 U	0.4 U	2.8	0.39 U	0.38 U	0.05 J	0.36 U
Benz[a]anthracene	1	0.39 U	0.38 U	**5**	0.39 U	**5**	0.41 U	0.37 U	0.39 U	0.39 U	**12 D**	0.4 U	0.39 U	0.4 U	**1.4**	0.39 U	0.38 U	0.058 J	0.36 U
Benzo[a]pyrene	1	0.39 U	0.38 U	**3.8**	0.39 U	**3.8**	0.41 U	0.37 U	0.39 U	0.39 U	**6.3**	0.4 U	0.39 U	0.4 U	**1.2**	0.39 U	0.38 U	0.4 U	0.36 U
Benzo[b]fluoranthene	1	0.39 U	0.38 U	**3.1**	0.39 U	**3**	0.41 U	0.37 U	0.39 U	0.39 U	**4.9**	0.4 U	0.39 U	0.4 U	0.89	0.39 U	0.38 U	0.4 U	0.36 U
Benzo[g,h,i]perylene	100	0.39 U	0.38 U	1.7	0.39 U	1.6	0.41 U	0.37 U	0.39 U	0.39 U	2.5	0.4 U	0.39 U	0.4 U	0.5	0.39 U	0.38 U	0.4 U	0.36 U
Benzo[k]fluoranthene	3.9	0.39 U	0.38 U	0.92 J	0.39 U	0.98 J	0.41 U	0.37 U	0.39 U	0.39 U	2.1	0.4 U	0.39 U	0.4 U	0.31 J	0.39 U	0.38 U	0.4 U	0.36 U
Chrysene	3.9	0.39 U	0.38 U	**4.5**	0.39 U	**4.6**	0.41 U	0.37 U	0.39 U	0.39 U	**12 D**	0.4 U	0.39 U	0.4 U	1.4	0.39 U	0.38 U	0.051 J	0.36 U
Dibenz[a,h]anthracene	0.33	0.39 U	0.38 U	**0.36 J**	0.39 U	**0.41 J**	0.41 U	0.37 U	0.39 U	0.39 U	**0.82**	0.4 U	0.39 U	0.4 U	0.14 J	0.39 U	0.38 U	0.4 U	0.36 U
Dibenzofuran	59	0.39 U	0.38 U	0.71 J	0.39 U	0.53 J	0.41 U	0.37 U	0.39 U	0.39 U	0.36 J	0.4 U	0.39 U	0.4 U	0.4 U	0.39 U	0.38 U	0.4 U	0.36 U
Fluoranthene	100	0.39 U	0.38 U	10	0.39 U	9.9	0.41 U	0.37 U	0.39 U	0.39 U	20 D	0.046 J	0.39 U	0.4 U	2.4	0.063 J	0.044 J	0.095 J	0.36 U
Fluorene	100	0.39 U	0.38 U	7.2	0.39 U	5.7	0.41 U	0.37 U	0.39 U	0.39 U	15 D	0.4 U	0.39 U	0.4 U	2.9	0.39 U	0.38 U	0.4 U	0.36 U
Indeno[1,2,3-cd]pyrene	0.5	0.39 U	0.38 U	**1.5 J**	0.39 U	**1.4**	0.41 U	0.37 U	0.39 U	0.39 U	**1.9**	0.4 U	0.39 U	0.4 U	0.41	0.39 U	0.38 U	0.4 U	0.36 U
Methylnaphthalene,2-	0.41+	0.39 U	0.38 U	**14**	0.39 U	**17**	0.41 U	0.37 U	0.39 U	0.39 U	**39 D**	0.4 U	0.39 U	0.4 U	**9.3 D**	0.39 U	0.38 U	0.4 U	0.36 U
Naphthalene	100	0.39 U	0.22 J	22	0.39 U	83 D	0.41 U	0.37 U	0.39 U	0.39 U	60 D	0.4 U	0.39 U	0.4 U	12 D	0.39 U	0.38 U	0.4 U	0.36 U
Phenanthrene	100	0.39 U	0.38 U	23	0.08 J	23 D	0.41 U	0.37 U	0.39 U	0.39 U	60 D	0.12 J	0.39 U	0.4 U	16 D	0.16 J	0.1 J	0.19 J	0.36 U
Pyrene	100	0.39 U	0.38 U	14	0.052 J	14	0.41 U	0.37 U	0.39 U	0.39 U	34 D	0.072 J	0.39 U	0.4 U	4.1	0.081 J	0.057 J	0.11 J	0.36 U

Notes:

270 Result exceeds Restricted Residential Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* Samples collected from borings completed in 2010.

+ Value adapted from Residential Use SSCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-5
Comparison of Remaining Soil Analytical Data to Restricted Residential Soil Cleanup Objectives
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical / Location	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (Bold)	SHSB-22 98-100' 4/2/2002	SHSB-23 8-10' 4/4/2002	SHSB-23 17-19' 4/4/2002	SHSB-23 37-39' 4/4/2002	SHSB-23 58-60' 4/4/2002	SHSB-24 12-14' 4/16/2002	SHSB-24 20-22' 4/16/2002	SHSB-24 40-42' 4/16/2002	SHSB-24 56-58' 4/17/2002	SHSB-25 6-8' 4/5/2002	SHSB-25 21-23' 4/5/2002	SHSB-25 42-44' 4/8/2002	SHSB-25 57-59' 4/8/2002	SHSB-26 5-6' 4/8/2002	SHSB-26 16-18' 4/8/2002	SHSB-26 40-42' 4/8/2002	SHSB-26 58-60' 4/9/2002	SHSB-27 5-7' 4/11/2002
Location		MGP	8 W Water Street	8 W Water Street	8 W Water Street	8 W Water Street	2 W Water Street	2 W Water Street	2 W Water Street	2 W Water Street	4 W Water Street	4 W Water Street	4 W Water Street	4 W Water Street	SHROW	SHROW	SHROW	SHROW	SHROW
BTEX (mg/kg)																			
Benzene	4.8	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.004	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	100	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017	0.001 U	0.001 U	0.001 U	0.002
Ethylbenzene	41	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002 U	0.002	0.001 U	0.001 U	0.001 U
Xylene, total	100	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.003	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.041	0.001 U	0.001 U	0.001 U	0.006
PAHs (mg/kg)																			
Acenaphthene	100	0.37 U	0.41 U	0.4 U	0.39 U	0.4 U	0.09 J	0.4 U	0.42 U	0.4 U	0.13 J	0.4 U	0.42 U	0.4 U	96	0.12 J	0.4 U	0.39 U	0.34 J
Acenaphthylene	100	0.37 U	0.33 J	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	76	0.4 U	0.4 U	0.39 U	0.64
Anthracene	100	0.37 U	0.12 J	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.12 J	0.4 U	0.42 U	0.4 U	**120**	0.094 J	0.4 U	0.39 U	0.41
Benz[a]anthracene	1	0.37 U	0.8	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	**110**	0.07 J	0.4 U	0.39 U	0.44
Benzo[a]pyrene	1	0.37 U	0.91	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	**75**	0.4 U	0.4 U	0.39 U	0.57
Benzo[b]fluoranthene	1	0.37 U	0.89	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	**61**	0.4 U	0.4 U	0.39 U	0.47
Benzo[g,h,i]perylene	100	0.37 U	0.5	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	29	0.4 U	0.4 U	0.39 U	0.43
Benzo[k]fluoranthene	3.9	0.37 U	0.32 J	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	**34**	0.4 U	0.4 U	0.39 U	0.19 J
Chrysene	3.9	0.37 U	0.93	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	**110**	0.078 J	0.4 U	0.39 U	0.49
Dibenz[a,h]anthracene	0.33	0.37 U	0.1 J	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	**9.4 J**	0.4 U	0.4 U	0.39 U	0.09 J
Dibenzofuran	59	0.37 U	0.41 U	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	22 U	0.4 U	0.4 U	0.39 U	0.36 U
Fluoranthene	100	0.37 U	0.86	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.15 J	0.4 U	0.42 U	0.4 U	**190**	0.16 J	0.4 U	0.39 U	0.73
Fluorene	100	0.37 U	0.41 U	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.088 J	0.4 U	0.42 U	0.4 U	**110**	0.078 J	0.4 U	0.39 U	0.22 J
Indeno[1,2,3-cd]pyrene	0.5	0.37 U	0.39 J	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.38 U	0.4 U	0.42 U	0.4 U	**26**	0.4 U	0.4 U	0.39 U	0.35 J
Methylnaphthalene,2-	0.41+	0.37 U	0.41 U	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.051 J	0.4 U	0.42 U	0.4 U	**22 J**	0.4 U	0.4 U	0.39 U	0.1 J
Naphthalene	100	0.37 U	0.41 U	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.14 J	0.4 U	0.42 U	0.4 U	22 U	0.4 U	0.4 U	0.39 U	0.18 J
Phenanthrene	100	0.37 U	0.042 J	0.4 U	0.39 U	0.4 U	0.43 U	0.14 J	0.42 U	0.4 U	0.44	0.4 U	0.42 U	0.4 U	**240**	0.32 J	0.4 U	0.39 U	0.28 J
Pyrene	100	0.37 U	1.4	0.4 U	0.39 U	0.4 U	0.43 U	0.4 U	0.42 U	0.4 U	0.22 J	0.4 U	0.42 U	0.4 U	**280**	0.22 J	0.4 U	0.39 U	1.4

Notes:

270 Result exceeds Restricted Residential Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* Samples collected from borings completed in 2010.

+ Value adapted from Residential Use SSCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-5
Comparison of Remaining Soil Analytical Data to Restricted Residential Soil Cleanup Objectives
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (Bold)	SHSB-27 28-30' 4/11/2002	SHSB-28 10-12' 4/2/2002	SHSB-28 20-22' 4/2/2002	SHSB-28 38-40' 4/2/2002	SHSB-28 58-60' 4/2/2002	SHSB-29 30-32' 4/11/2002	SHSB-29 58-60' 4/11/2002	SHSB-30 5-6' 4/1/2002	SHSB-30 28-30' 4/1/2002	SHSB-31 16-18' 3/28/2002	SHSB-31 28-30' 3/28/2002	SHSB-32 16-20' 4/15/2002	SHSB-34 8-10' 4/9/2002	SHSB-34 28-30' 4/9/2002	SHSB-35 8-10' 4/10/2002	SHSB-35 28-30' 4/10/2002	SHSB-36 8-10' 3/29/2002	SHSB-36 14-16' 3/29/2002
Location		SHROW	SHROW	SHROW	SHROW	SHROW	SHROW	SHROW	18 Bridge Street	18 Bridge Street	SHROW	SHROW	11 Bridge Street	SHROW	SHROW	18 Bridge Street	18 Bridge Street	SHROW	SHROW
BTEX (mg/kg)																			
Benzene	4.8	0.001 U	0.001 J	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.009	0.001 U
Toluene	100	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	41	0.001 U	0.001 U	0.009	0.001 U	0.001 U	0.001 U	0.001 U	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylene, total	100	0.001 U	0.001 U	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.008	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
PAHs (mg/kg)																			
Acenaphthene	100	0.38 U	0.3 J	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.5	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	0.11 J	0.41 U	0.42 U	0.4 U
Acenaphthylene	100	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	0.16 J	0.41 U	0.42 U	0.4 U
Anthracene	100	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	0.41 J	0.41 U	0.42 U	0.4 U
Benz[a]anthracene	1	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	**1.2**	0.41 U	0.42 U	0.4 U
Benzo[a]pyrene	1	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	**1.1**	0.41 U	0.42 U	0.4 U
Benzo[b]fluoranthene	1	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	**1.4**	0.41 U	0.42 U	0.4 U
Benzo[g,h,i]perylene	100	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	0.75	0.41 U	0.42 U	0.4 U
Benzo[k]fluoranthene	3.9	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	0.56	0.41 U	0.42 U	0.4 U
Chrysene	3.9	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	1.3	0.41 U	0.42 U	0.4 U
Dibenz[a,h]anthracene	0.33	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	0.18 J	0.41 U	0.42 U	0.4 U
Dibenzofuran	59	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	0.064 J	0.41 U	0.42 U	0.4 U
Fluoranthene	100	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.06 J	0.49 U	0.41 U	0.049 J	NA	0.052 J	0.46 U	0.4 U	2.9	0.41 U	0.42 U	0.4 U
Fluorene	100	0.38 U	0.088 J	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	0.14 J	0.41 U	0.42 U	0.4 U
Indeno[1,2,3-cd]pyrene	0.5	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	**0.72**	0.41 U	0.42 U	0.4 U
Methylnaphthalene,2-	0.41+	0.38 U	0.1 J	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	0.49 U	0.41 U	0.4 U	NA	0.4 U	0.46 U	0.4 U	0.47 U	0.41 U	0.42 U	0.4 U
Naphthalene	100	0.38 U	1	0.41 U	0.41 U	0.4 U	0.41 U	0.36 U	2.3	0.41 U	0.4 U	NA	0.046 J	0.46 U	0.4 U	0.09 J	0.41 U	0.42 U	0.4 U
Phenanthrene	100	0.38 U	0.071 J	0.41 U	0.41 U	0.4 U	0.41 U	0.13 J	0.49 U	0.41 U	0.11 J	NA	0.12 J	0.46 U	0.4 U	1.7	0.41 U	0.42 U	0.4 U
Pyrene	100	0.38 U	0.39 U	0.41 U	0.41 U	0.4 U	0.41 U	0.096 J	0.49 U	0.41 U	0.058 J	NA	0.073 J	0.063 J	0.4 U	2.4	0.41 U	0.42 U	0.4 U

Notes:

270 Result exceeds Restricted Residential Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* Samples collected from borings completed in 2010.

+ Value adapted from Residential Use SSCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-5
Comparison of Remaining Soil Analytical Data to Restricted Residential Soil Cleanup Objectives
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (Bold)	SHSB-37 6-8' 4/12/2002	SHSB-37 10-12' 4/12/2002	SHSB-38 8-10' 4/8/2002	SHSB-38 12-14' 4/8/2002	SHSB-38 22-24' 4/8/2002	SHSB-39 8-10' 3/27/2002	SHSB-39 16-18' 3/27/2002	SHSB-40 8-9' 4/9/2002	SHSB-40 13-15' 4/9/2002	SHSB-41 9-11' 4/11/2002	SHSB-41 16-18' 4/11/2002	SHSB-42 8-10' 4/15/2002	SHSB-42 20-22' 4/15/2002	SHSB-43 8-10' 4/16/2002	SHSB-43 16-18' 4/16/2002	SHSB-44 6-8' 4/17/2002	SHSB-44 28-30' 4/17/2002	SHSS-15 0-6" 5/9/2002
Location		11 Bridge Street	11 Bridge Street	SHROW	SHROW	SHROW	SHROW	SHROW	USPS	USPS	SHROW	SHROW	SHROW	SHROW	11 Bridge Street	11 Bridge Street	SHROW	SHROW	SHROW
BTEX (mg/kg)																			
Benzene	4.8	0.002	0.36	**14**	0.065 U	0.001 U	0.003 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.26 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	100	0.001 U	0.005 U	17	0.16	0.001 U	0.003 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.26 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	41	0.003	0.005	**140**	0.75	0.001 U	0.003 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	16	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylene, total	100	0.008	0.009	**130**	0.78	0.001 U	0.003 U	0.001 U	0.001 U	0.002	0.007	0.001 U	17	0.001 U	0.001 U	0.002	0.001 U	0.001 U	0.001
PAHs (mg/kg)																			
Acenaphthene	100	13 D	1.6 U	**330**	1.2	0.39 U	0.92 U	0.38 U	0.053 J	0.4 U	0.4 J	0.42 U	**110 D**	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Acenaphthylene	100	1.8	1.6 U	85 J	0.26 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	10	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Anthracene	100	11 D	1.6 U	**210**	0.64	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	58 D	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Benz[a]anthracene	1	**6.1**	1.6 U	**150**	0.45	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	**39 D**	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Benzo[a]pyrene	1	**4**	1.6 U	**120**	0.35 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	**31 DJ**	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Benzo[b]fluoranthene	1	**3**	1.6 U	**81 J**	0.22 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	**18**	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Benzo[g,h,i]perylene	100	1.1	1.6 U	59 J	0.17 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	12	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Benzo[k]fluoranthene	3.9	1.9	1.6 U	**60 J**	0.19 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	**6.8**	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Chrysene	3.9	**6.2 D**	1.6 U	**150**	0.42 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	**36 D**	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Dibenz[a,h]anthracene	0.33	**0.39**	1.6 U	110 U	0.43 U	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	**2.8**	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Dibenzofuran	59	0.55	1.6 U	110 U	0.43 U	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.14 J	0.42 U	2.2	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Fluoranthene	100	12 D	1.6 U	**300**	0.99	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	82 D	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.054 J
Fluorene	100	8.3 D	1.6 U	**190**	0.64	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.12 J	0.42 U	51 D	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Indeno[1,2,3-cd]pyrene	0.5	**1.2**	1.6 U	**47 J**	0.14 J	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	**10**	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Methylnaphthalene,2-	0.41+	**6.3 D**	1.6 U	**420**	**1.5**	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.33 J	0.42 U	**160 D**	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Naphthalene	100	7.9 D	1.6 U	**1400**	5.3	0.39 U	0.92 U	0.38 U	0.41 U	0.29 J	1.7	0.42 U	**390 D**	0.047 J	0.42 U	0.41 U	0.42 U	0.37 U	0.41 U
Phenanthrene	100	32 D	1.6 U	**690**	2.3	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	**210 D**	0.42 U	0.045 J	0.41 U	0.42 U	0.37 U	0.41 U
Pyrene	100	14 D	1.6 U	**410**	1.3	0.39 U	0.92 U	0.38 U	0.41 U	0.4 U	0.43 U	0.42 U	**120 D**	0.42 U	0.42 U	0.41 U	0.42 U	0.37 U	0.073 J

Notes:

270 Result exceeds Restricted Residential Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* Samples collected from borings completed in 2010.

+ Value adapted from Residential Use SSCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-5
Comparison of Remaining Soil Analytical Data to Restricted Residential Soil Cleanup Objectives
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical / Location	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (Bold)	SHSS-16 0 5/9/2002 SHROW	SHSS-17 0 5/9/2002 SHROW	SHSS-18 0-2" 5/17/2002 2 W Water Street	SHMGP-01 0 2/21/2006 SHROW	SHSS-102 0-2" 6/1/2004 SHROW	SHSS-103 0-2" 6/1/2004 SHROW	SHSS-106 0-2" 6/1/2004 2 W Water Street	SHSS-107 0-2" 6/1/2004 2 W Water Street	SHSS-108 0-2" 6/1/2004 4 W Water Street	SHSS-110 0-2" 6/2/2004 SHROW	SB-204 4-10' 4/26/2007 SHROW	SB-204 16-18' 4/26/2007 SHROW	SB-219 2-8' 4/26/2007 SHROW	SB-220 4-9' 5/1/2007 SHROW	SB-221 5-8' 5/1/2007 SHROW	SB-222 5-9' 5/1/2007 SHROW	SB-223 4-8' 5/1/2007 SHROW	SB-224 8-10' 5/8/2007 SHROW
BTEX (mg/kg)																			
Benzene	4.8	0.001 U	0.002 U	0.001 U	0.012 U	0.017 U	0.011 U	0.012 U	0.011 U	0.011 U	0.015 U	0.0058 U	0.0059 U	0.0062 U	0.097 J	0.35 J	1.90	0.0059 U	0.0057 U
Toluene	100	0.001 U	0.002 U	0.001 U	0.012 U	0.017 U	0.011 U	0.012 U	0.011 U	0.011 U	0.015 U	0.0058 U	0.0059 U	0.0062 U	7.4	7.2	27	0.0059 U	0.0057 U
Ethylbenzene	41	0.001 U	0.002 U	0.001 U	0.012 U	0.017 U	0.011 U	0.012 U	0.011 U	0.011 U	0.015 U	0.0058 U	0.0059 U	0.0062 U	0.39 U	0.2 J	0.91 J	0.0059 U	0.0057 U
Xylene, total	100	0.003	0.004	0.001 U	0.012 U	0.006 J	0.011 U	0.012 U	0.002 J	0.011 U	0.015 U	0.017 U	0.018 U	0.019 U	7.4	5.9	24	0.018 U	0.017 U
PAHs (mg/kg)																			
Acenaphthene	100	0.4 U	0.54 U	0.35 U	0.41 U	0.56 U	0.18 J	0.39 U	0.3 J	0.36 U	0.17 J	0.38 U	0.015 J	0.022 J	58	**270**	43	0.07 J	0.086 J
Acenaphthylene	100	0.16 J	0.54 U	0.35 U	4.2	0.61	0.37 U	0.39 U	0.11 J	0.073 J	0.79	0.38 U	0.39 U	0.41 U	11 J	35 J	5.8	0.89 J	0.38 U
Anthracene	100	0.061 J	0.061 J	0.35 U	1.3	0.27 J	0.38	0.39 U	0.72	0.36 U	0.48 J	0.38 U	0.39 U	0.41 U	40	**130**	24 J	0.4 J	0.39 J
Benz[a]anthracene	1	0.18 J	0.25 J	0.058 J	**8.4 D**	0.75	**1.2**	0.25 J	**1.7**	0.16 J	**1.1**	0.38 U	0.39 U	0.41 U	**30 J**	**95**	**21 J**	**2.5**	0.38 U
Benzo[a]pyrene	1	0.22 J	0.28 J	0.048 J	**16 D**	**1.2**	**1.1**	0.26 J	**1.5 J**	0.17 J	**1.5 J**	0.38 U	0.39 U	0.41 U	**25 J**	**64**	**15 J**	**2.2**	0.38 UJ
Benzo[b]fluoranthene	1	0.36 J	0.42 J	0.064 J	**14 D**	**1.6**	**1.3**	0.4	**1.2 J**	0.18 J	**1.2 J**	0.38 U	0.39 U	0.41 U	**16 J**	**44 J**	**12**	**2.7**	0.38 UJ
Benzo[g,h,i]perylene	100	0.16 J	0.54 U	0.35 U	14 D	0.93	0.36 J	0.39 U	0.25 J	0.36 UJ	0.54 J	0.38 U	0.39 U	0.41 U	15 J	33 J	10	2.9	0.38 UJ
Benzo[k]fluoranthene	3.9	0.19 J	0.28 J	0.35 U	**6.5**	1.3	1.5	0.37 J	2 J	0.35 J	2.1 J	0.38 U	0.39 U	0.41 U	39 U	**17 J**	**4.3**	**1 J**	0.38 U
Chrysene	3.9	0.32 J	0.4 J	0.067 J	**9 D**	1.2	1.5	0.42	1.5	0.21 J	1.2	0.38 U	0.39 U	0.41 U	**24 J**	**82**	**17 J**	**2.4**	0.38 UJ
Dibenz[a,h]anthracene	0.33	0.4 U	0.54 U	0.35 U	**1.8**	0.56 U	0.37 U	0.39 U	0.37 UJ	0.36 UJ	0.49 UJ	0.38 U	0.39 U	0.41 U	39 U	**4 J**	**1.7 J**	**0.43 J**	0.38 U
Dibenzofuran	59	0.4 U	0.54 U	0.35 U	0.41 U	NA	NA	NA	NA	NA	NA	0.38 U	0.39 U	0.41 U	39 U	11 J	2 U	1.6 U	0.38 U
Fluoranthene	100	0.3 J	0.57	0.1 J	8.2 D	0.95	3.1	0.7	2.9	0.27 J	1.4	0.38 U	0.39 U	0.41 U	35 J	**170**	34	3.7	0.017 J
Fluorene	100	0.4 U	0.54 U	0.35 U	0.41 U	0.56 U	0.24 J	0.39 U	0.29 J	0.36 U	0.23 J	0.38 U	0.39 U	0.41 U	30 J	**100**	18 J	1.6 U	0.041 J
Indeno[1,2,3-cd]pyrene	0.5	0.14 J	0.13 J	0.35 U	**6**	**0.84**	0.43	0.39 U	0.37 J	0.082 J	**0.52 J**	0.38 U	0.39 U	0.41 U	**8 J**	**23 J**	**7**	**2.1 J**	0.38 UJ
Methylnaphthalene,2-	0.41+	0.4 U	0.54 U	0.35 U	**0.64**	0.13 J	0.37 U	0.39 U	0.096 J	0.36 U	0.18 J	0.38 U	0.39 U	0.41 U	**140**	**310**	**40**	0.088 J	0.042 J
Naphthalene	100	0.4 U	0.54 U	0.35 U	0.75	0.2 J	0.37 U	0.39 U	0.13 J	0.36 U	0.5	0.38 U	0.048 J	0.41 U	**160**	**790**	**110**	0.14 J	0.1 J
Phenanthrene	100	0.11 J	0.24 J	0.054 J	1.8	0.42 J	2.2	0.45	2.3	0.13 J	1.1	0.025 J	0.39 U	0.049	**160**	**450**	89	0.61 J	0.18 J
Pyrene	100	0.42	0.64	0.12 J	20 D	1.5	2.7	0.73	4.4	0.42	3.1	0.016 J	0.39 U	0.021 J	91	**250**	52	6.4	0.027 J

Notes:

270 Result exceeds Restricted Residential Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* Samples collected from borings completed in 2010.

+ Value adapted from Residential Use SSCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 1-5
Comparison of Remaining Soil Analytical Data to Restricted Residential Soil Cleanup Objectives
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical / Location	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL (Bold)	SB-230 5-6' 7/11/2007 18 Bridge Street	SB-230 7.5-10' 7/11/2007 18 Bridge Street	SB-231 5-6' 7/11/2007 18 Bridge Street	SB-231 8-10' 7/11/2007 18 Bridge Street	SB-232 5-6' 7/17/2007 SHROW	SB-232 10-12' 7/17/2007 SHROW	SB-234 5-6' 7/17/2007 SHROW	SB-234 10-12' 7/17/2007 SHROW	SB-235 6.5-7.5' 7/17/2007 SHROW	SB-235 10-12' 7/17/2007 SHROW	SB-236 6-7' 7/17/2007 SHROW	SB-236 10-12' 7/17/2007 SHROW	SB-237 2-3' 7/17/2007 SHROW	SB-237 7-8' 7/17/2007 SHROW	SHHC-E1 1.5' 7/28/2010 18 Bridge Street	SHHC-N1 1.5' 7/28/2010 18 Bridge Street
BTEX (mg/kg)																	
Benzene	4.8	0.0059 U	0.0061 U	0.0059 U	0.0061 U	0.006 U	0.0059 U	0.0061 U	0.0058 U	0.006 U	0.006 U	0.0078 U	0.0058 U	0.0061 U	0.0074 U	0.006 U	0.006 U
Toluene	100	0.0059 U	0.0061 U	0.0059 U	0.0061 U	0.006 U	0.0059 U	0.0061 U	0.0058 U	0.006 U	0.006 U	0.0078 U	0.0058 U	0.0061 U	0.0074 U	0.006 U	0.006 U
Ethylbenzene	41	0.0059 U	0.0061 U	0.0059 U	0.0061 U	0.006 U	0.0059 U	0.0061 U	0.0058 U	0.006 U	0.006 U	0.0078 U	0.0058 U	0.0061 U	0.0074 U	0.006 U	0.006 U
Xylene, total	100	0.018 U	0.018 U	0.018 U	0.013 J	0.018 U	0.018 U	0.018 U	0.017 U	0.018 U	0.018 U	0.023 U	0.017 U	0.018 U	0.022 U	0.006 U	0.006 U
PAHs (mg/kg)																	
Acenaphthene	100	0.39 U	0.023 J	0.35 J	0.4 U	0.48	0.37 U	0.4 U	0.38 U	0.09 J	0.063 J	1.8 J	0.052 J	0.4 U	0.49 U	**5.6 D**	0.38 U
Acenaphthylene	100	0.39 U	0.4 U	0.39 U	0.4 U	0.17 J	0.37 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	**2.2**	0.38 U
Anthracene	100	0.39 U	0.4 U	0.39 U	0.4 U	0.23 J	0.37 U	0.4 U	0.38 U	0.39 U	0.39 U	0.15 J	0.38 U	0.4 U	0.49 U	**2.9**	0.38 U
Benz[a]anthracene	1	0.034 J	0.4 U	0.071 J	0.4 U	0.22 J	0.37 U	0.4 U	0.38 U	0.39 U	0.39 U	0.16 J	0.38 U	0.4 U	0.49 U	**6.8 D**	0.38 U
Benzo[a]pyrene	1	0.39 U	0.4 U	0.39 U	0.4 U	0.22 J	0.37 U	0.014 J	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	**7.5 D**	0.38 U
Benzo[b]fluoranthene	1	0.39 U	0.4 U	0.39 U	0.4 U	0.19 J	0.37 U	0.024 J	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	**5.0**	0.38 U
Benzo[g,h,i]perylene	100	0.39 U	0.4 U	0.39 U	0.4 U	0.18 J	0.37 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	**3.2**	0.38 U
Benzo[k]fluoranthene	3.9	0.39 U	0.4 U	0.39 U	0.4 U	0.063 J	0.37 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	**6.0**	0.38 U
Chrysene	3.9	0.037 J	0.4 U	0.037 J	0.4 U	0.23 J	0.37 U	0.24 J	0.38 U	0.39 U	0.39 U	0.12 J	0.38 U	0.4 U	0.49 U	**6.5 D**	0.38 U
Dibenz[a,h]anthracene	0.33	0.39 U	0.4 U	0.39 U	0.4 U	0.4 U	0.37 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	**0.8**	0.38 U
Dibenzofuran	59	0.39 U	0.4 U	0.39 U	0.4 U	0.4 U	0.37 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	NA	NA
Fluoranthene	100	0.042 J	0.4 U	0.042 J	0.4 U	0.34 J	0.37 U	0.4 U	0.38 U	0.041 J	0.021 J	0.19 J	0.38 U	0.4 U	0.49 U	**13.0 D**	0.38 U
Fluorene	100	0.39 U	0.4 U	0.14 J	0.4 U	0.34 J	0.37 U	0.4 U	0.38 U	0.39 U	0.39 U	0.4 J	0.033 J	0.4 U	0.49 U	**1.7**	0.38 U
Indeno[1,2,3-cd]pyrene	0.5	0.39 U	0.4 U	0.39 U	0.4 U	0.11 J	0.37 U	0.4 U	0.38 U	0.39 U	0.39 U	2.6 U	0.38 U	0.4 U	0.49 U	**2.6**	0.38 U
Methylnaphthalene,2-	0.41+	0.054 J	0.4 U	0.32 J	0.4 U	0.1 J	0.37 U	0.4 U	0.38 U	0.39 U	390 U	**1.4 J**	0.38 U	0.4 U	0.49 U	**0.42 U**	0.38 U
Naphthalene	100	0.39	0.059 J	0.86	0.43	0.46	0.37 U	0.4 U	0.38 U	0.56	0.47	2.3 J	0.38 U	0.4 U	0.49 U	**0.42 U**	0.38 U
Phenanthrene	100	0.39 U	0.4 U	0.36 J	0.4 U	0.4	0.37 U	0.019 J	0.38 U	0.39 U	0.39 U	0.68 J	0.035 J	0.4 U	0.49 U	**6.4**	0.38 U
Pyrene	100	0.073 J	0.4 U	0.39 U	0.4 U	0.51	0.37 U	0.4 U	0.38 U	0.39 U	0.39 U	0.25 J	0.38 U	0.4 U	0.49 U	**22.0 D**	0.38 U

Notes:

270 Result exceeds Restricted Residential Soil Cleanup Criteria

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

J The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

NS: Not Sampled

* Samples collected from borings completed in 2010.

+ Value adapted from Residential Use SSCO

MGP - Former Sag Harbor Manufactured Gas Plant Site

SHROW - Village of Sag Harbor Right of Way Areas

Table 2-1
Unrestricted Use and Restricted Use SCOs
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Chemical	6NYCRR Part 375 UNRESTRICTED USE	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL	6NYCRR Part 375 RESTRICTED USE COMMERCIAL
BTEX (mg/kg)			
Benzene	0.06	4.8	44
Toluene	0.7	100	500
Ethylbenzene	1	41	390
Xylene, total	0.26	100	500
PAHs (mg/kg)			
Acenaphthene	20	100	500
Acenaphthylene	100	100	500
Anthracene	100	100	500
Benz[a]anthracene	1	1	5.6
Benzo[a]pyrene	1	1	1
Benzo[b]fluoranthene	1	1	5.6
Benzo[g,h,i]perylene	100	100	500
Benzo[k]fluoranthene	0.8	3.9	56
Chrysene	1	3.9	56
Dibenz[a,h]anthracene	0.33	0.33	0.56
Dibenzofuran	7	59	350
Fluoranthene	100	100	500
Fluorene	30	100	500
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6
Methylnaphthalene,2-	0.41	NE	NE
Naphthalene	12	100	500
Phenanthrene	100	100	500
Pyrene	100	100	500
Metals (mg/kg)			
Aluminum	NA	NA	NA
Antimony	NA	NA	NA
Arsenic	13	16	16
Barium	350	400	400
Beryllium	7.2	72	590
Cadmium	2.5	4.3	9.3
Chromium	30	180	1,500
CR, Hexavalent	1	110	400
Cobalt	30	NA	NA
Copper	50	270	270
Iron	2000	NA	NA
Lead	63	400	1000
Magnesium	NA	NA	NA
Manganese	1600	2000	10000
Mercury	0.18	0.81	2.8
Nickel	30	310	310
Potassium	NA	NA	NA
Selenium	3.9		
Silver	2	180	1500
Sodium	NA	NA	NA
Thallium	NA	NA	NA
Vanadium	100	NA	NA
Zinc	109	10000	10000

Table 2-2 A
Matrix of Responsibilities - 31 Long Island Avenue
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Responsible Party → / Trigger ↓	NYSDEC	National Grid	Property Owner	Action: NYSDEC	Action: National Grid	Action: Property Owners
Access Agreement (AA)		✓	✓		AA will be executed between the Property Owner and National Grid for SMP implementation including maintaining engineering controls, following restrictions and institutional controls, annual inspection, groundwater monitoring, and indoor air monitoring (as needed)	AA will be executed between the Property Owner and National Grid for SMP implementation including maintaining engineering controls, following restrictions and institutional controls, annual inspection, groundwater monitoring, and indoor air monitoring (as needed)
Annual Report		✓			Report will be completed by National Grid and Submitted to NYSDEC. Report will include results of GW Monitoring	
Emergency Response	✓	✓	✓	Review and Comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days. National Grid will review emergency activities, conduct maintenance or repair (if necessary) and submit update to NYSDEC with Annual Inspection Report	Property Owner or Lessee have to provide details of emergency work to National Grid and NYSDEC within 48 hrs of emergency
Environmental Easement (EE)	✓		✓	EE will be executed between the Property Owner and the NYSDEC		EE will be executed between the Property Owner and the NYSDEC
Future Property Development	✓	✓	✓	Review and Comment, as necessary	National Grid to review and decide if oversight is required upon notification by the Property Owner. If new building, decision on indoor air sampling will beevaluated. Following development, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Property Owner has to provide at a minimum 15-business days notice to National Grid and NYSDEC. Restrictions on type of development activities should be followed
Ground Intrusion Work		✓	✓	Review and Comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the Property Owner. National Grid to review and decide if oversight is required. Following development, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Property Owner has to provide at a minimum 15-business days notice to National Grid and NYSDEC. All ground intrusive activities shall be pursuant to the SMP
Groundwater Use			✓			Never; removed groundwater shall be managed pursuant to the SMP
HASP Development		✓	✓		National Grid will aid in the development of task-specific HASP	Develop a Site-specific HASP for any subsurface work deeper than 24-inches below ground surface or top of groundwater table whichever is shallower.
Inspections		✓	✓		Annual Site-wide inspection of Engineering Controls and Institutional Controls	Inspections (annual and following any emergency) of the Engineering Controls and Institutional Controls
Interviews		✓	✓		National Grid to discuss annually with the Property Owner and Lessee	National Grid to discuss annually with the Property Owner and Lessee
Survey for Easement		✓			National Grid will perform a Metes and Bounds (or similar) Survey to include in the Site Management Plan and Environmental Easement	Property Owner shall provide access to property to National Grid
Monitoring		✓	✓		Monitoring will be completed by National Grid quarterly, semi-annually, or annually or as needed. Indoor air monitoring will be completed for any building modification or new buildings	Property Owner shall provide National Grid with access to monitoring locations
Property Ownership Change		✓	✓		National Grid will notify DEC of any event and associated changes within 15 days of notification by the Property Owner. National Grid will submit update to NYSDEC with Annual Inspection Report	Property Owner shall provide at a minimum 60 days notice to National Grid and NYSDEC
Property Use Change (currently Restricted Residential)	✓	✓	✓	Review and Comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the Property Owner. National Grid to review and confer with DEC if SMP revision and/or additional ECs/ICs are required. Following use change, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Property Owner has to provide at a minimum 60 days notice to National Grid and NYSDEC
SMP Implementation			✓			Implement the Site Management Plan for any ground intrusive work that will disturb composite cover system

Table 2-2 B
Matrix of Responsibilities - 11 Bridge Street
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Trigger ↓ / Responsible Party →	NYSDEC	National Grid	Property Owner	Action: NYSDEC	Action: National Grid	Action: Property Owners
Access Agreement (AA)		✓	✓		AA will be executed between the Property Owner and National Grid for SMP implementation including maintaining engineering controls, following restrictions and institutional controls, annual inspection, groundwater monitoring, and indoor air monitoring (as needed)	AA will be executed between the Property Owner and National Grid for SMP implementation including maintaining engineering controls, following restrictions and institutional controls, annual inspection, groundwater monitoring, and indoor air monitoring (as needed)
Annual Report		✓			Report will be completed by National Grid and Submitted to NYSDEC. Report will include results of GW Monitoring	
Emergency Response	✓	✓	✓	Review and Comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days. National Grid will review emergency activities, conduct maintenance or repair (if necessary) and submit update to NYSDEC with Annual Inspection Report	Property Owner or Lessee have to provide details of emergency work to National Grid and NYSDEC within 48 hrs of emergency
Environmental Easement (EE)	✓		✓	EE will be executed between the Property Owner and the NYSDEC		EE will be executed between the Property Owner and the NYSDEC
Future Property Development	✓	✓	✓	Review and Comment, as necessary	National Grid to review and decide if oversight is required upon notification by the Property Owner. If new building, decision on indoor air sampling will beevaluated. Following development, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Property Owner has to provide at a minimum 15-business days notice to National Grid and NYSDEC. Restrictions on type of development activities should be followed
Ground Intrusion Work		✓	✓	Review and Comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the Property Owner. National Grid to review and decide if oversight is required. Following development, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Property Owner has to provide at a minimum 15-business days notice to National Grid and NYSDEC. All ground intrusive activities shall be pursuant to the SMP
Groundwater Use			✓			Never; removed groundwater shall be managed pursuant to the SMP
HASP Development		✓	✓		National Grid will aid in the development of task-specific HASP	Develop a Site-specific HASP for any subsurface work deeper than 24-inches below ground surface or top of groundwater table whichever is shallower.
Inspections		✓	✓		Annual Site-wide inspection of Engineering Controls and Institutional Controls	Inspections (annual and following any emergency) of the Engineering Controls and Institutional Controls
Interviews		✓	✓		National Grid to discuss annually with the Property Owner and Lessee	National Grid to discuss annually with the Property Owner and Lessee
Survey for Easement		✓			National Grid will perform a Metes and Bounds (or similar) Survey to include in the Site Management Plan and Environmental Easement	Property Owner shall provide access to property to National Grid
Monitoring		✓	✓		Monitoring will be completed by National Grid quarterly, semi-annually, or annually or as needed. Indoor air monitoring will be completed for any building modification or new buildings	Property Owner shall provide National Grid with access to monitoring locations
Property Ownership Change		✓	✓		National Grid will notify DEC of any event and associated changes within 15 days of notification by the Property Owner. National Grid will submit update to NYSDEC with Annual Inspection Report	Property Owner shall provide at a minimum 60 days notice to National Grid and NYSDEC
Property Use Change (currently Restricted Residential)	✓	✓	✓	Review and Comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the Property Owner. National Grid to review and confer with DEC if SMP revision and/or additional ECs/ICs are required. Following use change, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Property Owner has to provide at a minimum 60 days notice to National Grid and NYSDEC
SMP Implementation			✓			Implement the Site Management Plan for any ground intrusive work that will disturb composite cover system

Table 2-2C
Matrix of Responsibilities - 18 Bridge Street
Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Trigger ↓ / Responsible Party →	NYSDEC	National Grid	Property Owner	Action: NYSDEC	Action: National Grid	Action: Harbor Close Condominium Board
Access Agreement (AA)		✓	✓		AA will be executed between Harbor Close Condominium Board and National Grid for SMP implementation including maintaining engineering controls, following restrictions and institutional controls, annual inspection, groundwater monitoring, and indoor air monitoring (as needed)	AA will be executed between the Harbor Close Condominium Board and National Grid for SMP implementation including maintaining engineering controls, following restrictions and institutional controls, annual inspection, groundwater monitoring, and indoor air monitoring (as needed)
Annual Report		✓		Review and comment, as necessary	Report will be completed by National Grid and Submitted to NYSDEC. Report will include results of groundwater monitoring	
Emergency Response	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the Harbor Close Condominium Board. National Grid will review emergency activities, conduct maintenance or repair (if necessary) and submit update to NYSDEC with Annual Inspection Report	Harbor Close Condominium Board shall provide details of emergency work to National Grid and NYSDEC within 48 hrs of emergency
Future Property Development	✓	✓	✓	Review and comment, as necessary	National Grid to review and decide if oversight is required upon notification by Harbor Close Condominium Board. If new building, decision on indoor air sampling. Following development, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Harbor Close Condominium Board shall provide at a minimum 15-business days notice to National Grid and NYSDEC. There are no restrictions on type of development activities
Ground Intrusion Work (>24-inches or top of groundwater)		✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the Harbor Close Condominium Board. National Grid to review and decide if oversight is required. Following development, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Harbor Close Condominium Board shall provide at a minimum 15-business days notice to National Grid and NYSDEC. All ground intrusive activities shall be pursuant to the SMP
Groundwater Use			✓	Review and comment, as necessary		Harbor Close Condominium Board shall provide at a minimum 15-business days notice to National Grid and NYSDEC prior to groundwatger use with the exception of the existing well for irrigation only; dewatered groundwater shall be managed according to SMP requirements
HASP Development		✓	✓		National Grid will aid in development of tas-specific HASP	Develop a Site-specific HASP for any subsurface work deeper than 24-inches below ground surface or top of groundwater table whichever is shallower.
Inspections		✓	✓		Annual Site-wide inspection of Engineering Controls and Institutional Controls	Inspections (annual and following any emergency) of the Engineering Controls and Institutional Controls
Interviews		✓	✓		National Grid to discuss annually with Harbor Close Condominium Board	National Grid to discuss annually with Harbor Close Condominium Board
Monitoring		✓	✓		Monitoring will be completed by National Grid quarterly, semi-annually, or annually or as needed. Indoor air monitoring will be completed for any building modification or new buildings.	Harbor Close Condominium Board shall provide National Grid with access to monitoring locations
Property Ownership (transfer of all existing shares)		✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days upon notification by Harbor Close Condominium Board. National Grid will submit update to NYSDEC with Annual Inspection Report	Harbor Close Condominium Board shall provide at a minimum 60 days notice to National Grid and NYSDEC if all the shares of the property are transferred or sold.
Property Use Change (currently Restricted Residential)	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by Harbor Close Condominium Board. National Grid to review and confer with NYSDEC if SMP revision and/or additional ECs/ICs are required. Following use change, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Harbor Close Condominium Board shall provide at a minimum 60 days notice to National Grid and NYSDEC
SMP Implementation			✓	Review and comment, as necessary		Harbor Close Condominium Board shall provide at a minimum 15-business days notice to National Grid and NYSDEC and implement the Site Management Plan for any ground intrusive work that will disturb soil cover system
Vegatable Gardens and Farming on Common Grounds			✓	Review and comment, as necessary		Harbor Close Condominium Board shall provide at a minimum 15-business days notice to National Grid and NYSDEC prior to use of common land for vegetable gardens and/or farming

Table 2-2 D
Matrix of Responsibilities - Village of Sag Harbor Right of Ways
Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Responsible Party → / Trigger ↓	NYSDEC	National Grid	Property Owner	Action: NYSDEC	Action: National Grid	Action: Village of Sag Harbor
Access Agreement (AA)		✓	✓		AA will be executed between the Village of Sag Harbor and National Grid for SMP implementation including maintaining engineering controls, following restrictions and institutional controls, annual inspection, groundwater monitoring, Dense Nonaqueous Phase Liquid (DNAPL) Recovery, and indoor air monitoring (as needed)	AA will be executed between the Village of Sag Harbor and National Grid for SMP implementation including maintaining engineering controls, following restrictions and institutional controls, annual inspection, groundwater monitoring, Dense Nonaqueous Phase Liquid Recovery, and indoor air monitoring (as needed)
Annual Report		✓		Review and comment, as necessary	Report will be completed by National Grid and Submitted to NYSDEC. Report will include results of groundwater monitoring and DNAPL Recovery	
Emergency Response	✓	✓	✓	Review and comment, as necessary	National Grid will notify NYSDEC of any event and associated changes within 15 days of notification by the Village of Sag Harbor. National Grid will review emergency activities, conduct maintenance or repair (if necessary) and submit update to NYSDEC with Annual Inspection Report	Village of Sag Harbor shall provide details of emergency work to National Grid and NYSDEC within 48 hrs of emergency
Future Property Development	✓	✓	✓	Review and comment, as necessary	National Grid to review and decide if oversight is required upon notification by the Village of Sag Harbor. If new building, decision on indoor air sampling. Following development, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Village of Sag Harbor shall provide at a minimum 15-business days notice to National Grid and NYSDEC. There are no restrictions on type of development activities
Ground Intrusion Work (>24-inches or top of groundwater)		✓	✓	Review and comment, as necessary	National Grid will notify NYSDEC of any event and associated changes within 15 days of notification by the Village of Sag Harbor. National Grid to review and decide if oversight is required. Following ground intrusion work, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Village of Sag Harbor shall provide at a minimum 15-business days notice to National Grid and NYSDEC. All ground intrusive activities shall be pursuant to the SMP
Groundwater Use			✓			Never; removed groundwater shall be managed pursuant to the SMP
HASP Development		✓	✓		National Grid will aid in development of task-specific HASP	Develop a Site-specific HASP for any subsurface work deeper than 24-inches below ground surface or top of groundwater table whichever is shallower.
Inspections		✓	✓		Annual Site-wide inspection of Engineering Controls and Institutional Controls	Inspections (annual and following any emergency) of the Engineering Controls and Institutional Controls
Interviews		✓	✓		National Grid to discuss annually with the Village of Sag Harbor	National Grid to discuss annually with the Village of Sag Harbor
Monitoring and DNAPL Recovery		✓	✓		Monitoring and DNAPL Recovery will be completed by National Grid quarterly, semi-annually, or annually or as needed. Indoor air monitoring will be completed for any new buildings	Village of Sag Harbor shall provide National Grid with access to monitoring and DNAPL Recovery locations
Property Ownership Change		✓	✓	Review and comment, as necessary	National Grid will notify NYSDEC of any event and associated changes within 15 days upon notification by the Village of Sag Harbor. National Grid will submit update to NYSDEC with Annual Inspection Report	Village of Sag Harbor shall provide at a minimum 60 days notice to National Grid and NYSDEC
Property Use Change (currently Restricted Commercial)	✓	✓	✓	Review and comment, as necessary	National Grid will notify NYSDEC of any event and associated changes within 15 days of notification by the Village of Sag Harbor. National Grid to review and confer with NYSDEC if SMP revision and/or additional ECs/ICs are required. Following use change, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	Village of Sag Harbor shall provide at a minimum 60 days notice to National Grid and NYSDEC
SMP Implementation			✓			Village of Sag Harbor shall provide at a minimum 15-business days notice to National Grid and NYSDEC and implement the Site Management Plan for any ground intrusive work that will disturb composite cover system
Vegetable Gardens and Farming on Common Grounds			✓	Review and comment, as necessary		Village of Sag Harbor shall provide at a minimum 15-business days notice to National Grid and NYSDEC prior to use of included properties for vegetable gardens and/or farming

Table 2-2 E
Matrix of Responsibilities - USPS
Former Sag Harbor MGP Site
Sag Harbor, New York

Trigger ↓ / Responsible Party →	DEC	National Grid	Property Owner	Action: DEC	Action: National Grid	Action: United States Postal Office
Access Agreement (AA)		✓	✓		AA will be executed between the USPS and National Grid for SMP implementation including maintaining engineering controls, recommended notifications and institutional controls, annual inspection, groundwater monitoring, and indoor air monitoring (as needed)	AA will be executed between the USPS and National Grid for SMP implementation including maintaining engineering controls, recommended notifications and institutional controls, annual inspection, groundwater monitoring, and indoor air monitoring (as needed)
Annual Report		✓		Review and comment, as necessary	Report will be completed by National Grid and Submitted to NYSDEC. Report will include results of groundwater monitoring	
Emergency Response	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the USPS. National Grid will review emergency activities, conduct maintenance or repair (if necessary) and submit update to NYSDEC with Annual Inspection Report	The DEC recommends the USPS to notify National Grid of any emergency work completed on the property that resulted in contact with soil 24 inches below the property surface and/or groundwater.
Future Property Development	✓	✓	✓	Review and comment, as necessary	National Grid to review and decide if oversight is required upon notification by the USPS. If new building, decision on indoor air sampling. Following development, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	The DEC recommends the USPS to provide a minimum 15-business days notice to National Grid prior to the start of any developmental activities. There are no restrictions on type of development activities.
Ground Intrusion Work (>24-inches or top of groundwater)		✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the USPS. National Grid to review and decide if oversight is required. Following development, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	The DEC recommends the USPS to provide at a minimum 15-business days notice to National Grid and DEC prior to any ground intrusive activities 24 inches below the property surface. It is also recommended that all ground intrusive activities shall be pursuant to the SMP.
Groundwater Use			✓	Review and comment, as necessary		The DEC recommends the USPS to provide at a minimum 15-business days notice to National Grid and NYSDEC prior to groundwater use; It is also recommended that dewatered groundwater be managed according to SMP requirements
HASP Development		✓	✓		National Grid will aid in development of tas-specific HASP	The DEC recommends the USPS to develop a Site-specific HASP for any subsurface work deeper than 24-inches below ground surface or top of groundwater table whichever is shallower.
Inspections		✓	✓		Annual Site-wide inspection of Engineering Controls and Institutional Controls	Inspections (annual and following any emergency) of the Engineering Controls and Institutional Controls will be completed by National Grid
Interviews		✓	✓		National Grid to discuss annually with the USPS	National Grid to discuss annually with the USPS
Monitoring		✓	✓		Monitoring will be completed by National Grid quarterly, semi-annually, or annually or as needed. Indoor air monitoring will be completed for any building modification or new buildings.	The DEC recommends the USPS to provide National Grid with access to monitoring locations
Property Ownership (transfer of all existing shares)		✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days upon notification by the USPS. National Grid will submit update to NYSDEC with Annual Inspection Report	The DEC recommends the USPS to provide at a minimum 60 days notice to National Grid and DEC if the property is transferred or sold.
Property Use Change (currently Commercial)	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the USPS. National Grid to review and confer with NYSDEC if SMP revision and/or additional ECs/ICs are required. Following use change, National Grid to update SMP and submit to NYSDEC with Annual Inspection Report	The DEC recommends the USPS to provide at a minimum 60 days notice to National Grid and DEC of any application to change the current Property Use.
SMP Implementation			✓	Review and comment, as necessary		The DEC recommends the USPS to implement the Site Management Plan for any ground intrusive work that will disturb composite cover system
Vegatable Gardens and Farming on Common Grounds			✓	Review and comment, as necessary		The DEC recommends the USPS to provide at a minimum 15-business days notice to National Grid and NYSDEC prior to use of common land for vegetable gardens and/or farming

AECOM

Table 2-2F
Matrix of Responsibilities - 2 West Water Street
Former Sag Harbor MGP Site
Sag Harbor, New York

Trigger / Responsible Party	DEC	National Grid	Property Owner	Action: DEC	Action: National Grid	Action: 2 West Water Street Property Owner(s) or their representatives
Access Agreement (AA)		✓	✓		AA will be executed between the owner(s) of 2 West Water Street property and National Grid for SMP implementation including maintaining engineering controls, recommended notifications and institutional controls, annual inspection, and indoor air monitoring (as needed).	AA will be executed between the owner(s) of 2 West Water Street property and National Grid for SMP implementation including maintaining engineering controls, recommended notifications and institutional controls, annual inspection, and indoor air monitoring (as needed).
Annual Report	✓	✓		Review and comment, as necessary	Report will be completed by National Grid and Submitted to DEC. Report will include results of groundwater monitoring.	
Emergency Response	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the Owners or the Representatives of 2 West Water Street property. National Grid will review emergency activities, conduct maintenance or repair (if necessary) and submit update to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 2 West Water Street property or their representatives to notify National Grid of any emergency work completed on the property that resulted in contact with soils 24 inches below the property surface and/or groundwater.
Future Property Development	✓	✓	✓	Review and comment, as necessary	National Grid to review and decide if oversight is required upon notification by the owner(s) of 2 West Water Street property or their representatives. If new building is proposed, a decision on indoor air sampling will be made in consultation with DEC. Following development, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 2 West Water Street property or their representatives to provide a minimum 15-business days notice to National Grid prior to the start of any developmental activities. There are no restrictions on type of development activities
Ground Intrusion Work (>24-inches or top of groundwater)		✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the owner(s) of 2 West Water Street property or their representatives. National Grid to review and decide if oversight is required. Following development, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 2 West Water Street property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to any ground intrusive activities 24 inches below the property surface. It is also recommended that all ground intrusive activities shall be pursuant to the SMP.
Groundwater Use			✓	Review and comment, as necessary		The DEC recommends the owner(s) of 2 West Water Street property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to groundwater use; It is also recommended that dewatered groundwater be managed according to SMP requirements.
HASP Development		✓	✓		National Grid will aid in development of task-specific HASP.	The DEC recommends the owner(s) of 2 West Water Street property or their representatives to develop a Site-specific HASP for any subsurface work deeper than 24 inches below the property surface or top of groundwater table whichever is shallower..
Inspections		✓	✓		Annual Site-wide inspection of Engineering Controls and Institutional Controls.	Inspections (annual and following any emergency) of the Engineering Controls and Institutional Controls will be completed by National Grid.
Interviews		✓	✓		National Grid to discuss annually with the owner(s) of 2 West Water Street property or their representatives.	National Grid to discuss annually with the owner(s) of 2 West Water Street property or their representatives.
Monitoring		✓	✓		Monitoring will be completed by National grid quarterly, semi-annually, or annually or as needed. Indoor air monitoring will be completed by National Grid for any new buildings.	The DEC recommends the owner(s) of 2 West Water Street property or their representatives to provide National Grid with access to groundwater and indoor air monitoring locations following construction of any new buildings on the property.
Property Ownership Change		✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days upon notification by the owner(s) of 2 West Water Street property. National Grid will submit update to DEC with Annual Inspection Report	The DEC recommends the owner(s) of 2 West Water Street property or their representatives to provide at a minimum 60 days notice to National Grid and DEC if the property is transferred or sold.
Property Use Change (currently Restricted Residential)	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the owner(s) of 2 West Water Street property or their representatives. National Grid to review and confer with DEC if SMP revision and/or additional ECs/ICs are required. Following use change, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 2 West Water Street property or their representatives to provide at a minimum 60 days notice to National Grid and DEC of any application to change the current Property Use.
SMP Implementation	✓		✓	Review and comment, as necessary		The DEC recommends the owner(s) of 2 West Water Street property or their representatives to implement the Site Management Plan for any ground intrusive work that will disturb soil 24 inches below the property surface or top of groundwater table whichever is shallower.
Vegetable Gardens and Farming on Common Grounds	✓		✓	Review and comment, as necessary		The DEC recommends the owner(s) of 2 West Water Street property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to use of all or portions of the property for vegetable gardens and/or farming.

Table 2-2 F
Matrix of Responsibilities - 4 West Water Street
Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Trigger ↓ / Responsible Party →	DEC	National Grid	Property Owner	Action: DEC	Action: National Grid	Action: 4 West Water Street Property Owner(s) or their representatives
Access Agreement (AA)		✓	✓		AA will be executed between the owner(s) of 4 West Water Street property and National Grid for SMP implementation including maintaining engineering controls, recommended notifications and institutional controls, and indoor air monitoring (as needed).	AA will be executed between the owner(s) of 4 West Water Street property and National Grid for SMP implementation including maintaining engineering controls, recommended notifications and institutional controls, and indoor air monitoring (as needed).
Annual Report	✓	✓		Review and comment, as necessary	Report will be completed by National Grid and Submitted to DEC. Report will include results of groundwater monitoring.	
Emergency Response	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the Owners or the Representatives of 4 West Water Street property. National Grid will review emergency activities, conduct maintenance or repair (if necessary) and submit update to DEC with Annual Inspection Report	The DEC recommends the owner(s) of 4 West Water Street property or their representatives to notify National Grid of any emergency work completed on the property that resulted in contact with soil 24 inches below the property surface or groundwater.
Future Property Development	✓	✓	✓	Review and comment, as necessary	National Grid to review and decide if oversight is required upon notification by the owner(s) of 4 West Water Street property or their representatives. If new building is proposed, decision on indoor air sampling will be made in consultation with DEC. Following development, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 4 West Water Street property or their representatives to provide a minimum 15-business days notice to National Grid prior to the start of any developmental activities. There are no restrictions on type of development activities.
Ground Intrusion Work (>24-inches or top of groundwater)	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the owner(s) of 4 West Water Street property or their representatives. National Grid to review and decide if oversight is required. Following development, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 4 West Water Street property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to any ground intrusive activities 24 inches below property surface. It is also recommended that all ground intrusive activities shall be pursuant to the SMP.
Groundwater Use			✓	Review and comment, as necessary		The DEC recommends the owner(s) of 4 West Water Street property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to groundwater use; It is also recommended that dewatered groundwater be managed according to SMP requirements.
HASP Development		✓	✓		National Grid will aid in development of task-specific HASP.	The DEC recommends the owner(s) of 4 West Water Street property or their representatives to develop a Site-specific HASP for any subsurface work deeper than 24 inches below property surface or top of groundwater table whichever is shallower.
Inspections		✓	✓		Annual Site-wide inspection of Engineering Controls and Institutional Controls.	Inspections (annual and following any emergency) of the Engineering Controls and Institutional Controls will be completed by National Grid.
Interviews		✓	✓		National Grid to discuss annually with the owner(s) of 4 West Water Street property or their representatives.	National Grid to discuss annually with the owner(s) of 4 West Water Street property or their representatives.
Monitoring		✓	✓		Indoor air monitoring will be completed by National Grid for any new buildings.	The DEC recommends the owner(s) of 4 West Water Street property or their representatives to provide National Grid with access to indoor air monitoring locations following construction of any new buildings on the property
Property Ownership (transfer of all existing shares)		✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days upon notification by the owner(s) of 4 West Water Street property. National Grid will submit update to DEC with Annual Inspection Report	The DEC recommends the owner(s) of 4 West Water Street property or their representatives to provide at a minimum 60 days notice to National Grid and DEC if the property is transferred or sold.
Property Use Change (currently Restricted Residential)	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the owner(s) of 4 West Water Street property or their representatives. National Grid to review and confer with DEC if SMP revision and/or additional ECs/ICs are required. Following use change, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 4 West Water Street property or their representatives to provide at a minimum 60 days notice to National Grid and DEC of any application to change the current Property Use.
SMP Implementation	✓		✓	Review and comment, as necessary		The DEC recommends the owner(s) of 4 West Water Street property or their representatives to implement the Site Management Plan for any ground intrusive work that will disturb soil 24 inches below property surface or top of groundwater table whichever is shallower.
Vegetable Gardens and Farming on Common Grounds	✓		✓	Review and comment, as necessary		The DEC recommends the owner(s) of 4 West Water Street property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to use of portion or all of the property for vegetable gardens and/or farming.

AECOM

Table 2-2F
Matrix of Responsibilities - 8 West Water Street
Former Sag Harbor MGP Site
Sag Harbor, New York

Trigger ↓ / Responsible Party →	DEC	National Grid	Property Owner	Action: DEC	Action: National Grid	Action: 8 West Water Street Property Owner(s) or their representatives
Access Agreement (AA)		✓	✓		AA will be executed between the owner(s) of 8 West Water Street property and National Grid for SMP implementation including maintaining engineering controls, recommended notifications and institutional controls, and indoor air monitoring (as needed).	AA will be executed between the owner(s) of 8 West Water Street property and National Grid for SMP implementation including maintaining engineering controls, recommended notifications and institutional controls, and indoor air monitoring (as needed).
Annual Report	✓	✓		Review and comment, as necessary	Report will be completed by National Grid and Submitted to DEC. Report will include results of groundwater monitoring.	
Emergency Response	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the Owners or the Representatives of 8 West Water Street property. National Grid will review emergency activities, conduct maintenance or repair (if necessary) and submit update to DEC with Annual Inspection Report	The DEC recommends the owner(s) of 8 West Water Street property or their representatives to notify National Grid of any emergency work completed on the property that resulted in contact with soil 24 inches below the property surface or groundwater.
Future Property Development	✓	✓	✓	Review and comment, as necessary	National Grid to review and decide if oversight is required upon notification by the owner(s) of 8 West Water Street property or their representatives. If new building is proposed, decision on indoor air sampling will be made in consultation with DEC. Following development, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 8 West Water Street property or their representatives to provide a minimum 15-business days notice to National Grid prior to the start of any developmental activities. There are no restrictions on type of development activities.
Ground Intrusion Work (>24-inches or top of groundwater)	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the owner(s) of 8 West Water Street property or their representatives. National Grid to review and decide if oversight is required. Following development, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 8 West Water Street property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to any ground intrusive activities 24 inches below property surface or top of groundwater table whichever is shallower. It is also recommended that all ground intrusive activities shall be pursuant to the SMP.
Groundwater Use			✓	Review and comment, as necessary		The DEC recommends the owner(s) of 8 West Water Street property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to groundwater use; It is also recommended that dewatered groundwater be managed according to SMP requirements.
HASP Development		✓	✓		National Grid will aid in development of task-specific HASP.	The DEC recommends the owner(s) of 8 West Water Street property or their representatives to develop a Site-specific HASP for any subsurface work deeper than 24 inches below property surface or top of groundwater table whichever is shallower.
Inspections		✓	✓		Annual Site-wide inspection of Engineering Controls and Institutional Controls.	Inspections (annual and following any emergency) of the Engineering Controls and Institutional Controls will be completed by National Grid.
Interviews		✓	✓		National Grid to discuss annually with the owner(s) of 8 West Water Street property or their representatives.	National Grid to discuss annually with the owner(s) of 8 West Water Street property or their representatives.
Monitoring		✓	✓		Indoor air monitoring will be completed by National Grid for any new buildings.	The DEC recommends the owner(s) of 8 West Water Street property or their representatives to provide National Grid with access to indoor air monitoring locations following construction of any new buildings on the property
Property Ownership (transfer of all existing shares)		✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days upon notification by the owner(s) of 8 West Water Street property. National Grid will submit update to DEC with Annual Inspection Report	The DEC recommends the owner(s) of 8 West Water Street property or their representatives to provide at a minimum 60 days notice to National Grid and DEC if the property is transferred or sold.
Property Use Change (currently Restricted Residential)	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the owner(s) of 8 West Water Street property or their representatives. National Grid to review and confer with DEC if SMP revision and/or additional ECs/ICs are required. Following use change, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 8 West Water Street property or their representatives to provide at a minimum 60 days notice to National Grid and DEC of any application to change the current Property Use.
SMP Implementation	✓		✓	Review and comment, as necessary		The DEC recommends the owner(s) of 8 West Water Street property or their representatives to implement the Site Management Plan for any ground intrusive work that will disturb soil 24 inches below property surface or top of groundwater table whichever is shallower.
Vegetable Gardens and Farming on Common Grounds	✓		✓	Review and comment, as necessary		The DEC recommends the owner(s) of 8 West Water Street property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to use of portion or all of the property for vegetable gardens and/or farming.

AECOM

Table 2-2F
Matrix of Responsibilities - 22 Long Island Avenue
Former Sag Harbor MGP Site
Sag Harbor, New York

Trigger ↓ / Responsible Party →	DEC	National Grid	Property Owner	Action: DEC	Action: National Grid	Action: 22 Long Island Avenue Property Owner(s) or their representatives
Access Agreement (AA)		✓	✓		AA will be executed between the owner(s) of 22 Long Island Avenue property and National Grid for SMP implementation including maintaining engineering controls, recommended notifications and institutional controls, and indoor air monitoring (as needed).	AA will be executed between the owner(s) of 22 Long Island Avenue property and National Grid for SMP implementation including maintaining engineering controls, recommended notifications and institutional controls, and indoor air monitoring (as needed).
Annual Report	✓	✓		Review and comment, as necessary	Report will be completed by National Grid and Submitted to DEC. Report will include results of groundwater monitoring.	
Emergency Response	✓	✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the Owners or the Representatives of 22 Long Island Avenue property. National Grid will review emergency activities, conduct maintenance or repair (if necessary) and submit update to DEC with Annual Inspection Report	The DEC recommends the owner(s) of 22 Long Island Avenue property or their representatives to notify National Grid of any emergency work completed on the property that resulted in contact with soil 24 inches below the property surface and/or groundwater.
Future Property Development	✓	✓	✓	Review and comment, as necessary	National Grid to review and decide if oversight is required upon notification by the owner(s) of 22 Long Island Avenue property or their representatives. If new building is proposed, decision on indoor air sampling will be made in consultation with DEC. Following development, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 22 Long Island Avenue property or their representatives to provide a minimum 15-business days notice to National Grid prior to the start of any developmental activities. There are no restrictions on type of development activities.
Ground Intrusion Work (>24-inches or top of groundwater)		✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days of notification by the owner(s) of 22 Long Island Avenue property or their representatives. National Grid to review and decide if oversight is required. Following development, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 22 Long Island Avenue property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to any ground intrusive activities 24 inches below the property surface or top of groundwater table whichever is shallower. It is also recommended that all ground intrusive activities shall be pursuant to the SMP.
Groundwater Use			✓	Review and comment, as necessary		The DEC recommends the owner(s) of 22 Long Island Avenue property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to groundwater use; It is also recommended that dewatered groundwater be managed according to SMP requirements.
HASP Development		✓	✓		National Grid will aid in development of task-specific HASP.	The DEC recommends the owner(s) of 22 Long Island Avenue property or their representatives to develop a Site-specific HASP for any subsurface work 24 inches below property surface or top of groundwater table whichever is shallower.
Inspections		✓	✓		Annual Site-wide inspection of Engineering Controls and Institutional Controls.	Inspections (annual and following any emergency) of the Engineering Controls and Institutional Controls will be completed by National Grid.
Interviews		✓	✓		National Grid to discuss annually with the owner(s) of 22 Long Island Avenue property or their representatives.	National Grid to discuss annually with the owner(s) of 22 Long Island Avenue property or their representatives.
Monitoring		✓	✓		Indoor air monitoring will be completed by National Grid for any new buildings.	The DEC recommends the owner(s) of 22 Long Island Avenue property or their representatives to provide National Grid with access to indoor air monitoring locations following construction of any new buildings on the property.
Property Ownership (transfer of all existing shares)		✓	✓	Review and comment, as necessary	National Grid will notify DEC of any event and associated changes within 15 days upon notification by the owner(s) of 22 Long Island Avenue property. National Grid will submit update to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 22 Long Island Avenue property or their representatives to provide at a minimum 60 days notice to National Grid and DEC if the property is transferred or sold.
Property Use Change (currently Commercial)	✓	✓	✓	Review and comment, as necessary.	National Grid will notify DEC of any event and associated changes within 15 days of notification by the owner(s) of 22 Long Island Avenue property or their representatives. National Grid to review and confer with DEC if SMP revision and/or additional ECs/ICs are required. Following use change, National Grid to update SMP and submit to DEC with Annual Inspection Report.	The DEC recommends the owner(s) of 22 Long Island Avenue property or their representatives to provide at a minimum 60 days notice to National Grid and DEC of any application to change the current Property Use.
SMP Implementation	✓		✓	Review and comment, as necessary.		The DEC recommends the owner(s) of 22 Long Island Avenue property or their representatives to implement the Site Management Plan for any ground intrusive work that will disturb soil 24 inches below property surface or top of groundwater table whichever is shallower.
Vegetable Gardens and Farming on Common Grounds	✓		✓	Review and comment, as necessary.		The DEC recommends the owner(s) of 22 Long Island Avenue property or their representatives to provide at a minimum 15-business days notice to National Grid and DEC prior to use of portions or all of the property for vegetable gardens and/or farming.

Table 3-1
Monitoring and Inspection Schedule
Former Sag Harbor MGP Site
Sag Harbor, New York

Monitoring Program	Frequency*	Matrix	Analysis
Soil Cover System	Annually	Cap	Inspection
Composite Cover System	Annually	Cap	Inspection
Monitored Natural Attenuation	Quarterly	Groundwater	Benzene, toluene, ethylbenzene, xylene, polycyclic aromatic hydrocarbons, Monitored Natural Attenuation parameters (Dissolved Oxygen, Nitrate, Ammonia, Total Iron, Ferrous Iron, Sulfate, Sulfide, Methane, Alkalinity, Oxidation Reduction Potential, and pH)
Passive DNAPL Recovery System	Quarterly	DNAPL	-
SVI/Indoor Air	Post Remedial Action and Prior to any Building Renovation/Construction	Air	EPA Modified TO-15 Parameters
Excavation	Prior to Disposal	Soil	Disposal Facility Parameters
Dewatering	Prior to Disposal	Water	Disposal Facility Parameters
18 Bridge Street Property Irrigation Well	Semi-Annually	Groundwater	Benzene, toluene, ethylbenzene, xylene, polycyclic aromatic hydrocarbons

***The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH**

Notes:

DNAPL - Dense Nonaqueous Phase Liquid

SPDES - State Pollution Discharge Elimination System

SVI - Soil Vapor Intrusion

NYSDEC - New York State Department of Environmental Conservation

NYSDOH - New York State Department of Health

Table 3-2
Monitoring Well Construction Details
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

AECOM

Monitoring Well I.D.	Well Construction			Depth of Well	Screen Type	Screen slotted size/diameter	Screen Interval	Ground Surface
	Protective Casing	Well Type	Diameter (inches)	(ft bgs)	(ft bgs)	(inchs)	(ft bgs)	(feet msl)
SHMW-01SR	Flush-Mount	PVC	1.0	6.00	Slotted PVC	0.020/1.00	1.0 - 6.0	3.99
SHMW-01IR	Flush-Mount	PVC	1.0	47.00	Slotted PVC	0.020/1.00	35.0 - 45.0	3.96
SHMW-01D	Flush-Mount	PVC	1.0	75.00	Slotted PVC	0.020/1.00	65.0 - 75.0	3.78
SHMW-02S	Flush-Mount	PVC	1.0	6.00	Slotted PVC	0.020/1.00	1.0 - 6.0	4.21
SHMW-02IR	Flush-Mount	PVC	4.0	39.00	Slotted PVC	0.020/4.00	27.0 - 37.0	4.32
SHMW-02DR	Flush-Mount	PVC	1.0	75.00	Slotted PVC	0.020/1.00	65.0 - 75.0	4.14
SHMW-03S	Flush-Mount	PVC	2.0	14.00	Slotted PVC	0.020/2.00	2.0 - 12.0	5.23
SHMW-03I	Flush-Mount	PVC	2.0	48.00	Slotted PVC	0.020/2.00	35.0 - 45.0	5.27
SHMW-04SR	Flush-Mount	PVC	4.0	14.00	Slotted PVC	0.020/4.00	2.0 - 12.0	4.43
SHMW-05SR	Flush-Mount	PVC	1.0	12.00	Slotted PVC	0.020/1.00	2.0 - 12.0	5.31
SHMW-05IR	Flush-Mount	PVC	1.0	45.00	Slotted PVC	0.020/1.00	35.0 - 45.0	5.42
SHMW-07SR	Flush-Mount	PVC	1.0	11.00	Slotted PVC	0.020/1.00	1.0 - 11.0	3.81
SHMW-07IR	Flush-Mount	PVC	1.0	45.00	Slotted PVC	0.020/1.00	35.0 - 45.0	3.74
SHMW-08S	Flush-Mount	PVC	2.0	12.00	Slotted PVC	0.020/2.00	1.0 - 7.0	5.26
SHMW-08I	Flush-Mount	PVC	2.0	48.00	Slotted PVC	0.020/2.00	35.0 - 45.0	5.08
SHMW-09S	Flush-Mount	PVC	2.0	12.00	Slotted PVC	0.020/2.00	2.0 - 12.0	4.36
SHMW-09I	Flush-Mount	PVC	2.0	48.00	Slotted PVC	0.020/2.00	35.0 - 45.0	4.41
SHMW-10S	Flush-Mount	PVC	1.0	15.00	Pre-Packed	20/40 Mesh	5.00 - 15.00	5.91
SHMW-10I	Flush-Mount	PVC	1.0	45.50	Pre-Packed	20/40 Mesh	35.0 - 45.0	5.89
SHMW-11S	Flush-Mount	PVC	1.0	13.50	Pre-Packed	20/40 Mesh	3.50 - 15.50	5.74
SHMW-11I	Flush-Mount	PVC	1.0	45.00	Pre-Packed	20/40 Mesh	35.0 - 45.0	5.79
SHMW-12S	Flush-Mount	PVC	1.0	6.50	Pre-Packed	20/40 Mesh	1.50 - 6.50	3.42
SHMW-12I	Flush-Mount	PVC	1.0	45.00	Pre-Packed	20/40 Mesh	35.0 - 45.0	3.29
SHMW-13S	Flush-Mount	PVC	1.0	6.50	Pre-Packed	20/40 Mesh	1.50 - 6.50	4.68
SHMW-13I	Flush-Mount	PVC	1.0	45.00	Pre-Packed	20/40 Mesh	35.0 - 45.0	4.70

Figures

File: M:\SAG Harbor\FIGURE_1-1_SITE LOCATION MAP.dwg Layout: FIGURE 1-1 User: schwartze Plotted: Feb 18, 2011 - 2:41pm Xref's:

AECOM

NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

SITE LOCATION MAP

DATE: 02/18/11	DRWN: DLS/PGH		**FIGURE 1-1**

LEGEND:

LIMITS OF SMP

APPROXIMATE PROPERTY LIMITS

AECOM

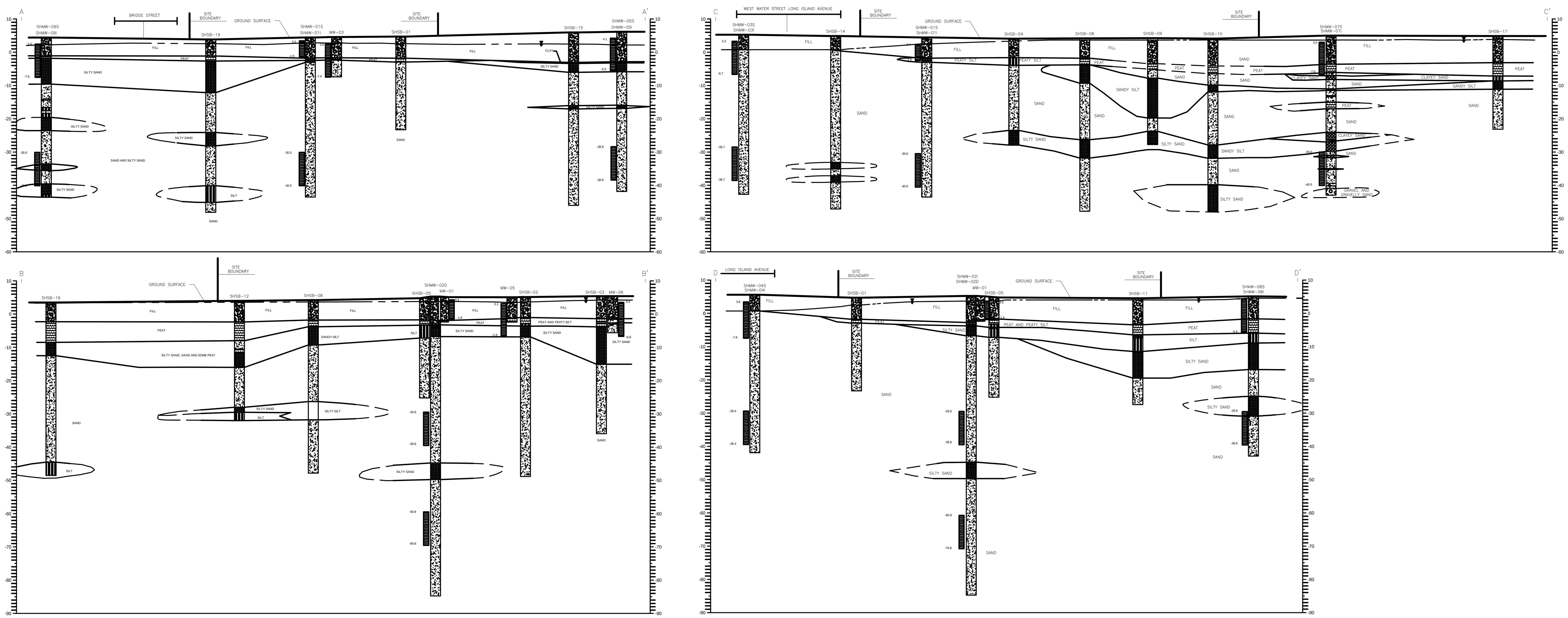
NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

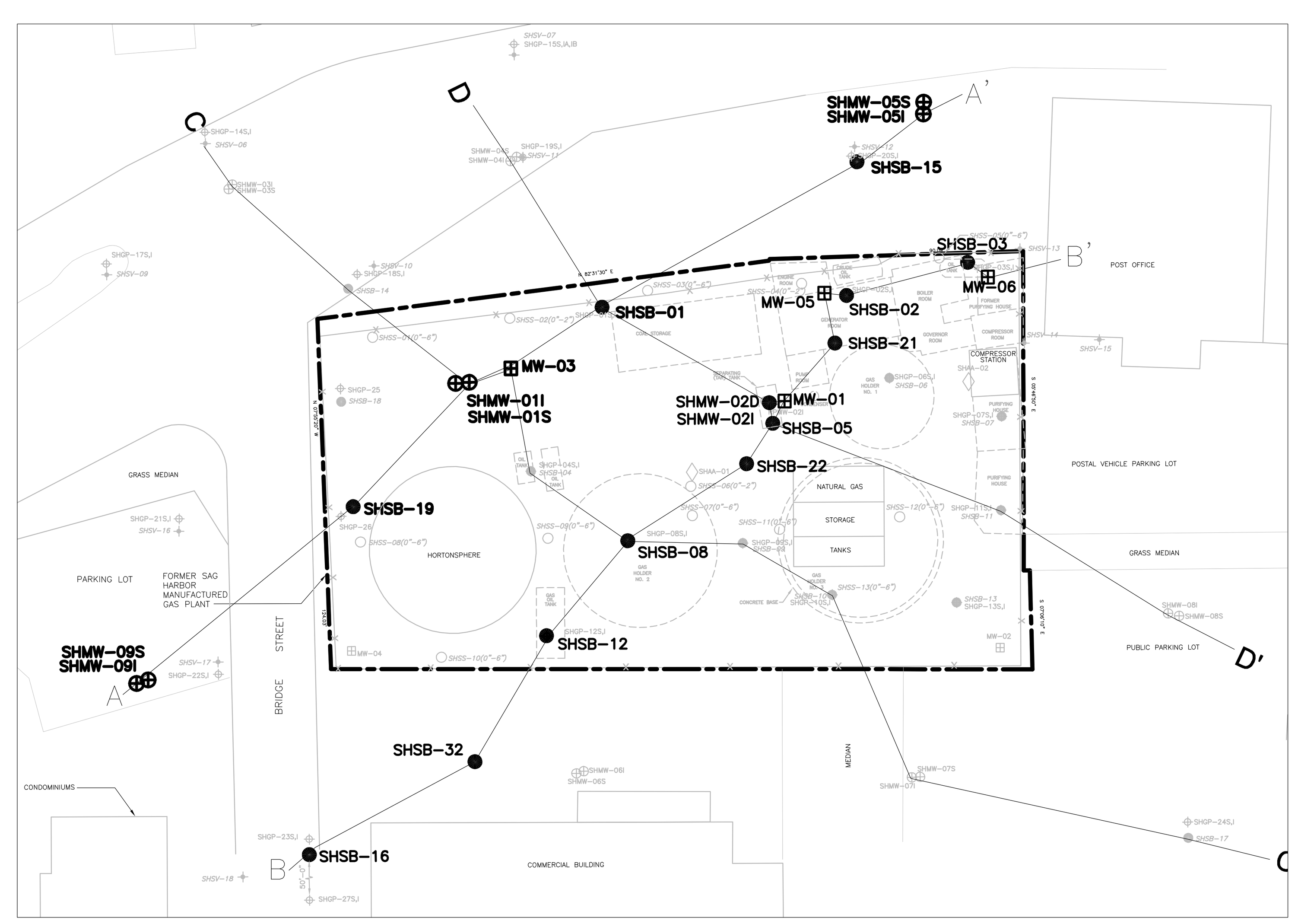
DATE: 02/18/11 DRWN: E.S.S./DEN

SITE LAYOUT MAP

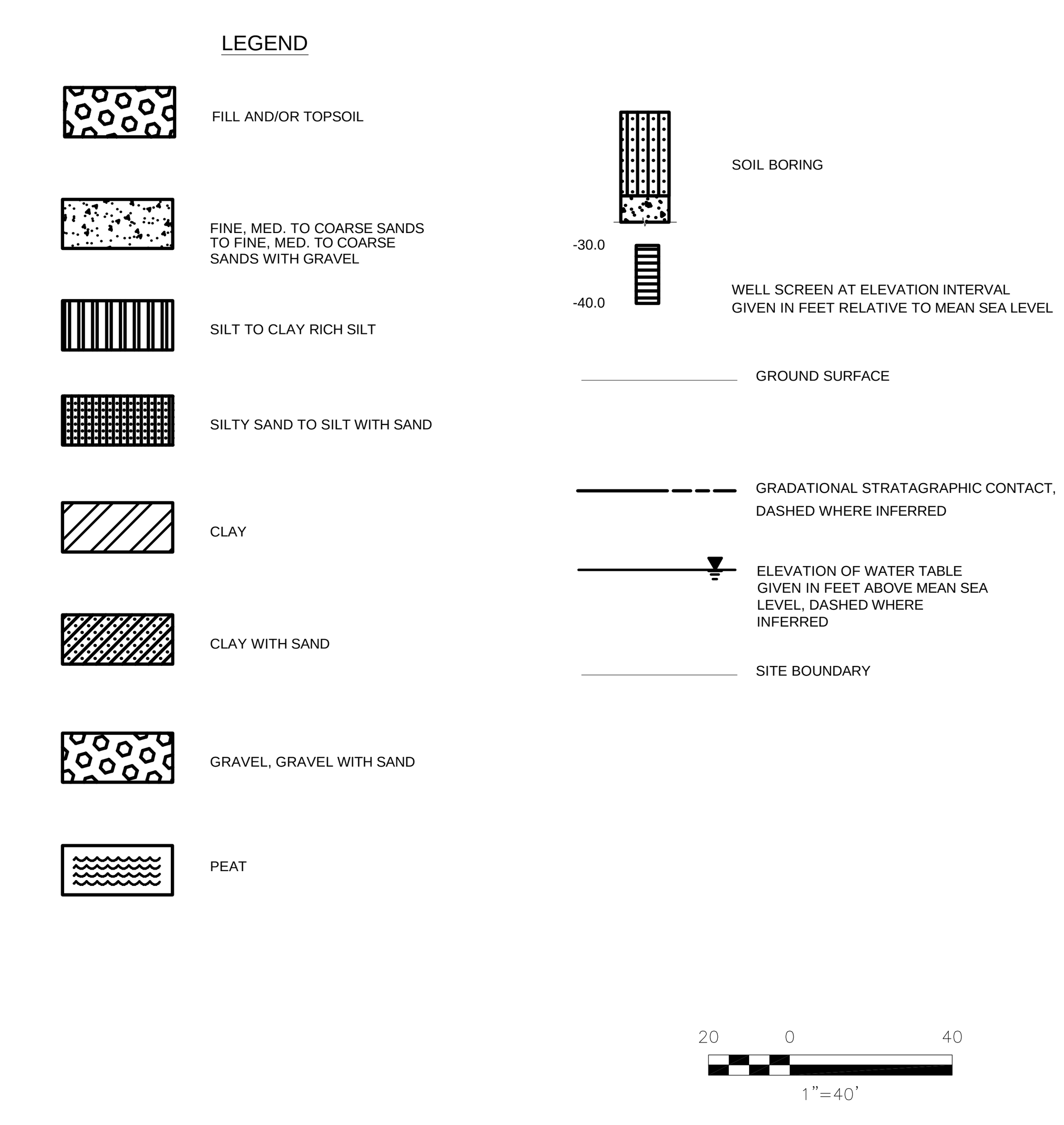
FIGURE 1-2

File: M:\SAG Harbor\FIGURE_1-2_SITE LAYOUT MAP.dwg Layout: FIGURE 1-2 User: schwartze Plotted: Feb 18, 2011 - 2:42pm Xref's:





KEY MAP
SHOWING CROSS-SECTION LINES
SCALE:1"=50'



SOURCE:
CROSS SECTIONS AND DETAILS ADAPTED FROM THE REPORT "FINAL REMEDIAL INVESTIGATION REPORT, SAG HARBOR FORMER MGP SITE", DATED DECEMBER 2003 BY DEVIRKA AND BARTULLI

AECOM

NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

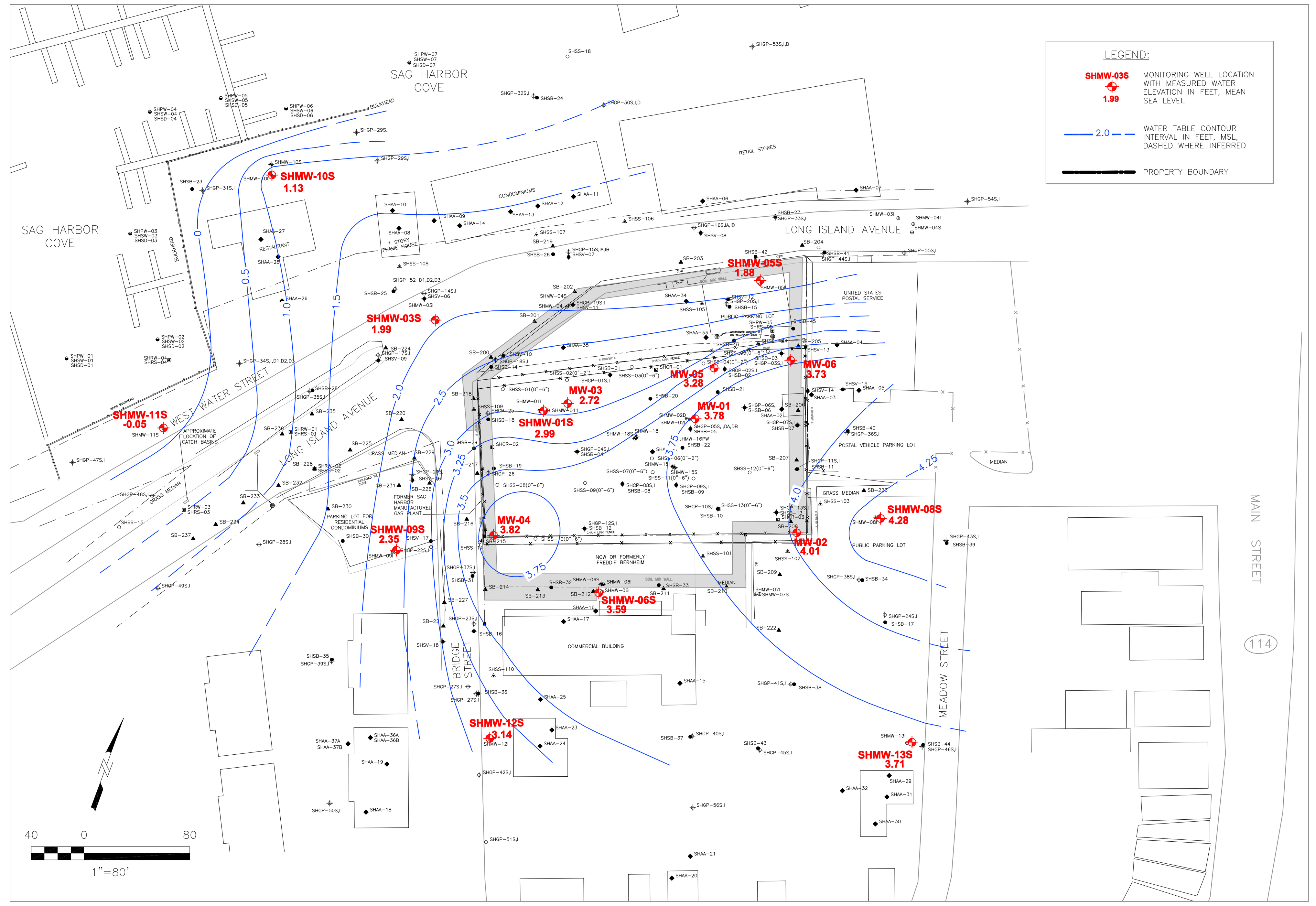
GEOLOGIC CROSS SECTIONS

DATE: 02/18/11 | DRWN: DLS/PGH

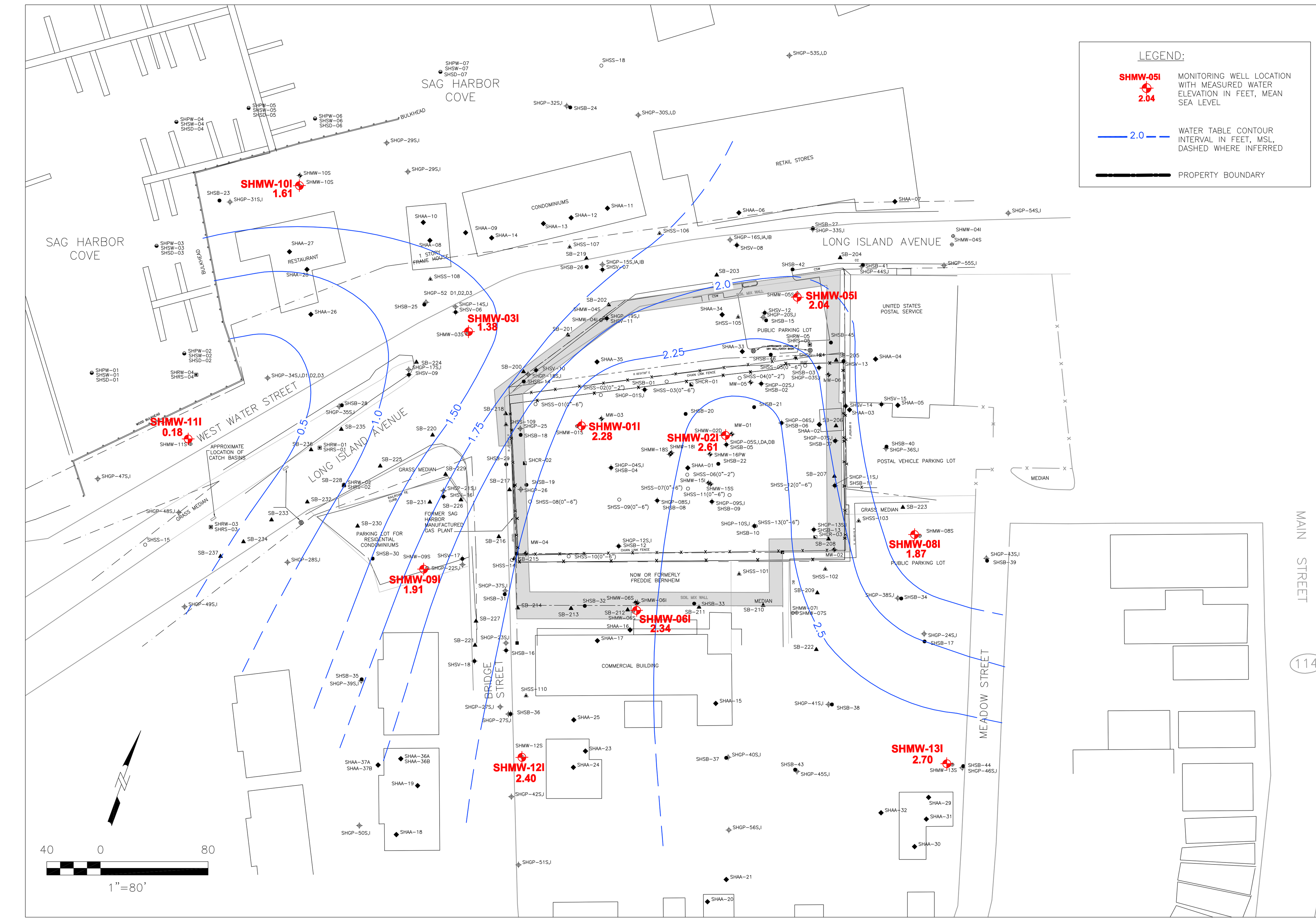
FIGURE 1-3

LEGEND:

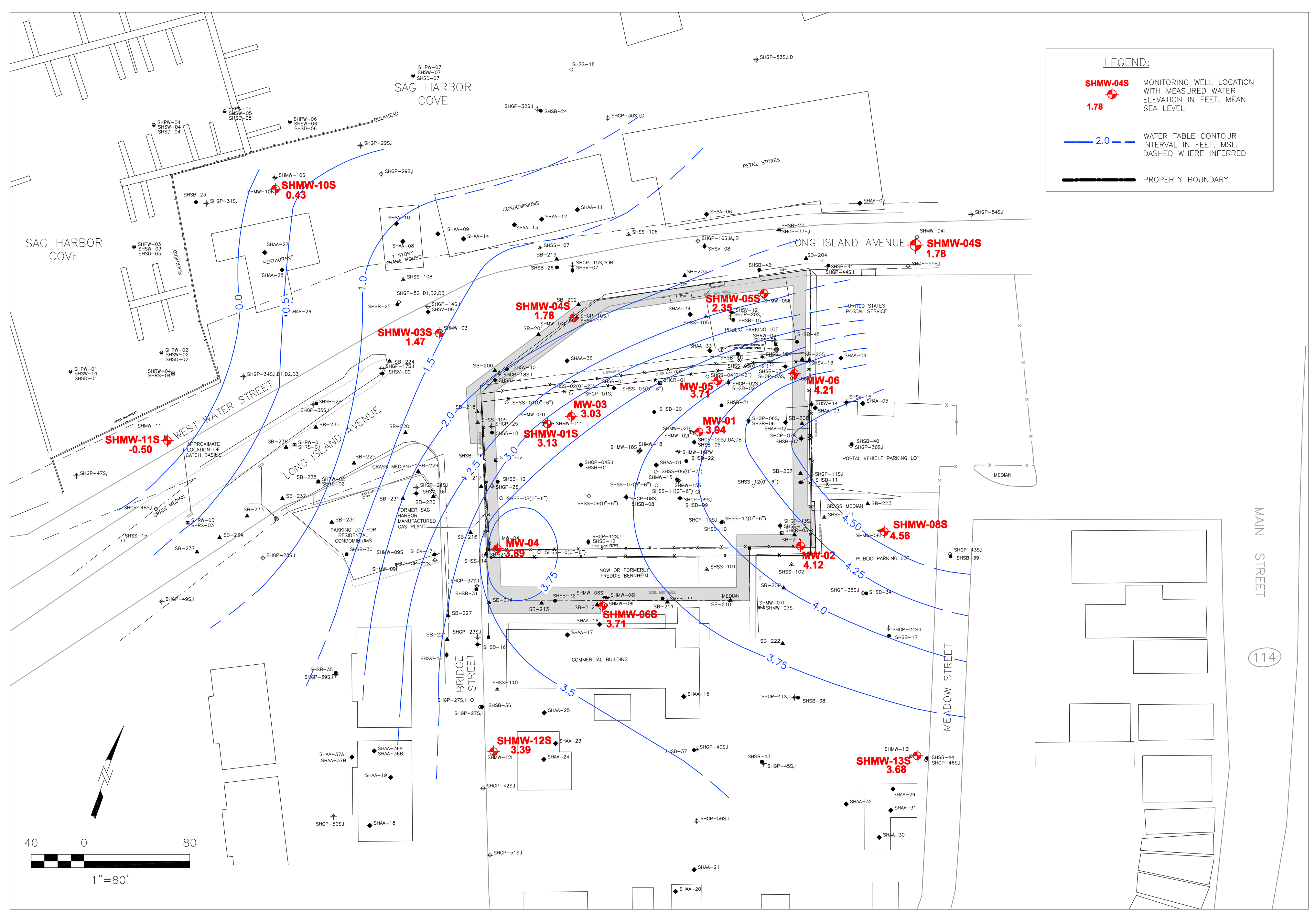
MW–01	⚘	EXISTING PIEZOMETER/WELL LOCATION FROM PREVIOUS INVESTIGATION
SB–22B	▲	EXISTING SOIL BORING LOCATION
SHSB–01	●	EXISTING SUBSURFACE SOIL SAMPLING LOCATION (CONTINUOUS SAMPLING)
SHMW–01S	⊕	EXISTING GROUNDWATER MONITORING WELL LOCATION (SHALLOW ZONE)
SHMW–01I	⊕	EXISTING GROUNDWATER MONITORING WELL LOCATION (INTERMEDIATE ZONE)
SHMW–01D	⊕	EXISTING GROUNDWATER MONITORING WELL LOCATION
SHMW–10S	⊕	COMPLETED SUPPLEMENTAL GROUNDWATER MONITORING WELL LOCATION (SHALLOW ZONE)
SHMW–10I	⊕	COMPLETED SUPPLEMENTAL GROUNDWATER MONITORING WELL LOCATION (INTERMEDIATE ZONE)
SHMW–18S	⚘	2007 PDI SAMPLE LOCATION
		EXISTING BUILDING
		SITE PROPERTY LINE
		ADJACENT PROPERTY LINE
		RIGHT OF WAY
		WOODEN BULKHEAD
		SOIL MIX WALL



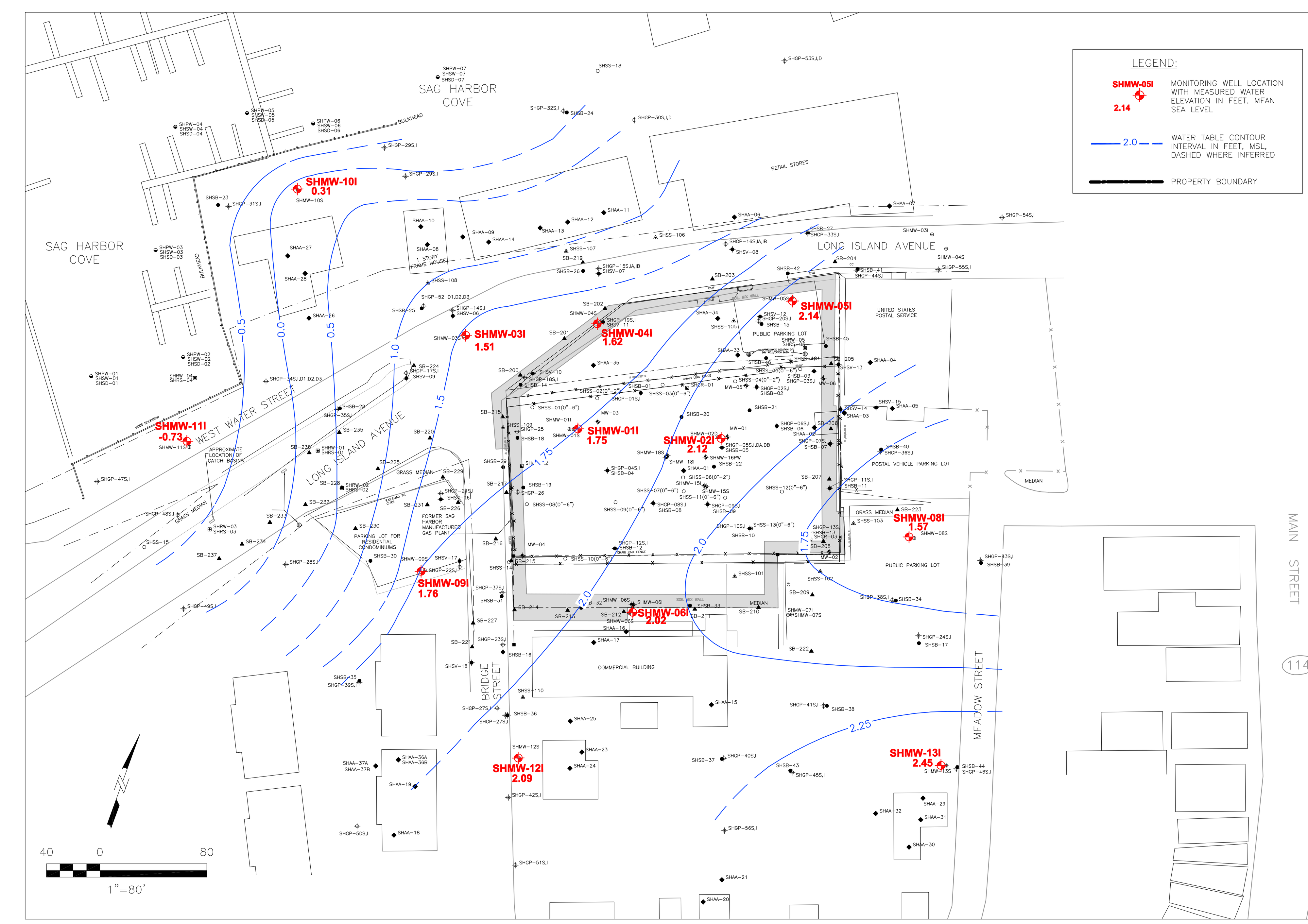
WATER TABLE CONTOUR MAP
HIGH TIDE - MAY 17, 2002



POTENTIOMETRIC SURFACE OF INTERMEDIATE GROUNDWATER ZONE
HIGH TIDE - MAY 17, 2002



WATER TABLE CONTOUR MAP
LOW TIDE - MAY 20, 2002



POTENTIOMETRIC SURFACE OF INTERMEDIATE GROUNDWATER ZONE
LOW TIDE - MAY 20, 2002

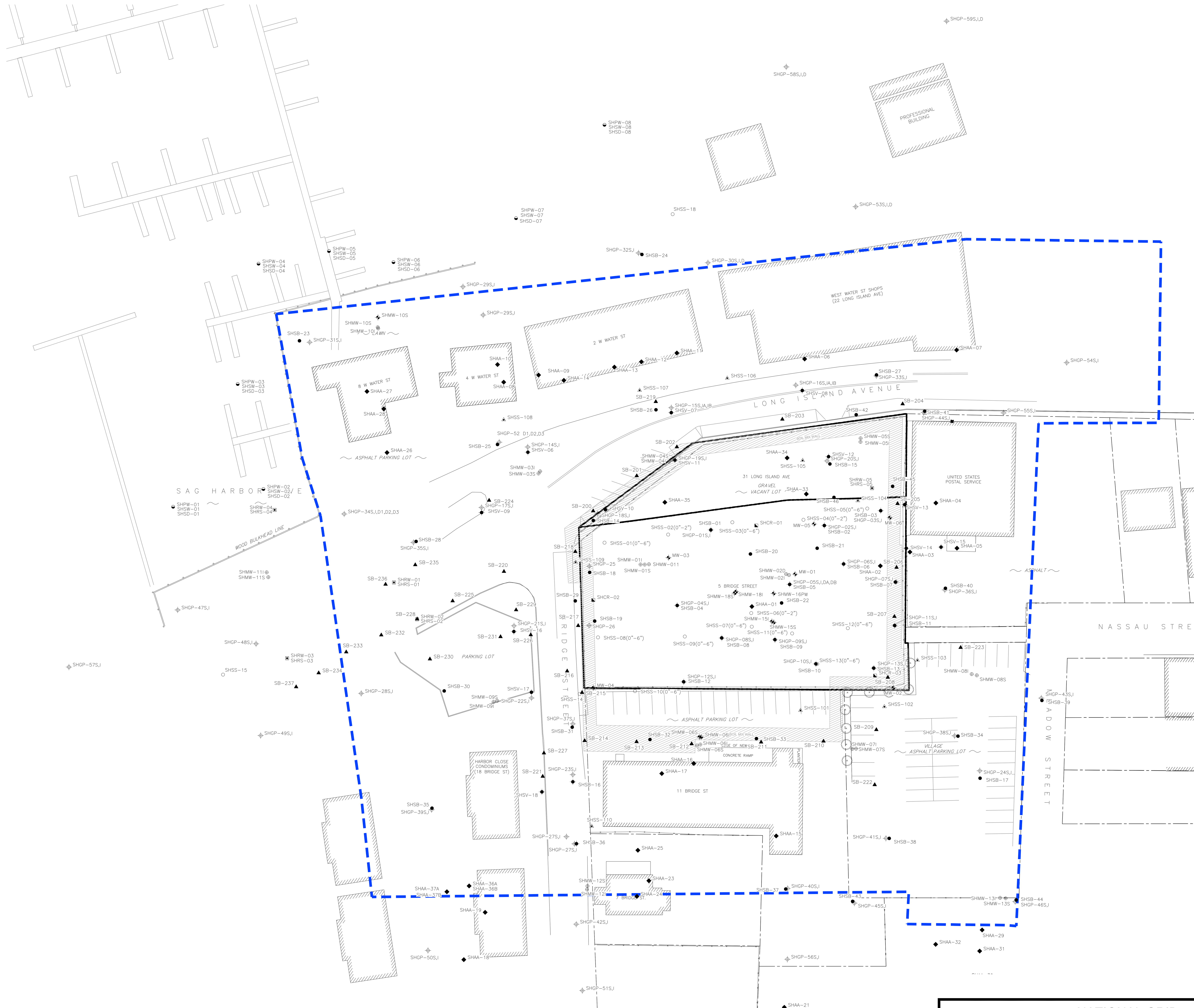
AECOM

NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

DATE: 02/18/11 DRWN: DLS/PGH

GROUNDWATER FLOW MAP

FIGURE 1-4



LEGEND:

MW-01	⊕	EXISTING PIEZOMETER/WELL LOCATION FROM PREVIOUS INVESTIGATION
SB-228	▲	EXISTING SOIL BORING LOCATION
SHSB-01	●	EXISTING SUBSURFACE SOIL SAMPLING LOCATION (CONTINUOUS SAMPLING)
SHMW-01S	⊕	GROUNDWATER MONITORING WELL LOCATION (S=SHALLOW ZONE, I=INTERMEDIATE ZONE, D=DEEP ZONE)
SHMW-18S	⊕	2007 PDI SAMPLE LOCATION
	- - -	LIMITS OF SMP
	▨	SOIL MIX WALL

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET ADJUST SCALE ACCORDINGLY

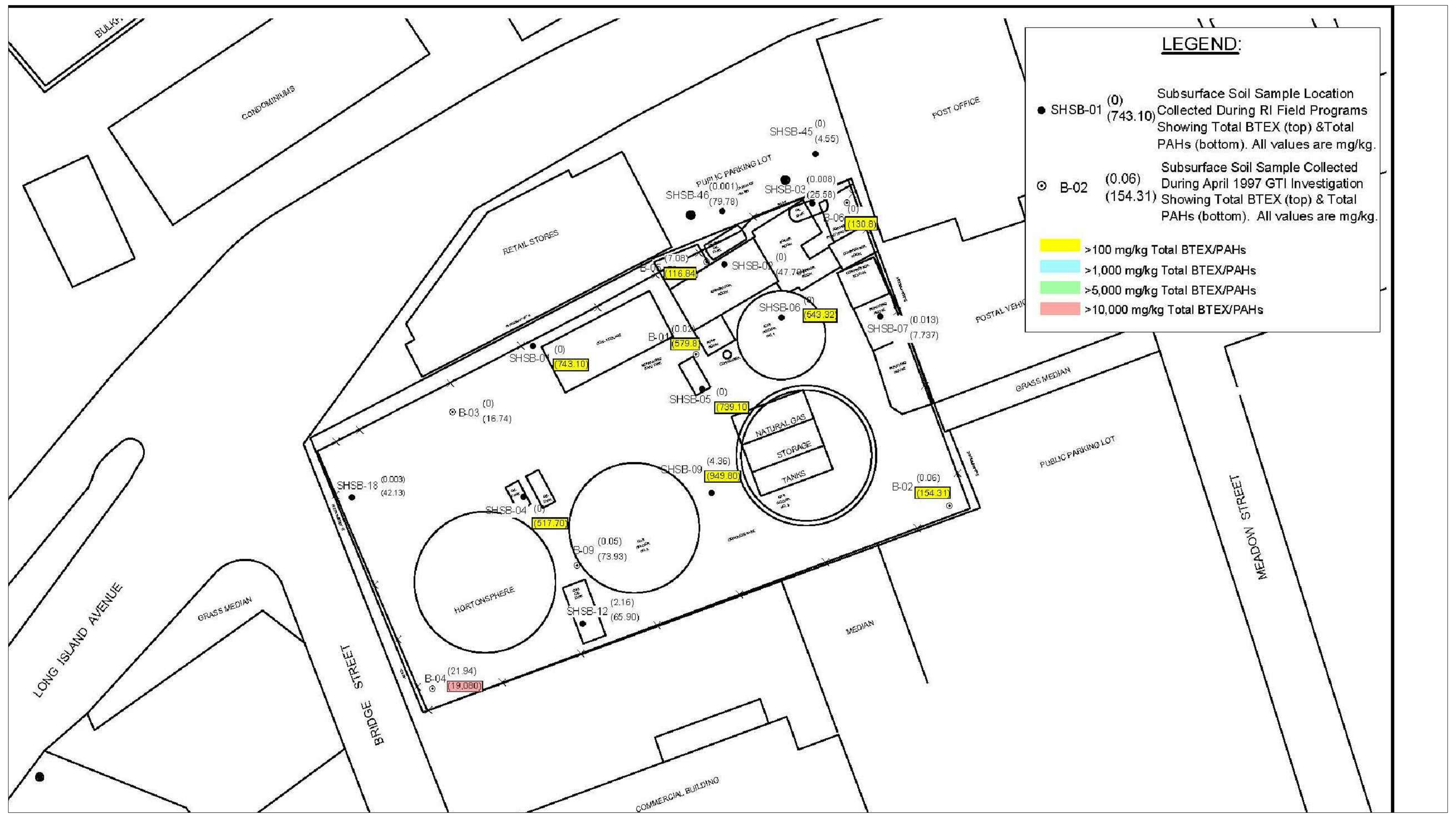
AECOM

NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

REMEDIAL INVESTIGATION SAMPLING LOCATIONS

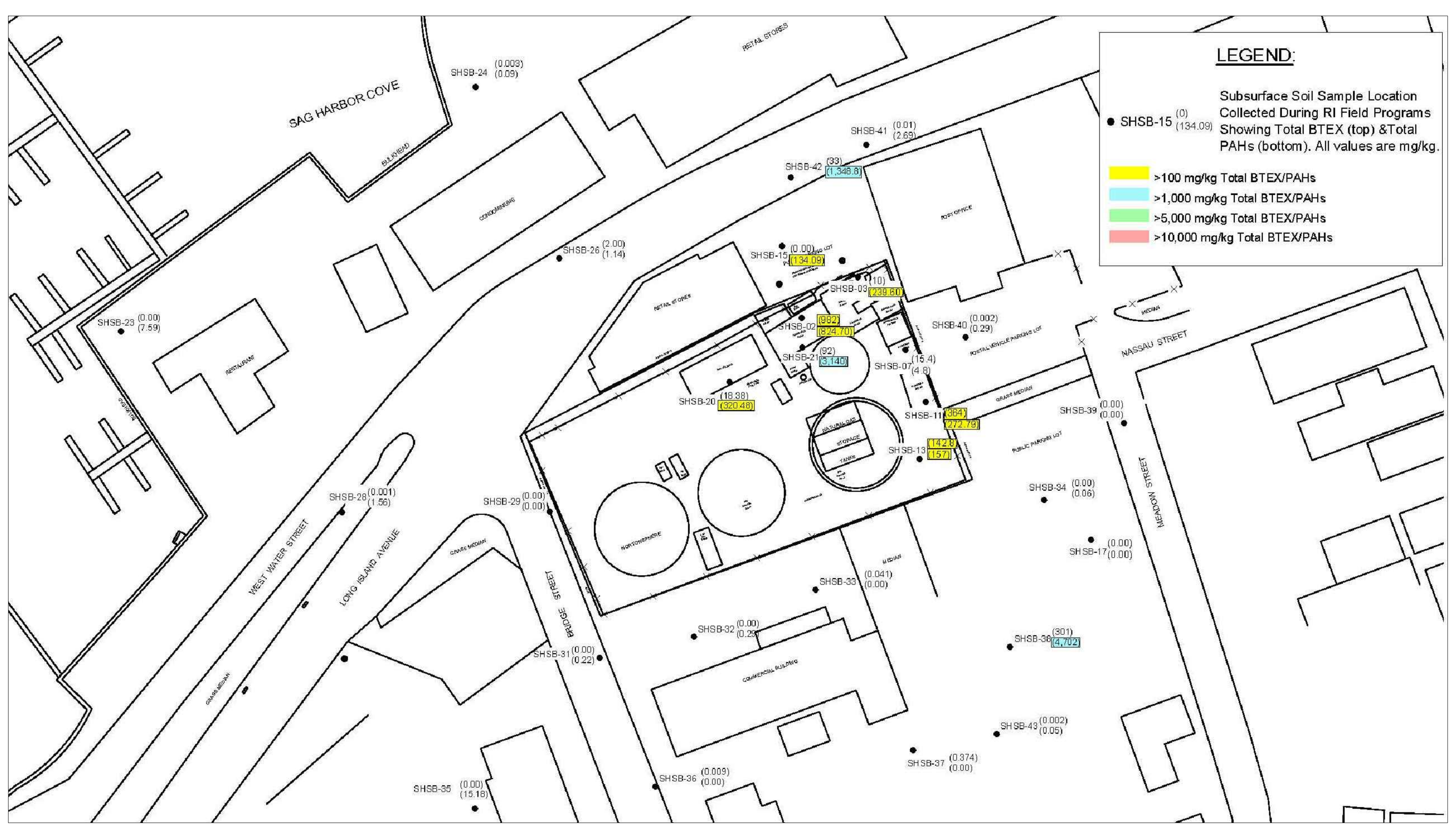
DATE: 02/18/11 | DRWN: DLS/PGH(E.S.S.)

FIGURE 1-5



TOTAL BTEX/PAHs IN SHALLOW SUBSURFACE SOIL
(0-2 FEET)

TOTAL BTEX/PAHs IN SHALLOW SUBSURFACE SOIL
(2-8 FEET)



TOTAL BTEX/PAHs IN INTERMEDIATE SUBSURFACE SOIL
(8-18 FEET)

TOTAL BTEX/PAHs IN DEEP SUBSURFACE SOIL
(GREATER THAN 18 FEET)

NOT TO SCALE

SOURCE:
SOIL DATA ADAPTED FROM THE "FINAL REMEDIAL INVESTIGATION WORK PLAN, SAG HARBOR FORMER MGP SITE" DATED DECEMBER 2004 BY DVIRKA AND BARTICULLI

AECOM

NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

PRE-REMEDIAL ACTION EXTENT OF MGP TAR CONTAMINATION IN SOILS

DATE: 02/20/14 | DRWN: DLS/PGH

FIGURE 1-6

AECOM

NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

DATE: 02/18/11 | DRWN: DLS/PGH(E.S.S.)

EXTENT OF GROUNDWATER CONTAMINATION

FIGURE 1-7

AECOM

NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

EXTENT OF REMEDIAL ACTION

DATE: 02/18/11 | DRWN: DLS-E.S.S./DEN

FIGURE 1-8

SHMW-10S ▲	SOIL BORING LOCATION
●	SOIL BORING LOCATION WITH VISUAL OBSERVATION OF CONTAMINATION AND/OR EXCEEDANCES OF THE NYSDEC RESTRICTED USE RESIDENTIAL SOIL CLEANUP OBJECTIVES (mg/kg) (SEE NOTE)
SHSB-20(101.0')	BORING ID (TOTAL DEPTH)
(9-11')	DEPTH INTERVAL IN FEET BGS WHERE VISUAL IMPACTS WERE OBSERVED (SEE NOTE)
ND	NOT DETECTED
J	ESTIMATED VALUE
B	VALUE IS GREATER THAN CRDL, BUT LESS THAN OR EQUAL TO IDL
D	COMPOUND QUATITATED ON A DILUTED SAMPLE
**	EXCEEDANCES FOR THE NYSDEC UNRESTRICTED USE SOIL CLEANUP OBJECTIVES (mg/kg)
BOLD	EXCEEDANCES FOR THE NYSDEC RESTRICTED USE RESIDENTIAL SOIL CLEANUP OBJECTIVES (mg/kg)
	LOCATION OF VISUAL IMPACTS OBSERVED DURING REMEDIAL ACTION IMPLEMENTATION
SB-226(10.0') ▲	SOIL SAMPLES NOT COLLECTED AT THIS LOCATION
	LIMITS OF SMP
	SOIL MIX WALL

NOTE: DEPTH INTERVAL WITH A "" INDICATE ONLY EXCEEDANCE OF THE NYSDEC RESTRICTED USE RESIDENTIAL SOIL CLEANUP OBJECTIVES. NO VISUAL CONTAMINATION OBSERVED AT THESE LOCATIONS.

* SAMPLE COLLECTED FROM SHSB-02D LOCATION, REPORTED IN SHSB-05 LOCATION

Chemical	6NYCRR Part 375 Track 1 UNRESTRICTED USE	6NYCRR Part 375 Track 4 RESTRICTED USE RESIDENTIAL
BTEX (mg/kg)		
Benzene	0.06	4.8
Toluene	0.7	100
Ethylbenzene	1	41
Xylene, total	0.26	100
PAHs (mg/kg)		
Acenaphthene	20	100
Acenaphthylene	100	100
Anthracene	100	100
Benz[a]anthracene	1	1
Benzo[a]pyrene	1	1
Benzo[b]fluoranthene	1	1
Benzo[g,h,i]perylene	100	100
Benzo[k]fluoranthene	0.8	3.9
Chrysene	1	3.9
Dibenz[a,h]anthracene	0.33	0.33
Dibenzofuran	7	59
Fluoranthene	100	100
Fluorene	30	100
Indeno[1,2,3-cd]pyrene	0.5	0.5
Methylnaphthalene,2-	NE	NE
Naphthalene	12	100
Phenanthrene	100	100
Pyrene	100	100

Chemical	*SHSB-04 (6-8) 10/26/2010	*SHSB-04 (13-15) 10/26/2010
Location	MGP	MGP
BTEX (mg/kg)		
Xylene, Total	1.4**	0.012 U
PAHs (mg/kg)		
Benz[a]anthracene	**5.3**	**5.8**
Benzo[a]pyrene	**4.1**	**4.4**
Benzo[b]fluoranthene	**3.3**	**4**
Chrysene	**4.3**	**4.3**
Dibenz[a,h]anthracene	**0.5**	**0.6**
Naphthalene	31**	31**

Chemical	SHSB-04A (6-9) 10/26/2010	SHSB-04A (13-15) 10/26/2010	*SHSB-04A (5-5.5) 11/1/2010	*SHSB-04A (6-9) 11/1/2010	*SHSB-04A (10.5-13.5) 11/1/2010
Location	MGP	MGP	MGP	MGP	MGP
BTEX (mg/kg)					
Benzene	0.002 J	0.012 U	**0.067**	0.056 U	**4.9**
Ethylbenzene	0.77	0.012 U	1.1**	17**	25**
Xylene, Total	1.4**	0.012 U	1.1**	15**	0.22
PAHs (mg/kg)					
Acenaphthene	18	18	59**	240**	31**
Benz[a]anthracene	**4.1**	**4.4**	**60**	**54**	**7.6**
Benzo[a]pyrene	**3.3**	**4**	**24**	**46**	**5.4**
Benzo[b]fluoranthene	**1.5**	**1.2**	**37**	**28**	**6.1 J**
Benzo[k]fluoranthene	1.5**	1.2**	**12 J**	**18**	1.8 J**
Chrysene	**4.3**	**4.3**	**56**	**46**	**6.7**
Dibenz[a,h]anthracene	**0.5**	**0.6**	**3.5 J**	**4.3 J**	**0.48 J**
Fluoranthene	9.6	10	98	**120**	16
Indeno[1,2,3-cd]pyrene	**1.3**	**1.3**	**9.7**	**11**	**1.3 J**
Naphthalene	31**	31**	10	760**	85**
Phenanthrene	35	37	**320**	**400**	53
Pyrene	13	14	**130**	**160**	22

SHSB-26		
Sample Interval (ft bgs)	5-6	16-18
Date	4/8/2002	4/8/2002
Acenaphthene	96**	0.12J
Anthracene	**120**	0.094 J
Benzo(a)anthracene	**110**	0.07J
Benzo(a)pyrene	**75**	ND
Benzo(b)fluranthene	**61**	ND
Benzo[k]fluoranthene	**34**	ND
Chrysene	**110**	0.078J
Dibenz[g,h,i]perylene	**9.4J**	ND
Fluoranthene	**190**	0.16 J
Fluorene	**110**	0.078 J
Indeno[1,2,3-cd]pyrene	**26**	ND
Phenanthrene	**240**	0.32 J
Pyrene	**280**	0.22 J

SHSS-107	
Sample Interval (ft bgs)	0-2"
Date	6/1/2004
Benz[a]anthracene	**1.7**
Benzo(a)pyrene	**1.5J**
Benzo[b]fluoranthene	**1.2J**
Benzo[k]fluoranthene	2J**
Chrysene	1.5**

SHSB-15		
Sample Interval (ft bgs)	26-28	48-50
Date	3/6/2000	3/7/2000
Benz[a]anthracene	**5**	ND
Benzo(a)pyrene	**3.8**	ND
Benzo[b]fluoranthene	**3.1**	ND
Benzo(k)fluoranthene	0.92J**	ND
Chrysene	**4.5**	ND
Dibenz[a,h]anthracene	**0.36 J**	ND
Indeno[1,2,3-cd]pyrene	**1.5 J**	ND
Naphthalene	22**	ND

SHSB-42		
Sample Interval (ft bgs)	8-10	20-22
Date	4/15/2002	4/15/2002
Acenaphthene	**110 D**	ND
Benz[a]anthracene	**39D**	ND
Benzo[a]pyrene	**31DJ**	ND
Benzo[b]fluoranthene	**18**	ND
Benzo[k]fluoranthene	**6.8**	ND
Chrysene	**36 D**	ND
Dibenz[a,h]anthracene	**2.8**	ND
Ethylbenzene	16**	ND
Fluorene	51D**	ND
Naphthalene	**390 D**	ND
Indeno[1,2,3-cd]pyrene	**10**	ND
Phenanthrene	**210 D**	ND
Xylene(total)	17**	ND
Pyrene	**120 D**	ND

SHSB-02				
Chemical	SHSB-02 (11-11.5) 10/26/2010	*SHSB-02 (30-30.5) 10/26/2010	*SHSB-02 (70-72) 10/26/2010	Duplicate of: SHSB-02 (70-72) 10/26/2010
Location	MGP	MGP	MGP	MGP
BTEX (mg/kg)				
Benzene	0.086**	0.057 UJ	0.012 U	0.008
Ethylbenzene	0.86	17**	0.006	0.02
Xylene, Total	2.4**	32**	0.013 J	0.044 J
PAHs (mg/kg)				
Acenaphthene	22**	87 J**	0.4 U	0.38 U
Acenaphthylene	3	**390**	0.4 U	0.38 U
Anthracene	11	**220**	0.4 U	0.38 U
Benz[a]anthracene	**11**	**150**	0.4 U	0.38 U
Benzo[a]pyrene	**10**	**130**	0.4 U	0.38 U
Benzo[b]fluoranthene	**7.8**	**82 J**	0.4 U	0.38 U
Benzo[k]fluoranthene	2.5**	**32**	0.4 U	0.38 U
Chrysene	**10**	**140**	0.4 U	0.38 U
Dibenz[a,h]anthracene	**1.2**	**8.7 J**	0.4 U	0.38 U
Dibenzofuran	0.81	15**	0.4 U	0.38 U
Fluoranthene	22	**320**	0.4 U	0.14 J
Fluorene	10	**210**	0.4 U	0.38 U
Indeno[1,2,3-cd]pyrene	**3.7**	**27**	0.4 U	0.38 U
Naphthalene	37**	**1600**	0.4 U	0.38 U
Phenanthrene	51	**970**	**0.14 J**	0.29
Pyrene	31	**440**	**0.092 J**	0.18 J

SHSB-02		
Sample Interval (ft bgs)	16-18'	52-54'
Date	3/20/2000	3/22/2000
BTEX (mg/kg)		
Benzene	**92**	0.001 U
Toluene	**270**	0.001
Ethylbenzene	**240**	0.003
Xylene, total	**380**	0.005
PAHs (mg/kg)		
Acenaphthene	38**	0.12 J
Acenaphthylene	54	0.21 J
Anthracene	31	0.21 J
Benz[a]anthracene	**16 J**	0.15 J
Benzo[a]pyrene	**12 J**	0.13 J
Benzo[b]fluoranthene	**9.4 J**	0.11 J
Benzo[k]fluoranthene	**4 J**	0.39 U
Chrysene	**14 J**	0.14 J
Indeno[1,2,3-cd]pyrene	**5 J**	0.053 J
Methylnaphthalene,2-	120**	0.27 J
Naphthalene	**270**	0.31 J
Phenanthrene	**160**	0.83

SHSB-21		
Sample Interval (ft bgs)	15-17	71-73
Date	3/27/2002	3/28/2002
Benzene	**11**	ND
Benz[a]anthracene	**1.4**	ND
Benzo(a)pyrene	**1.2**	ND
Chrysene	1.4**	ND
Ethylbenzene	28**	ND
Toluene	16**	ND
Xylene (total)	37**	0.004

SHSB-11	
Sample Interval (ft bgs)	30-32
Date	3/23/2000
Benz[a]anthracene	**1.2**
Benzo(a)pyrene	**1.1**
Chrysene	1.0**
Indeno[1,2,3-cd]pyrene	**0.52**

SHSB-13		
Sample Interval (ft bgs)	18-20	34-36
Date	3/27/2000	3/27/2000
Benz[a]anthracene	**2**	ND
Benzo(a)pyrene	**1.6**	ND
Benzo[b]fluoranthene	**1.2**	ND
Chrysene	1.6**	ND
Indeno[1,2,3-cd]pyrene	**0.66**	ND

SHSS-103	
Sample Interval (ft bgs)	0-2"
Date	6/1/2004
Benz[a]anthracene	**1.2**
Benzo(a)pyrene	**1.1**
Benzo[b]fluoranthene	**1.3**
Benzo[k]fluoranthene	1.5**
Chrysene	1.5**

SB-223	
Sample Interval (ft bgs)	4-8
Date	5/1/2007
Benz[a]anthracene	**2.5**
Benzo(a)pyrene	**2.2**
Benzo[b]fluoranthene	**2.7**
Benzo(k)fluranthene	**1J**
Chrysene	**2.4**
Dibenz[a,h]anthracene	**0.43 J**
Indeno[1,2,3-cd]pyrene	**2.1 J**

SHSS-102	
Sample Interval (ft bgs)	0-2"
Date	6/1/2004
Benzo(a)pyrene	**1.2**
Benzo[b]fluoranthene	**1.6**
Benzo[k]fluoranthene	1.3**
Chrysene	1.2**
Indeno[1,2,3-cd]pyrene	**0.84**

	SHSB-07 4-5' 11/1/2010	SHSB-07 6.5-8.5' 11/1/2010	SHSB-07 16-18' 11/1/2010
	SHROW	SHROW	SHROW
BTEX (mg/kg)			
Benzene	ND	**0.45**	ND
Ethylbenzene	ND	**23**	ND
Xylene, total	ND	**16**	ND
PAHs (mg/kg)			
Acenaphthene	0.18 J	**410**	0.15 J
Anthracene	32	**180**	0.085 J
Benz[a]anthracene	**20**	**120**	ND
Benzo[a]pyrene	**26**	**91 J**	ND
Benzo[b]fluoranthene	**25**	**59 J**	ND
Benzo[k]fluoranthene	**15**	**37**	ND
Chrysene	**24**	**100**	ND
Dibenz[a,h]anthracene	**3.7 J**	**7.9 J**	ND
Dibenzofuran	ND	**19**	ND
Fluoranthene	29	**220**	0.11 J
Fluorene	0.63	**170**	0.078 J
Indeno[1,2,3-cd]pyrene	**12**	**22**	ND
Methylnaphthalene,2-	**0.83**	**460**	0.1 J
Naphthalene	1.9	**1400**	0.13 J
Phenanthrene	9.2	**690**	0.35
Pyrene	46	**310**	0.17 J

SB-222	
Sample Interval (ft bgs)	5-9
Date	5/1/2007
Acenaphthene	43**
Benzene	1.9**
Benz[a]anthracene	**21J**
Benzo[a]pyrene	**15J**
Benzo[b]fluoranthene	**12**
Dibenz[a,h]anthracene	**1.7J**
Indeno[1,2,3-cd]pyrene	**7**
Benzo[k]fluoranthene	**4.3**
Chrysene	**17 J**
Naphthalene	**110**
Toluene	27**
Xylene(total)	24**

SHSB-38		
Sample Interval (ft bgs)	8-10	12-14**
Date	4/8/2002	4/8/2002
Acenaphthene	**330**	1.2
Anthracene	**210**	0.64
Benzene	**14**	ND
Benzo(a)anthracene	**150**	0.45
Benzo[a]pyrene	**120**	0.35J
Benzo[b]fluoranthene	**81J**	0.22J
Benzo[k]fluoranthene	**60J**	0.19J
Chrysene	**150**	0.43J
Ethylbenzene	**140**	0.75
Fluoranthene	**300**	0.99
Fluorene	**190**	0.64
Indeno[1,2,3-cd]pyrene	**47J**	0.14J
Naphthalene	**1400**	5.3
Phenanthrene	**690**	2.3
Pyrene	**410**	1.3
Toluene	17**	0.16
Xylene, total	**130**	*0.78***

SHSB-37		
Sample Interval (ft bgs)	6-8	10-12 **
Date	4/12/2002	4/12/2002
Benzo(a)anthracene	**6.1**	ND
Benzo(a)pyrene	**4.0**	ND
Benzo[b]fluoranthene	**3**	ND
Benzo9k)fluoranthene	1.9**	ND
Chrysene	**6.2 D**	ND
Dibenz[a,h]anthracene	**0.39**	ND
Indeno[1,2,3-cd]pyrene	**1.2**	ND
Benzene	0.002	*0.36***

SHSS-110	
Sample Interval (ft bgs)	0-2"
Date	6/1/2004
Benz[a]anthracene	**1.1**
Benzo(a)pyrene	**1.5J**
Benzo[b]fluoranthene	**1.2 J**
Benzo[k]fluoranthene	2.1J**
Chrysene	1.2**
Indeno[1,2,3-cd]pyrene	**0.52 J**

SHSB-16		
Sample Interval (ft bgs)	6-8	50-52
Date	3/7/2000	3/8/2000
Benz[a]anthracene	**5**	ND
Benzo(a)pyrene	**3.8**	ND
Benzo[b]fluoranthene	**3**	ND
Benzo(k)fluranthene	0.98J**	ND
Chrysene	**4.6**	ND
Dibenz[a,h]anthracene	**0.41 J**	ND
Ethylbenzene	17**	ND
Indeno[1,2,3-cd]pyrene	**1.4**	ND
Naphthalene	83D**	ND
Xylene (total)	8.6**	ND

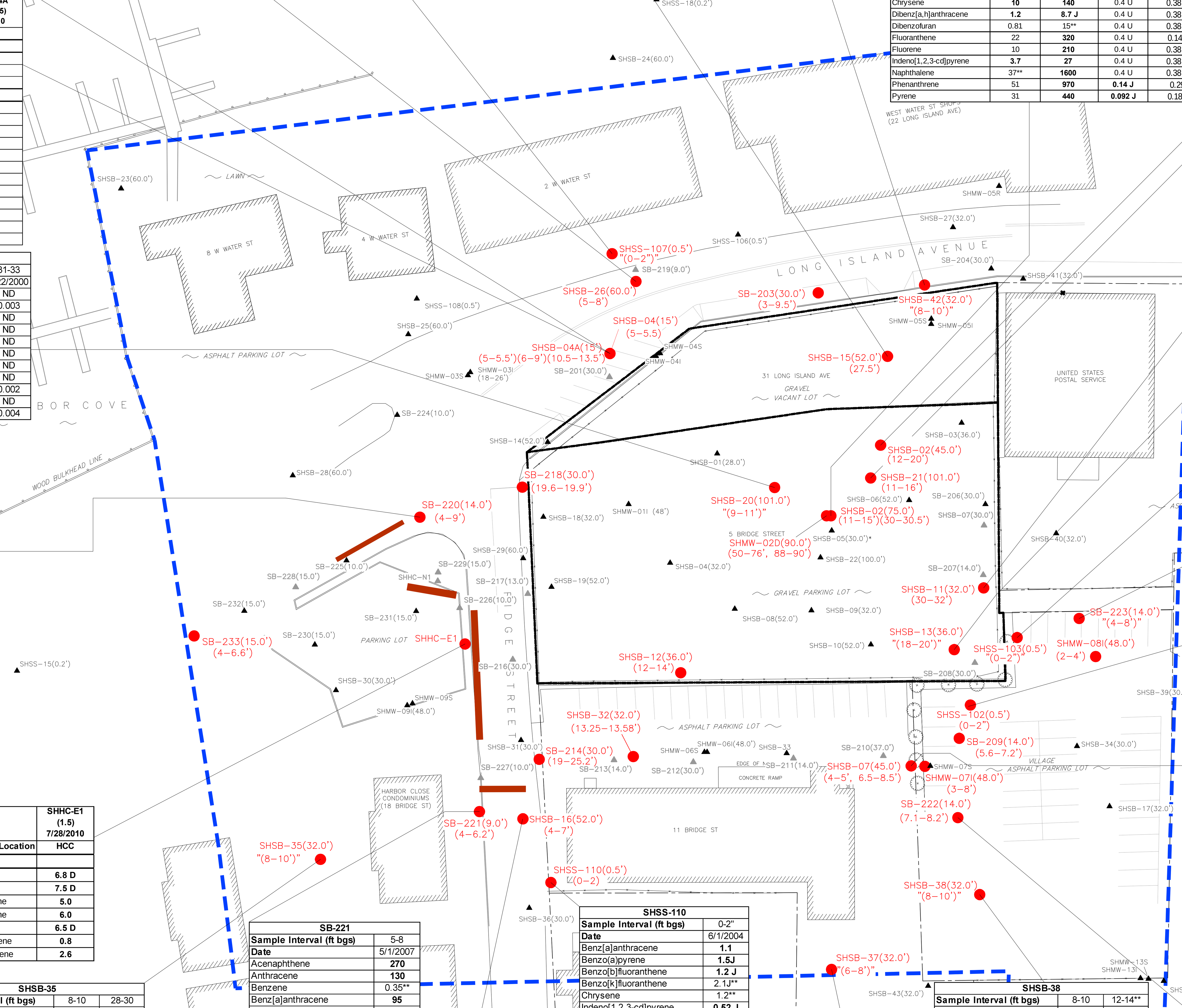
SB-221	
Sample Interval (ft bgs)	5-8
Date	5/1/2007
Acenaphthene	**270**
Anthracene	**130**
Benzene	0.35**
Benz[a]anthracene	**95**
Benzo[a]pyrene	**64**
Benzo[b]fluoranthene	**44J**
Benzo[k]fluoranthene	**17 J**
Chrysene	**82**
Dibenz[a,h]anthracene	**4J**
Dibenzofuran	11J**
Indeno[1,2,3-cd]pyrene	**23**
Fluoranthene	**170**
Fluorene	**100**
Napthalene	**790**
Phenanthrene	**450**
Pyrene	**250**
Toluene	7.2**
Xylene(total)	5.9**

SHSB-35		
Sample Interval (ft bgs)	8-10	28-30
Date	4/10/2002	4/10/2002
Benz[a]anthracene	**1.2**	ND
Benzo(a0pyrene	**1.1**	ND
Benzo[b]fluoranthene	**1.4**	ND
Chrysene	1.3**	ND
Indeno[1,2,3-cd]pyrene	**0.72**	ND

Chemical	SHHC-E1 (1.5) 7/28/2010
Location	HCC
PAHs (mg/kg)	
Benz[a]anthracene	**6.8 D**
Benzo[a]pyrene	**7.5 D**
Benzo[b]fluoranthene	**5.0**
Benzo[k]fluoranthene	**6.0**
Chrysene	**6.5 D**
Dibenz[a,h]anthracene	**0.8**
Indeno[1,2,3-cd]pyrene	**2.6**

SB-220	
Sample Interval (ft bgs)	4-9
Date	5/1/2007
Acenphthene	58**
Benzene	0.097J**
Benzo(a)anthracene	**30J**
Benzo(a)pyrene	**25J**
Benzo(a)fluranthene	**16J**
Chrysene	**24 J**
Indeno[1,2,3-cd]pyrene	**8J**
Naphthalene	**160**
Phenanthrene	**160**
Toluene	7.4**
Xylene(total)	7.4**

SHSB-20		
Sample Interval (ft bgs)	9-11	31-33
Date	3/21/2000	3/22/2000
Acenaphthene	30D**	ND
Benzene	0.55**	0.003
Benzo(a)anthracene	**12D**	ND
Benzo(a)pyrene	**6.3**	ND
Benzo[b]fluoranthene	**4.9**	ND
Benzo(k)fluranthene	2.1**	ND
Chrysene	**12D**	ND
Dibenz(a,h)anthracene	**0.82**	ND
Ethylbenzene	6.6**	0.002
Naphthalene	60D**	ND
Xylene (total)	11**	0.004



VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET ADJUST SCALE ACCORDINGLY

20 0 40

1"=40'

AECOM

NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

DATE: 02/21/14 DRWN: DLS-E.S.S./DEN

EXTENT OF REMAINING CONTAMINATION IN SOILS

FIGURE 1-9

LEGEND:

MW-01	EXISTING PIEZOMETER/WELL LOCATION FROM PREVIOUS INVESTIGATION
SHMW-01S	EXISTING GROUNDWATER MONITORING WELL LOCATION (SHALLOW ZONE)
SHMW-01I	EXISTING GROUNDWATER MONITORING WELL LOCATION (INTERMEDIATE ZONE)
SHMW-01D	EXISTING GROUNDWATER MONITORING WELL LOCATION (DEEP ZONE)
SHMW-10S	COMPLETED SUPPLEMENTAL GROUNDWATER MONITORING WELL LOCATION (SHALLOW ZONE)
SHMW-10I	COMPLETED SUPPLEMENTAL GROUNDWATER MONITORING WELL LOCATION (INTERMEDIATE ZONE)
SHMW-18S	2007 PDI SAMPLE LOCATION
SHGP-01S	EXISTING GROUNDWATER PROBE LOCATION (SHALLOW ZONE)
SHGP-01I	EXISTING GROUNDWATER PROBE LOCATION (INTERMEDIATE ZONE)
SHGP-01D	EXISTING GROUNDWATER PROBE LOCATION (DEEP ZONE)
(dashed blue line)	LIMITS OF SMP
(hatched)	SOIL MIX WALL
SHGP-39S,I*	GROUNDWATER SAMPLE EXCEEDS NYSDEC CLASS GA GW CRITERIA
*	EXCEEDANCES IN SHALLOW AQUIFER ZONE ONLY
**	EXCEEDANCES IN INTERMEDIATE AQUIFER ZONE ONLY
SHGP-32I,S	SUSPECTED FUEL IMPACTS NOT ASSOCIATED WITH MGP OPERATIONS OR RESIDUALS
ND	NOT DETECTED
J	ESTIMATED VALUE
B	VALUE IS GREATER THAN CRDL, BUT LESS THAN OR EQUAL TO IDL
D	COMPOUND QUATITATED ON A DILUTED SAMPLE

	NYSDEC Class GA Groundwater Criteria (µg/L)
Acenapthhene	20
Anthracene	50
Benz[a]anthracene	0.002
Benzene	1
Benzo[b]fluoranthene	0.002
Benzo[k]fluoranthene	0.002
Chrysene	0.002
Fluoranthene	50
Fluorene	50
Indeno[1,2,3-cd]pyrene	0.002
Napthalene	10
Napthalene	10
Phenanthrene	50
Pyrene	50
Toluene	5
Xylens (Total)	5

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET ADJUST SCALE ACCORDINGLY

20 0 40
1"=40'

AECOM

NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

EXTENT OF REMAINING CONTAMINATION IN GROUNDWATER

DATE: 02/18/11
DRWN: DLS — E.S.S./DEN
FIGURE 1-10

LEGEND:

- PERVIOUS AND IMPERVIOUS COVER SYSTEM
- PERVIOUS COVER (SOIL AND GRAVEL)
- IMPERVIOUS COVER SYSTEM (CONCRETE, ASPHALT, AND BUILDING FOUNDATIONS)

AECOM

NATIONAL GRID
SAG HARBOR FORMER MGP SITE
SAG HARBOR, NEW YORK

DATE: 02/18/11 | DRWN: E.S.S./DEN

SOIL AND COMPOSITE COVER SYSTEM LOCATIONS

FIGURE 2-1

File: M:\SAG Harbor\FIGURE_2-1_SOIL-COMPOSITE LOCATIONS.dwg Layout: FIGURE 2-1 User: schwartze Plotted: Feb 18, 2011 - 2:46pm Xref's:

Appendix A

Excavation Work Plan

AECOM

Excavation Work Plan

(Appendix A of the Site Management Plan)

Former Sag Harbor MGP Site
Sag Harbor, New York
NYSDEC Site No.: 1-52-159
Order on Consent Index #: D1-0002-98-11

February 2014

Contents

List of Figures

1.0 Notification

At least 15 business days prior to the start of any activity that is anticipated to encounter remaining contamination, the Property owner(s) or their representative(s) will notify National Grid and New York State (NYS) Department of Environmental Conservation (DEC). Currently, this notification will be made to:

National Grid Project Manager:
Name: Theodore Leissing
Address: 175 E Old Country Road, Hicksville, NY 11801
Telephone: (516) 545-2563
Fax: (516) 545-2582
Email: theodore.leissing@us.ngrid.com

New York State Department of Environmental Conservation Project Manager:
Name: Doug MacNeal
Address: New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau C
625 Broadway Albany, New York 12233-7014
Telephone: (518) 402-9662
Fax: (518) 402-9679
Email: dkmacnea@gw.dec.state.ny.us

This notification will include:

- A detailed description of the work to be performed, including the location and aerial extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this Excavation Work Plan ;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan, in electronic format, if it differs from the HASP provided in Appendix B of the Site Management Plan [AECOM, 2014], otherwise, a statement that the HASP provided in Appendix B will be followed;
- Identification of disposal facilities for potential waste streams; and

- Identification of sources of any anticipated backfill, along with all required chemical testing results.

2.0 Excavation Work Plan

2.1 Soil Screening Methods

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the Certificate of Completion, and while the Site Management Plan is in effect.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

2.2 Stockpile Methods

Soil stockpiles will be placed on a waterproof barrier and continuously encircled with a berm. Contaminated water draining from the soils will be collected from inside the bermed area and disposed of off-site in an appropriate manner. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the New York State Department of Environmental Conservation. Stockpiled material not being used will be removed within 30 days following disposal facility characterization.

2.3 Materials Excavation and Load Out

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Excavation Work Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under the Site Management Plan is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation requirements (and all other applicable transportation requirements).

A truck wash will be operated on the project site. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete.

Locations where vehicles enter or exit the project site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

2.4 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the project site will be lined with 6-mil polyethylene sheeting large enough to fully cover the top of the load. Additional automatic mesh tarps will be used to secure the liners. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks transporting residual MGP contamination will be decontaminated prior to leaving the project site. Decontaminated water, if any, will be collected and disposed of off-site in an appropriate manner.

The following truck transport routes are recommended for transporting residual MGP contamination:

1. Trucks will be required to enter and exit the project site via County Route 79 in Sag Harbor.
2. The entry truck route (Figure 1) shall be as follows:
   - Traveling north on County Route 79
   - Left onto Spring Street.
   - Right onto Bridge Street
   - Right off of Bridge Street into the project site.
3. The exit trucking route (Figure 2) shall be:
   - Head onto Long Island Avenue
   - Left onto Glover Street
   - Right onto County Route 79

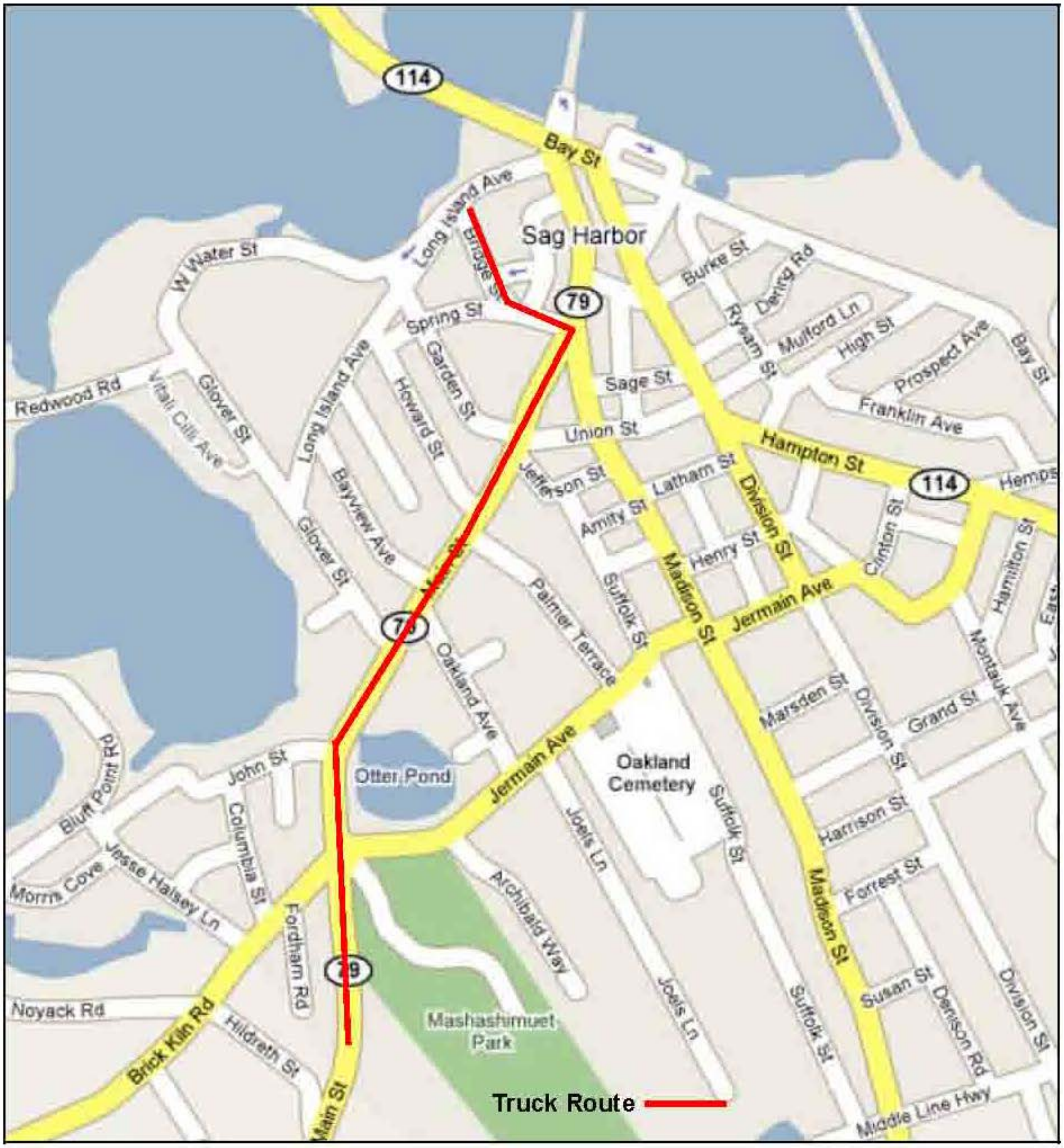


Figure 1: Entry Trucking Route

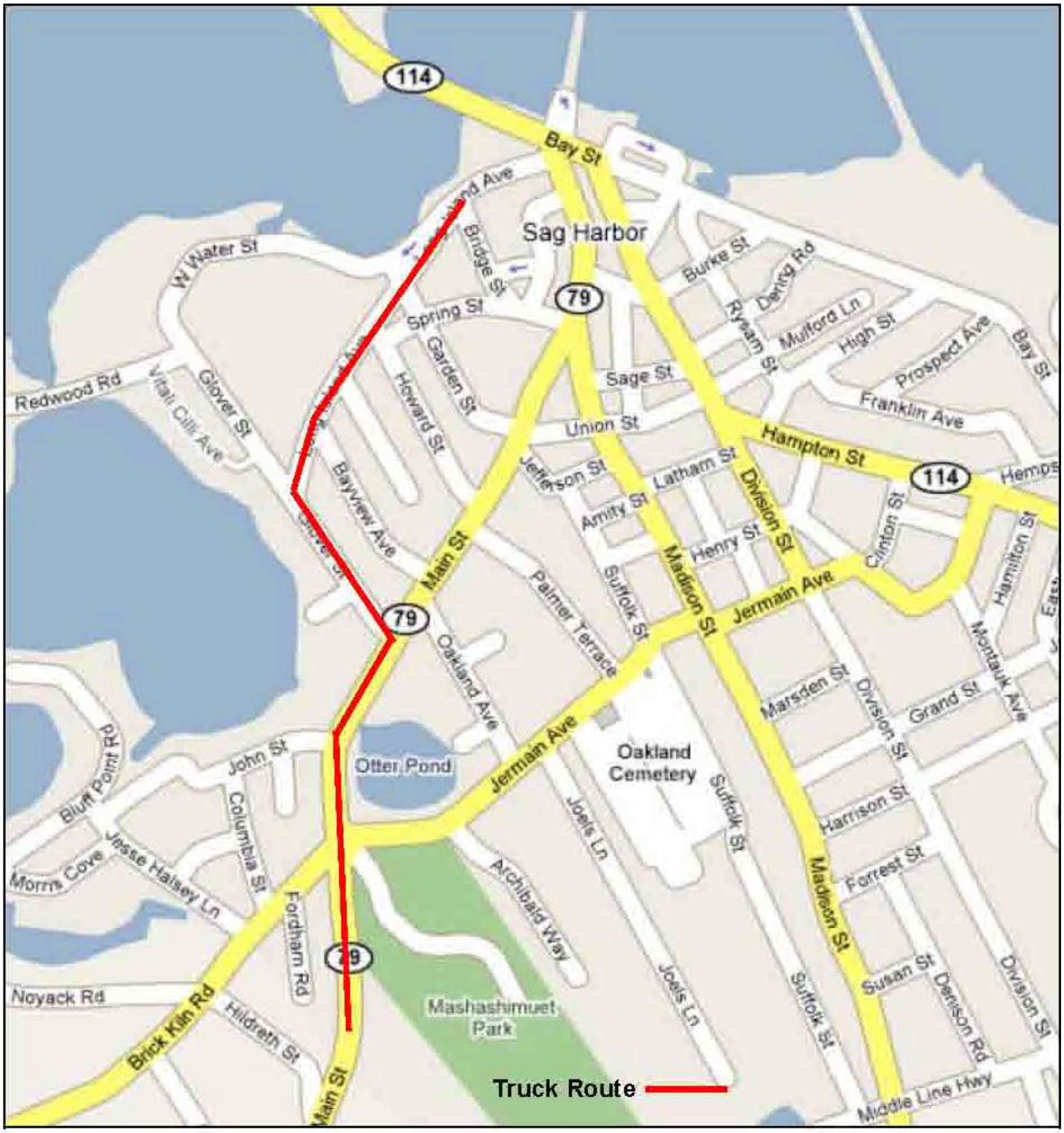


Figure 2: Exit Trucking Route

All trucks loaded with project site materials will exit the vicinity of the project site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during any Site activity and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

2.5 Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from areas known to have remaining contamination will be designated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this project site is proposed for unregulated off-site disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to the New York State Department of Environmental Conservation. Unregulated off-site management of materials from this project site will not occur without formal New York State Department of Environmental Conservation approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the New York State Department of Environmental Conservation in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet unrestricted Site Cleanup Objectives is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

2.6 Fluids Management

All liquids to be removed from the project site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the project site, but will be managed off-site.

Discharge of water generated during large-scale construction activities to surface waters (i.e., a local pond, stream or river) will be performed under a State Pollution Discharge Elimination System permit.

2.7 Cover System Restoration

After the completion of soil removal and any other invasive activities, the cover system will be restored in a manner that complies with the Remedial Design/Remedial Action Work Plan [AECOM, 2008]. The demarcation layer, consisting of orange snow fencing material or equivalent material will be placed in excavation areas with remaining contamination. The demarcation layer will provide a visual reference to the top of the ‘Remaining Contamination Zone’, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this Site Management Plan. Figure 1-8 of the Site Management Plan [AECOM, 2010] will be revised to show the excavation areas. If applicable, Figures 1-9 and 1-10 of the Site Management Plan will be updated to show the revised remaining contamination. The revised figures will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the ‘Remaining Contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan.

2.8 Backfill from Off-Site Sources

All materials proposed for import onto the project site will be approved by the qualified environmental professional and will be in compliance with provisions in this Site Management Plan prior to receipt at the project site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the project site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 2-1 of the Site Management Plan. Soils that meet ‘exempt’ fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this project site, will not be imported onto the project site without prior approval by NYSDEC. Solid waste will not be imported onto the project site. Additionally all imported soils must meet 6NYCRR Part 375 Restricted Use Residential Soil Cleanup Objectives shown in Table 2-1 of the Site Management Plan. All exposed surface soils must meet 6NYCRR Part 375 Unrestricted Use SCOs shown in Table 2-1 of the Site Management Plan.

Trucks entering the project site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

2.9 Stormwater Pollution Prevention

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by New York State Department of Environmental Conservation. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the Site Management Plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

2.10 Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc., as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In that case, a reduced list of analytes will be proposed to the New York State Department of Environmental Conservation for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to New York State Department of Environmental Conservation’s Project Manager. Reportable quantities of petroleum product will also be reported to the New York State Department of Environmental Conservation spills hotline, and included in the periodic reports prepared pursuant to Section 5 of the Site Management Plan.

2.11 Community Air Monitoring Plan

Air sampling stations will be placed upgradient and downgradient of generally prevailing wind conditions. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the Community Air Monitoring Plan (Appendix B of the SMP) will be reported to New York State Department of Environmental Conservation and New York State Department of Health Project Managers.

2.12 Odor Control Plan

Fugitive emissions can be generated from a variety of activities including excavation, drilling, and dewatering and/or from the temporary staging of materials for characterization, consolidation, and scheduling for transportation.

Due to the constituent of interest associated with the remedial activities at former Manufactured Gas Plan sites; fugitive emissions can take the form of volatile organic compounds, odor, and/or dust. Dust can be entrained with low levels of high molecular weight constituents, while volatile organic compounds can volatilize into ambient air. Odor emissions may result from the atmospheric exposure of contaminated media. Contamination may be present in soils and groundwater. The potential for odor generation from groundwater is less than that from solids. The constituent concentrations associated with these odors are typically less than the levels that potentially pose a health risk as the odor threshold of constituent of interest are typically less than health based action levels.

This odor control plan is capable of controlling emissions of nuisance odors off-site. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. New York State Department of Environmental Conservation and New York State Department of Health will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

A three-tiered set of controls are proposed for this Plan:

- Level I - Built into the design of the Plan and includes proactive measures to minimize the effect of fugitive emissions. Level 1 includes air monitoring to ensure that levels of volatile organic compounds and dust are under site-specific action levels.
- Level II – Procedures that are implemented in response to specific increases in fugitive emissions, but are not likely to have a significant impact in the schedule of the project site activities.
- Level III – More aggressive procedures, also initiated in response to specific increases in fugitive emissions that are likely to have a more significant impact on production schedule and the project site activities.

The Site Manager will be required to progressively implement these options until emission sources are controlled and ambient concentrations no longer have the potential to pose a health risk.

2.12.1 Level 1 controls

Level 1 Controls are built into the design of the field activities and involve physical controls, project site layout, and scheduling.

2.12.1.1 Physical controls

The simplest form of physical control is the use of visual barrier cloth on the project site perimeter fencing. The resistance caused by the visual barrier will elevate the discharge point of emissions leaving the site to the top of the perimeter fence and will promote better mixing and dispersion. Another form of simple physical control is the required use of tarps on trucks that move or transport impacted material.

All stockpiles of impacted material should be covered, if left inactive for a period of more than 2 hours.

For excavations, it may be possible to move some amount of soil around within the footprint of the excavation in order to minimize the amount of soil removal and subsequent stockpiling of impacted soil at the ground surface. The use of in-excavation stockpiling of excavated soil will be evaluated on a case-by-case basis, and will only be performed with the approval of the NYSDEC field representative, and will be completed only if it does not impede the collection of subsurface soils or the full delineation of the subsurface features being investigated.

Drill cuttings from the soil borings will be containerized as soon as possible during completion of each soil boring.

Loading of excavated debris or soil that has been found by the Site manager to be unsuitable material to return to excavation may generate odors. Every effort will be made to complete this work as quickly as possible and to keep these materials covered at all times.

All trucks used for off-site transport should have tarps in place to cover impacted material as detailed in Section 2.2. On-site haul routes should be routinely wetted to control dust using a hose, sprinkler, or dedicated water truck.

2.12.1.2 Site layout

The dispersion of fugitive emissions is controlled by meteorological conditions and their impact generally decreases with distance from the source. If possible, transfer/storage areas will be placed either downwind or significantly upwind of off-site receptors.

The height of the stockpiles should be lower than the top of the perimeter fencing (8 feet) to utilize the benefit of the barrier cloth. If stockpiles must be staged near the fence line (within 100 feet), they should be less than 8-feet in height.

2.12.1.3 Scheduling

Every effort should be made to minimize the amount of time that potentially contaminated material is stored on-site. Appropriate strategies involve the in-place precharacterization of soils to be excavated and the sampling of stockpiles as soon as they are placed. Efficient scheduling/coordination of operations can also limit the impact of active emission sources. Close coordination of excavation activities can decrease the surface area of disturbed material, thereby reducing the size of the emission source. A smaller source area can facilitate the implementation of additional controls, if required.

2.12.2 Level II controls

Air monitoring will routinely be performed at the fence line of the project site as delineated in the Community Air Monitoring Plan during all work activities. The results will be compared to site-specific action levels for volatile organic compounds and total particulates.

Level II controls will be enacted if the exceedance is confirmed or odors are detected at the fence line. If the action levels are exceeded, additional monitoring will be conducted to confirm the result. Level II controls will be enacted if the exceedance is confirmed. The Site Manager must then work through the applicable list of site controls until the fence line monitoring results for all parameters are determined to be less that their associated action levels. Specific Level II controls are discussed below.

2.12.2.1 Suppressing agents

Several agents that can be applied over emissions sources have been determined to be effective in controlling emissions. These include odor suppressant foam for volatile organic compounds mitigation and water spray for dust suppression.

The following suppressing agents have been identified for use but additional agents may be used or substituted for other proven agents such as odex, hydromulch, or ecosorb.

Odor suppressant foam

Odor suppressant foam can provide immediate, localized control of volatile organic compounds and odor emissions. The foam is created by the injection of air into a foam concentrate/water mixture using a Pneumatic Foam Unit. The foam is applied via a hose to cover source areas to a depth of 3 to 6 inches. Foam (Rusmar AC-600 or equivalent) is a short term remedy and can be actively used to control volatile organic compounds and odor emissions from active excavations/stockpiles, and during the loading of trucks. It is shipped as a concentrate and diluted with water at the site. Under normal conditions, this foam can last for several hours. However, it has been observed to degrade quickly in direct sunlight or precipitation so it must be applied liberally and frequently to all areas that require odor control.

Water spray

A spray of water can be used to minimize the amount of dust created. A water hose is effective for controlling dust over a small area, while lawn sprinklers or a dedicated water truck may be more efficient for extended control of large areas or on-site haul routes.

Odor Suppressant Solutions – BioSolve™ and Hydromulch

BioSolve™ can provide immediate, localized control of odor emissions. Information regarding the preparation and use of BioSolve™ is provided in Appendix A.

Although it is unlikely that it will be necessary, modified hydromulch slurry may be used to cover inactive sources for extended periods of time (up to several days). The hydromulch, typically cellulose fibers (HydroSealR) is modified by mixing a tackifier (glue) with the mulch and water to form a slurry. It is applied using a standard hydroseed applicator to a thickness of ¼ inch. The material forms a sticky, cohesive, and somewhat flexible cover. Reapplication may be necessary if the applied layer becomes desiccated or begins to crack.

2.12.2.2 Tarps

Tarps can provide effective control for source areas that are likely to be inactive for extended periods of time. To be effective, the size of the source area should be controlled such that it can be covered using a single tarp. Rolls of 6-mil polyethylene will be used to cover inactive stockpiles. Tarps will also be used for covering exposed soils loaded into trucks. All trucks will be lined with 6 mil polyethylene sheeting, the liners will be large enough to overlap and fully cover the top of the load. Additional automatic mesh tarps will be used to secure the liners.

2.12.2.3 Portable Barriers

The placement of portable barriers close to small active source areas (excavations) can elevate the discharge point of emissions to facilitate dispersion and minimize the effect on downwind receptors. The barriers can be constructed using materials such as plastic “Jersey barriers”, or fence poles and visual barrier fabric/plastic. The barriers are placed as temporary two or three-sided structures around active excavation or other intrusive areas, oriented such that the barriers are placed on the upwind and downwind sides of the source. If only one side of the source can be accessed, then the barrier should be placed on the downwind side.

2.12.3 Level III controls

Level III controls are to be implemented when Level II controls have been exhausted and ambient concentrations of emissions continue to exceed the site-specific action levels. Each of the control options listed in this subsection has the potential to significantly affect the schedule/production rate of site activities. These delays may be required periodically to ensure that acceptable levels of fugitive emissions are maintained, and are preferable to a complete work cessation to control an emission event.

2.12.3.1 Production/schedule

It may be necessary to reduce the excavation rate to reduce the surface area of disturbed media or slow the generation rate of stockpiles. These activities would result in smaller source areas that could be more effectively controlled using Level II techniques.

2.12.3.2 Meteorological conditions

It may be necessary to limit certain activities to those periods when preferred meteorological conditions exist, such as wind direction or low temperatures are present.

2.12.3.3 Relocation of activities

Another option is cease work and move the remedial activities to lesser-impacted areas until adequate control measures can be implemented or more favorable meteorological conditions return. Also, it may be beneficial to temporarily relocate material loading and transfer activity areas to other areas of the project site or within subsurface excavations to utilize the natural dispersion of emissions in the atmosphere, or shelter from the wind.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

2.13 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles;

- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production;

- Gravel will be used on roadways to provide a clean and dust-free road surface; and

- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

2.14 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during project site clearing and grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

Appendix B

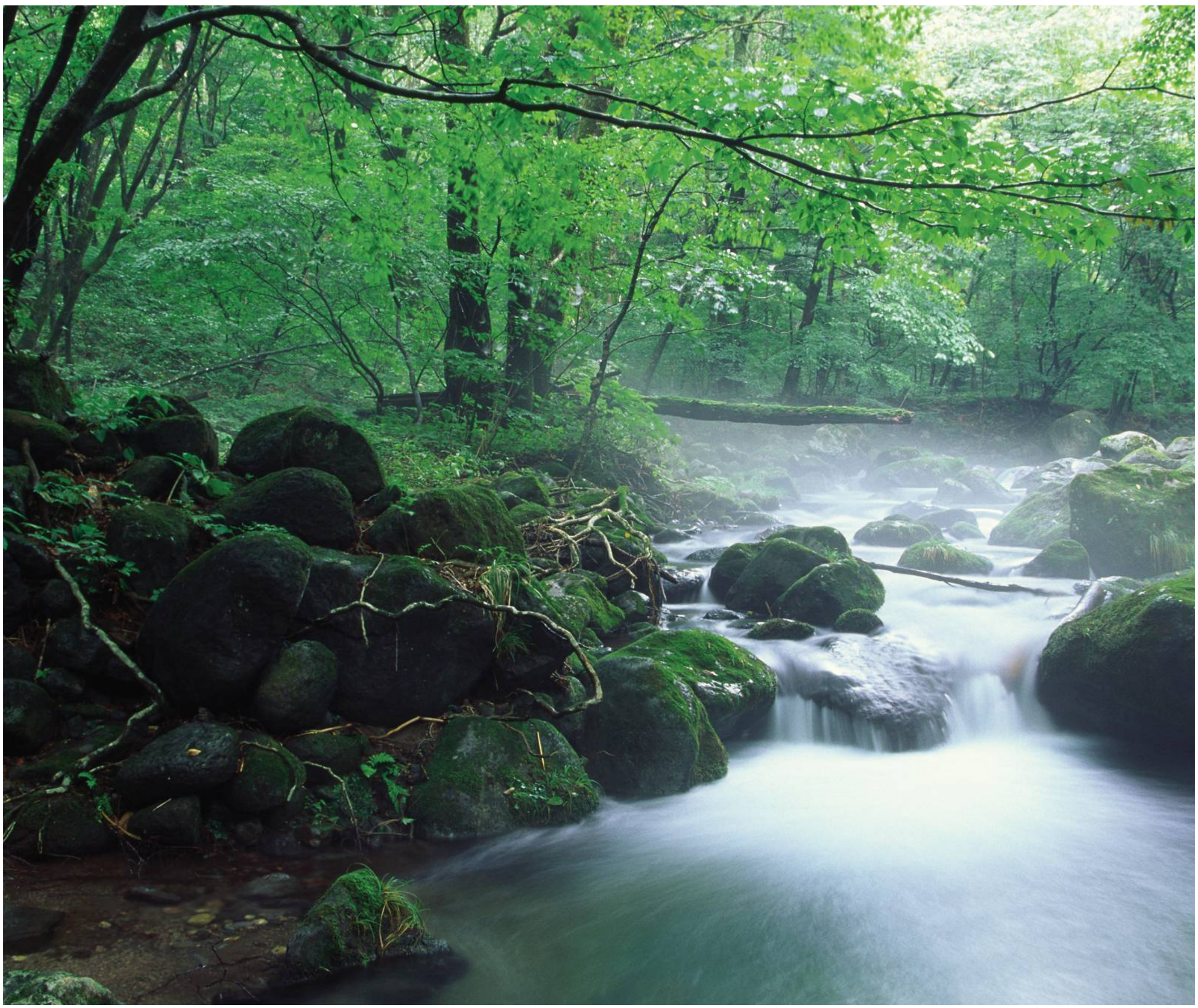
Health and Safety Plan (Compact Disc Copy Only)

Health and Safety Plan

Appendix B of the Site Management Plan

Former Sag Harbor Manufactured Gas Plant Site

Sag Harbor, Suffolk County, New York



Emergency Information and Hazard Assessment

Ground Intrusive Activities –Former Sag Harbor MGP Site
Sag Harbor, Suffolk County, New York

Hospital: Southampton Hospital

Address: 240 Meeting House Lane, Southampton, NY 11968

Phone #: (631) 726-8200

Directions from the Former Sag Harbor MGP site to Southampton Hospital

Turn right on Long Island Avenue (west),
Turn right on CR 79/Main St. (South),
Turn right on SR 27/Montauk Hwy (southeast),
Turn left of Old Town Road (southeast),
Turn right on Meeting House Ln (west).

Directions from Sag Harbor Former MGP Site to

Southampton Hospital

Start:	bridge street and long island ave, sag harbor, NY
End:	240 meeting house lane, southampton, NY
Distance:	10.6 mi
Time:	19 Minutes

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Emergency References

For critical injuries, dial 911 and/or seek treatment at the identified local Emergency Room

Ambulance: 911

Fire: 911

Police: 911

Underground Utilities – www.call811.com

DigNet of New York City and Long Island
Phone: (800) 272-4480
http://www.dignetnycli.com/

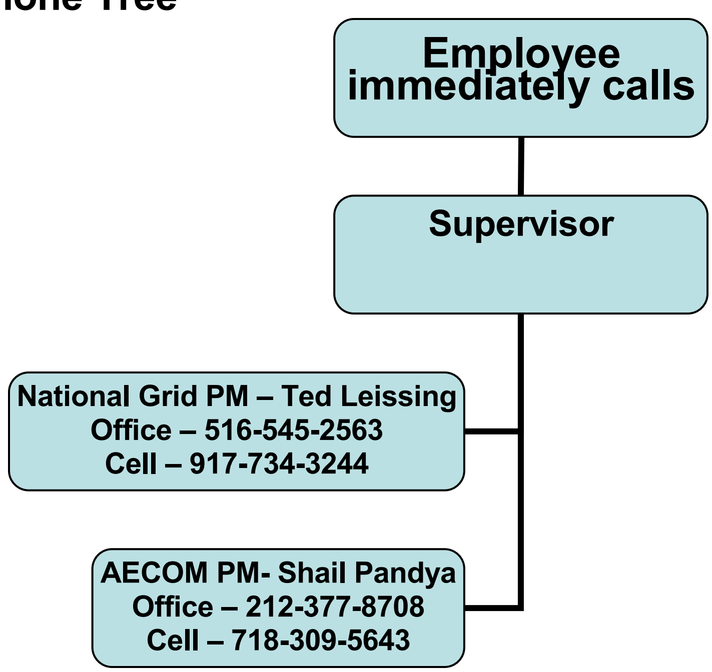
Emergency Chemical Information – InfoTrac (800) 535-5053

Poison Control Center – http://www.aapcc.org/
(800) 222-1222

Emergency Contact Phone Tree

Key Personnel:

National Grid PM – Ted Leissing
AECOM PM – Shail Pandya



AECOM Medical Records and Medical Consultant

In the event of a non-critical injury, and once preliminary reporting been completed, if the injured employee desires/needs to speak with a medical professional to consult on the nature of their injury and treatment options, employees may contact WorkCare directly if they have not be directed to call WorkCare, been contacted by WorkCare directly, or they have been unable to speak directly with any of the personnel identified in the Emergency Contact Phone Tree provided above.

Work Care North
Alameda, CA 94502
Telephone: 510-748-6900
Fax: 510-748-6915

Emergency Muster Point

The escape route from the site and an emergency muster point will be determined and provided to all workers during the project mobilization, and will be noted in the space below

Hazard Assessment

Task-Specific Hazard Assessment – Physical & Chemical

Hazard	General Site Hazard	Soil Boring & MW Installation	Soil Sampling	Groundwater Sampling	Utility Work	Excavation
Cold	√	√	√	√	√	√
Concrete Coring	√	√			√	√
Corrosive Liquids	√		√	√	√	√
Drilling	√	√				
Dust	√	√	√		√	√
Exposure to Chemical Hazards	√	√	√	√	√	√
Falling	√	√	√	√	√	√
Heat	√	√	√	√	√	√
Heavy Equipment	√	√			√	√
Insects	√	√	√	√	√	√
Lifting	√	√	√	√	√	√
Noise	√	√			√	√
Overhead Materials	√	√			√	√

Hazard	General Site Hazard	Soil Boring & MW Installation	Soil Sampling	Groundwater Sampling	Utility Work	Excavation
Overhead Utilities	√	√			√	√
Pinch Points	√	√	√	√	√	√
Poisonous Plants	√	√	√	√	√	√
Rotating Equipment	√	√			√	√
Sharp Objects	√	√	√	√	√	√
Splashing Liquids	√	√	√	√	√	√
Traffic	√	√	√	√	√	√
Tripping	√	√	√	√	√	√
Underground Utilities	√	√			√	√
Vehicle Operations	√	√	√	√	√	√
Weather	√	√	√	√	√	√

Chemical Hazards

Chemical Name	PEL[1]	TLV[2]	VP[3]	VD[4]	SG[5]	SOL[6]	FP[7]	LEL[8]	UEL[9]
Benzene	1	0.5	75	2.8	0.88	<1	12	1.2	7.8
Ethyl Benzene	100	100	7	4	0.88	<1	55	0.8	6.7
Hydrogen Cyanide	10	4.7 STEL	630	.94	0.69	100	0	5.6	40
Naphthalene	10	10	0.08	4.4	1.15	<1	174	0.9	5.9
Toluene	200	50	21	4	0.87	<1	40	1.1	7.1
Xylene	100	100	9	4	0.86	<1	81	1.1	7.0

[1] Permissible Exposure Limit in ppm
[2] Threshold Limit Value in ppm
[3] Vapor Pressure in mm Hg
[4] Vapor Density (air = 1)
[5] Specific Gravity (water = 1)
[6] Solubility in Water in %
[7] Flash Point in °F
[8] Lower Explosive Limit in % by volume
[9] Upper Explosive Limit in % by volume
NA = Not Applicable
? = Not known
C = Ceiling limit not to be exceeded

Unique Conditions

The National Grid PM (Ted Leissing) must be notified 15 business days prior to start of any ground intrusive activity as defined the Site Management Plan.

Ensure that all workers are made aware of the presence of a subsurface concrete soil mix wall on the 31 Long Island Avenue, 5 Bridge Street, 11 Bridge Street, and on Bridge Street and Long Island Ave. Please see Site Management Plan for extent.

Personal Protective Equipment

The minimum level of personal protective equipment required for field work is Level D. Level D consists of, hard hat, safety glasses, traffic safety vest, protective footwear, work gloves, and, as appropriate gloves for collection of environmental samples and hearing protection.

Additional personal protective equipment such as chainsaw chaps and sleeves, mesh face shield will be required for the cleaning and grubbing task.

Air Monitoring Instruments

Air monitoring in the breathing zone of field personnel potentially exposure to contaminated soils and groundwater will be conducted using a Photoionization detector (PID) with a 10.62 eV lamp.

Respiratory Protection

If conditions warrant Level C respirator protection in the form of half face or full face air purifying respirator with a combination organic vapors cartridge with P 100 filters will be required.

Job Hazard Analysis

AECOM

JHA Type: ☒ Investigation ☐ O&M ☐Office ☐ Construction	☒ New ☐ Revised	Date:
Office:	Client:	Location: Sag Harbor, Suffolk County, New York
Work Type: Test Pitting, Drilling and Sampling Activities	Work Activity: Test pitting with a back hoe, soil boring via direct push and HAS, monitoring well installation, soil and groundwater sampling	

Personal Protective Equipment (PPE): Minimum PPE is Level D including: hard hat, safety glasses, steel-toed boots, hearing protection as needed, and gloves as needed (type dependent on job-specific requirements). Traffic vest with reflective material/tape if needed and polycoated tyvek suits is needed.

Development Team	Position/Title	Reviewed By	Position/Title	Date

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, and notification to required contacts (e.g. site managers, clients, subcontractors, etc.). Additionally, safety meeting must be performed and documented at the beginning of each workday. Relevant forms should be updated if modifications are made in the field once work begins. Also consider weather conditions (heat, cold, rain, and lightning).

Global Site Work Safety - applies to all activities

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Inclement Site Conditions/ Weather	Poor Lighting	• All workers should have flashlight available with spare batteries. • One line of communication should be open at all times.
	Exposure (E) to Lightning Strikes	• Fieldwork shall not be conducted when lightning can be seen or thunder heard from the work area. When lightning and/or thunder occur, employees are to cease work, perform emergency equipment shut down as needed, and then seek shelter. • Minimize contact with ground and keep body parts touching ground close together. • Follow HASP guidelines for resuming work
	E to Thunderstorms, Hurricanes	• Listen to radio announcements for updates • Visually track threatening weather, cease outdoor activities if necessary • Seek shelter.
	Heat Stress (HS)	• Monitor self and other workers when ambient temperature exceed 85°F • Wear appropriate clothing • Consume sufficient quantities of water/electrolytes to avoid dehydration • Monitor yourself and co-workers for signs of heat stress • Take frequent breaks and take shelter to cool-off if feeling signs of heat stress
	Cold Stress (CS)	• Wear adequate insulating clothing to maintain core temperatures above 36ºC • At air temperatures of 2ºC (35.6ºF) or less, if immersed in water or clothing becomes wet, immediately change clothing and get treated for hypothermia. • Cover metal handles of tools and control bars by thermal insulating material at temperatures below -1ºC (30ºF). • Protect hands with mittens if the air temperature is -17.5ºC (9ºF) or less. • Consume warm sweet drinks and soups to provide caloric intake and fluid volume. Limit the intake of coffee because of the diuretic and circulatory effects. • Work under constant protective observation (buddy system or supervision) at or below -12ºC (10ºF) ECT. • Monitor yourself and co-workers for signs of cold stress • Take frequent breaks and take shelter to warm if feeling signs of cold stress. Avoid conditions that induce sweating. • Minimize standing or sitting still.
Hand Safety	Hand injury	• Wear chemically protective gloves when in contact with contaminated material. • Use shears rather than utility knives to cut tubing or other materials. • Wear leather or heat-resistant gloves while performing manual work. • Avoid touching hot surfaces without proper protective equipment. • Identify and avoid pinch points • Do not grasp steel hoist cables during hoisting. • Use only appropriate tools for the task.
Ergonomic Safety	Lifting – Back and Foot injury	• Follow standard safe lifting practices. • Wear proper PPE, i.e., steel-toed shoes with metatarsals. • Use Mechanical lifting devices when ever possible. • Ensure path is clear prior to lifting and moving materials. • Ensure proper rigging.

Global Site Work Safety - applies to all activities (continued)

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Ergonomic Safety (continued)	Overexertion (O) when lifting supplies/equipment	• Use equipment whenever possible. • Procure help when lifting awkward loads or materials that weigh greater than 60 lbs. • Use proper lifting techniques.
Tool Safety	Damaged Tools or Improper Use of Tools Injury Property damage	• Training of personnel. • Inspection and maintenance of equipment. • Use of proper tools for the work being performed.
Chemical Safety	Contact With (CW) Chemicals	• Always show precaution, follow protocol, and were proper PPE including gloves and safety glasses while handling chemicals. • Keep portable eyewash kits nearby.
	E to Toxic Substances	• All workers will be trained in expected site-specific hazards prior to beginning work on-site. • Standards and safe work practices will be developed for any newly discovered toxic hazards that are determined to be present at the site •

Mobilization

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Arrive at the Site	Unsafe driving practices	• Review driving directions prior to departing site • Ensure seat belt is fastened • Do not use cell phone while driving • Safe driving in rain or severe weather • Obey all laws
Site Inspection	Contact With (CW) Hazardous Plants, Insects, and Animals	• Survey the surroundings before any activity for any hazardous plants and animals detailed in Section 2.5 of the HASP especially dogs, venomous insects, bees, and snakes • Use bug repellant sprays • Be aware of any coworkers with any insect bite allergies • Wear proper PPE, i.e., long sleeved shirt and long pants • Personnel to be trained in the proper procedures to be followed in the event that an animal exhibits abnormal behavior. • Seek first aid for any bites or stings (insect, snake, or otherwise) • Provide medications to the SHSO for any sting/bite allergies you may have
	Slip, Trip, and Fall on same level (FS) or to lower level (FL)	• Maintain a clean work area and good housekeeping practices by drying wet surfaces, cleaning up muddy areas, and keeping unnecessary equipment and supplies out of walkways. • Inspect tread on steel-toed boots for signs of wear and replace as necessary • When carrying field equipment maintain clear view of footing • Wear steel-toed boots that extend over the ankle • Never run while on the job site • Use backpacks for moving gear around the site to keep hands free. • Be aware of slippery conditions. • No work after dusk, without proper overhead lighting.

Mobilization (Continued)		
❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Equipment Set-up	Struck by (SB) Heavy Equipment	• Ensure backup alarms are operable • Never approach equipment without establishing eye contact with operator • Establish protocol for hand and arm signals
	Damaged Tools or Improper Use of Tools • Injury • Property damage	• Training of personnel. • Inspection and maintenance of equipment. • Use of proper tools for the work being performed.
	Overhead lines or obstructions	• Check all locations for overhead obstructions
	CW electrical energy	• Use operable ground fault circuit interrupters (GFCI's) for any tool. • Inspect sampling equipment for frayed cords, damaged parts, etc. at the start of each day.
	Hand injury	• Use shears rather than utility knives to cut tubing or other materials. • Wear leather or heat-resistant gloves while performing manual work. • Avoid touching hot surfaces without proper protective equipment. • Identify and avoid pinch points • Do not grasp steel hoist cables during hoisting. • Use only appropriate tools for the task.
	Lifting – Back and Foot injury	• Follow standard safe lifting practices. • Wear proper PPE, i.e., steel-toed shoes. • Use Mechanical lifting devices when ever possible. • Ensure path is clear prior to lifting and moving materials. • Ensure proper rigging.
	Mechanical Hazards – Pinch Points/Sharp edges	• Care should be taken when working around heavy equipment. These items feature sharp/hard edges that present cutting, scraping, and impalement hazards. • Identify and label pinch points on equipment

Investigative Activities		
Setup soil, groundwater, and soil gas sampling locations	Underground utilities	• "Call before you dig" NY one call (Long Island) • Discuss utility situation with PM and Client before beginning any work.
Geoprobe® soil boring advancement, test pit digging and monitoring well installation	Safety equipment in Drill Rig not in place or operating	• Perform an initial and weekly inspection of heavy equipment.
	SB Heavy Equipment/ Heavy equipment operations	• Ensure backup alarms are operable • Ensure that emergency shut off button works on equipment • Keep proper clearance from equipment • Be aware of excavator swing radius • Establish eye contact with operator(s) prior to approaching equipment • Listen for backup indicators • Operators should always wear seat belts while equipment is running • Operators must be aware of their surroundings at all times • Establish protocol for hand and arm signals • Do not climb on equipment; use proper stepping features and/or ladder that is braced properly. • Complete a drill rig inspection form before starting work to ensure there are no leaking hoses or damaged equipment.
	Mechanical Hazards - Pinch Points/Sharp edges	• Work at a safe distance from moving parts of the drill rig. • Ensure that equipment guards (whip guards) are in place and secure. • Ensure that personnel are aware of and familiar with the potential hazards of rotary equipment being used. • Keep hands and loose clothing away from rotating augers and drill stem.

Investigative Activities (continued)		
❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Geoprobe soil boring installation, and monitoring well installation (continued)	Noise	• Implement the two (2) feet rule, if shouting is required to be heard within two (2) feet of other personnel hearing protection is required. • Impulsive or impact noise must not exceed 140 db peak sound level. • Use engineering controls where applicable. • Use of hearing protection during drilling operations is required.
	Eye injury from flying debris or dust	• Wear protective eyewear. • Keep away from air rotary sample collection ports (e.g. cyclone samplers or diverters).
	Fire	• Have fire extinguishers on equipment. • Use fire watch as conditions warrant and as required by the hot work permit. • Obtain a hot work permit when using an external air compressor.
	Chemical exposure by inhalation or direct contact	• Position the drill rig and personnel upwind of drilling location, as practicable. • Provide air monitoring in the work area. • Personnel to use Modified Level D PPE (initially) with upgrade as needed. • Place drill cuttings into drums/containers and keep drums/containers closed as practicable during drilling. • Wear safety glasses.
Sampling Collection, Preparation, and Shipment		
Collect soil and groundwater samples	E to toxic substances • Dermal contact with contaminated media • Ingestion of contaminated media	• Be alert during sampling to avoid splashing. • Wear proper PPE including protective gloves, protective coveralls, and safety glasses. • On exposure, rinse immediately with fresh water • Compliance with SOW/SOPs regarding the collection of samples. • Training of personnel. • Practice good personal hygiene and implementation of decontamination procedures using disinfectant.
	Mechanical Hazards – Pinch Points/Sharp edges/Impalement	• Care should be taken when working around sampling equipment. • Identify pinch points on equipment and include in the STAR form
	Slip, Trip, and FS on wet surfaces, over equipment, non stabilized surfaces and Weak or Narrow Embankments	• Wear appropriate slip-resistant boots with a steel toe. • Only the necessary personnel should be in the area of operation. • Always return equipment to proper storage location. • Avoid embankment edges. • Avoid positioning personnel downhill of equipment on embankments • Personnel to be cognizant of potential collapse of embankments. • Personnel to be cognizant of loose slopes.
	Caught Between (CB) pinch points	• When opening and closing bottle lids, be aware of pinch points. • Wear proper PPE including protective gloves, protective coveralls, and safety glasses. • Always keep attention focused on work.
	Lifting – Back and Foot injury	• Get assistance when lifting or moving heavy items if needed.
	Chemical Hazards - spills	• Exercise proper placement, handling, and storage of the chemical preservatives used during the sampling event. • Read associated MSDS • Ensure that the chemical/contaminated material is stored in a secondary containment device so that an unscheduled release of the chemical/contaminated material cannot occur.

Sampling Collection, Preparation, and Shipment (continued)		
❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Collect soil and groundwater samples (continued)	O by repeated motion	• Take breaks during sampling mixing. • Change personnel every four hours, if feeling tired. • Maintain good ergonomics.
	CW electrical energy	• Use operable GFCIs for any tool. • Keep electrical equipment away from wet surfaces and water. • Inspect sampling equipment for frayed cords, damaged parts, etc. at the start of each day.
Soil gas sampling	E to soil gas	• Measure for VOCs using a PID. • Respirator should be available for upgrade to Level C PPE
Secure samples in coolers for shipment	• Broken glass • Cross contamination	• Ensure sample bottles are securely packed in the cooler using bubble wrap and other packing materials.
Moving sample coolers	Heavy lifting	• Use proper technique or get help.
Ship samples to lab via FedEx	• Traffic Accident • Personal Injury	• Do not rush to get samples to FedEx. • Plan sampling activities to give adequate time to package samples and drop them off to Fed Ex location (if needed).
Test Pitting		
Excavation/Backfilling of Test Pit	Chemical Exposure by Inhalation or Direct Contact	• Position the excavator and personnel upwind of excavation location, as practicable. • Provide air monitoring in the work area. • Upgrade PPE to use of respirator as needed. • Cover excavated soil stockpile, as practicable, until test pit is backfilled or excavated soil is disposed of. • Wear safety glasses.
	Noise	• Implement the two (2) feet rule, if shouting is required to be heard within two (2) feet of another then hearing protection is required. • Impulsive or impact noise must not exceed 140 db peak sound level. • Use engineering controls where applicable. • Use of hearing protection during excavation operations is required.
	Dust	• Use engineering controls (water truck) to the extent possible to wet down soils prior to excavation and backfill activities.
	Overhead/Underground Utilities	• Review available maps and have utilities located. • Ensure that overhead clearances for heavy equipment are within required limitations.
	Decon/Contact with High Pressure Water	• Direct pressure spray wand away from people and keep hands and feet away from discharge. • Personnel performing decon to wear full-face shield, gloves, rubber boots and tyvek or polycoated tyvek.
Demobilization		
Decon sample preparation area and sampling tools	E and CW with airborne mists or vapors	• Always show precaution, follow protocol, and wear proper PPE including gloves and safety glasses while handling chemicals • Keep portable eyewash kits nearby
Decon sample preparation area and sampling tools (continued)	Chemical Hazards - spills	• Exercise proper placement, handling, and storage of the chemical solutions used during decontamination. • Read associated MSDS • Ensure that decontamination is carried out in a secondary containment device so that an unscheduled release of the contaminated decon water cannot occur.
	E to toxic substances • Dermal contact with contaminated media • Ingestion of contaminated media	• Be alert during decontamination to avoid splashing. • Wear proper PPE including protective gloves, protective coveralls, and safety glasses. • On exposure, rinse immediately with fresh water. • Training of personnel.
	Cross-contamination	• Wash your hands prior to touching your food or other “clean” materials that may be tainted by what is on your hands.
Closing drums of soil cuttings	• Heavy lifting • Cut or pinch from drum ring	• Use proper technique or get help. • Wear leather work gloves.

Job Hazard Analysis

JHA Type: ☐ Investigation ☐ O&M ☐ Office ☒ Construction		☒ New ☐ Revised	Date:
Office:	Client:	Loc: former Sag Harbor MGP, Sag Harbor, NY	
Work Type: Demolition		Work Activity: Various Demolition	

Personal Protective Equipment (PPE):

Minimum PPE is Level D including: Safety glasses, Steel toed boots, hard hat, Leather gloves, orange safety vest, face shield, hear protection (plugs and/or muffs)

Additional PPE may be required in the Health & Safety Plan (HASP). Also refer to the HASP for air monitoring, and emergency procedures. Please refer to Excavation JHA for additional site-specific requirements.

Development Team	Position/Title	Reviewed By	Position/Title	Date

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Jack-Hammering Concrete (hand operated hammer)	1. Flying Debris	• Wear appropriate PPE: hardhat with face shield, safety glasses, leather gloves, steel-toed boots, full body clothing.
	2. Noise	• Wear appropriate hearing protection in areas where decibel levels are > 85db • Be sure to use the hearing protection properly (either plugs, muffs or both)
	3. Vibration/ergonomic hazards	• Where appropriate footwear and gloves to lessen the effects of vibration on the body • Take frequent breaks: share the task with coworkers. • Use proper body positioning, avoid straining the back when moving the hammer
	4. Steel reinforcement bar removal	• Wear proper hand protection (leather gloves)

Hammering Concrete using backhoe/excavator hammer attachment	1. Flying Debris 2. Noise 3. Heavy Equipment Operation	• Wear appropriate PPE: hardhat with face shield, safety glasses, leather gloves, steel-toed boots, full body clothing. • Wear appropriate hearing protection in areas where decibel levels are > 85db • Be sure to use the hearing protection properly (either plugs, muffs or both) • Keep proper clearance from equipment • Be aware of excavator or backhoe swing radius • Establish eye contact with operator(s) prior to approaching equipment • Listen for backup indicators • To the maximum extent possible, remain clear of confined areas in which multiple pieces of equipment are operating • Operators should always wear seat belts while equipment is running • Operators must be aware of their surroundings at all times
Loading debris onto trucks	1. Heavy Equipment Operation 2. Manually handling/moving concrete and steel debris 3. Heavy Equipment (Truck Traffic)	• Keep proper clearance from equipment • Be aware of excavator or backhoe swing radius • Establish eye contact with operator(s) prior to approaching equipment • Listen for backup indicators • To the maximum extent possible, remain clear of confined areas in which multiple pieces of equipment are operating • Operators should always wear seat belts while equipment is running • Operators must be aware of their surroundings at all times • Avoid hand injuries by wearing proper hand protection (leather gloves are recommended) • Do not attempt to lift more than you're capable of lifting safety • If debris is too large to handle, employ heavy equipment to move it. • Wear appropriate eye protection, hard hat, and steel-toed boots • Keep proper clearance from moving trucks • Maintain eye contact with drivers or communicate your actions with them • Listen for backup indicators • Stay clear of areas around the truck while they are being loaded with debris; falling debris could cause serious injury or a fatality.

Job Hazard Analysis

JHA Type: ☐ Investigation ☐ O&M ☐ Office ☒ Construction	☒ New ☐ Revised	Date
Office: Manhattan Client: National Grid USA	Location: Former Sag Harbor MGP, Sag Harbor, New York	
Work Type: Excavation	Work Activity: Excavation and backfilling on the National Grid and Offsite Properties, loading and transport of impacted materials, dewatering, water treatment and discharge, excavation soil (if required) and water sampling	

Personal Protective Equipment (PPE):

Minimum PPE is Level D including: hard hat, safety glasses or goggles, steel-toed boots, high visibility safety vest, hearing protection as needed, and gloves as needed (type dependent on job-specific requirements).

Additional PPE may be required in the Health & Safety Plan (HASP). Also refer to the HASP for air monitoring, and emergency procedures.

Development Team	Position/Title	Reviewed By	Position/Title	Date

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, and notification to required contacts (e.g. site managers, clients, subcontractors, etc.). Additionally, safety meeting must be performed and documented at the beginning of each workday. Relevant forms should be updated if modifications are made in the field. Also consider weather conditions (heat, cold, rain, lightning).

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
1. General Site Safety	Hand injury	• Use shears rather than utility knives whenever practical. • Wear leather or heat-resistant gloves while performing manual work. • Avoid touching hot surfaces without proper protective equipment. • Identify and avoid pinch points • Use only appropriate tools for the task.
	Slip, Trip, and Fall on same level or to lower level	• Maintain a clean work area and good housekeeping practices by drying wet surfaces, cleaning up muddy areas, and keeping unnecessary equipment and supplies out of walkways. • Inspect tread on steel-toed boots for signs of wear and replace as necessary • When carrying field equipment maintain clear view of footing • Never run while on the job site • Use backpacks for moving gear around the site to keep hands free. • Be aware of slippery conditions.
	Lifting – Back and Foot injury	• Follow standard safe lifting practices. • Wear proper PPE, i.e., steel-toed shoes with metatarsals. • Use Mechanical lifting devices when ever possible. • Ensure path is clear prior to lifting and moving materials.
	Overexertion when lifting supplies/equipment	• Use equipment whenever possible. • Procure help when lifting awkward loads or materials that weigh greater than 60 lbs. • Use proper lifting techniques.
	Contact with electrical energy	• Use operable GFCIs for any tool. • Inspect electrical equipment for frayed cords,

		damaged parts, etc. at least once a week.
	Heat Stress	• Monitor self and other workers when ambient temperature exceed 85°F • Wear appropriate clothing • Consume sufficient quantities of water/electrolytes to avoid dehydration • Monitor yourself and co-workers for signs of heat stress • Take frequent breaks and take shelter to cool-off if feeling signs of heat stress
	Fall to Lower Level (from trailers, equipment)	• Limit walking on elevated surface • Clean mud from boots prior to walking on trailers • Only rental company personnel to remove equipment off of low boy trailers (should equipment be rented)
	Trip/Slip/Fall on Same Level	• Establish and enforce housekeeping protocol
	Safety equipment not in place or operating	• Perform an initial and weekly inspection of heavy equipment
2. Equipment Mobilization	Struck by Heavy Equipment Fall to Lower Level (from trailers, equipment) Trip/Slip/Fall on Same Level Safety equipment not in place or operating	• Ensure backup alarms are operable • Never approach equipment without establishing eye contact with operator • Establish protocol for hand and arm signals • Limit walking on elevated surface • Clean mud from boots prior to walking on trailers • Only rental company personnel to remove equipment off of low boy trailers (should equipment be rented) • Establish and enforce housekeeping protocol • Perform an initial and weekly inspection of heavy equipment
3. Excavation	Struck by Heavy Equipment/ Heavy equipment operations	• Ensure backup alarms are operable • Keep proper clearance from equipment • Be aware of excavator swing radius • Establish eye contact with operator(s) prior to approaching equipment • Listen for backup indicators • Operators should always wear seat belts while equipment is running • Operators must be aware of their surroundings at all times • Establish protocol for hand and arm signals
	Fall to Lower Level (from trailers, equipment)	• Limit walking on elevated surface • Clean mud from boots prior to walking on trailers • Only rental company personnel to remove equipment off of low boy trailers (should equipment be rented)
	Trip/Slip/Fall on Same Level	• Establish and enforce housekeeping protocol
	Safety equipment not in place or operating	• Perform an initial and weekly inspection of heavy equipment

	Hydrocarbon exposure/ Chemical exposure and Dust exposure	• Perform air monitoring prior to entering excavation area (MultiRae meter) • Continue to monitor periodically throughout the day • Properly document all calibration activities and readings performed on the proper sheets • Continue to monitor periodically throughout the day • Properly document all calibration activities and readings performed on the proper sheets
	Noise	• Use hearing protection and make sure it is inserted properly
	Sidewall instability	• Carefully examine the condition of the sidewall prior to approaching the edge • Signs of instability: look for active sloughing of soils, water seepage in the sidewall, and the presence of tension cracks in the surface above the side wall • Never stand in the excavation immediately adjacent to a side wall • If it is necessary to enter the excavation, always select a sloped route that is not too steep and proceed slowly
	Uneven ground	• Wear steel-toed boots that extend over the ankle • Never run while on the job site
	Underground utilities	• Check utility plans and expose if necessary prior to work
4. Loading haul trucks	Heavy equipment operation	• Keep proper clearance from equipment • Be aware of loaders rapid movements • Establish eye contact with operator(s) and truck drivers prior to approaching equipment • Listen for backup indicators
	Impacted Soil Exposure	• Wear splash proof PPE over Nomex coveralls when spraying trucks • Don face shield prior to spraying trucks
	Falling material	• Never stand on the opposite side of a trailer that is being loaded; material may spill over the side
Truck decontamination	Impacted Soil Exposure	• Wear splash proof PPE over Nomex coveralls when spraying trucks • Don face shield prior to spraying trucks
	Slips, trips, falls	• Exposed liner in sump area is very slippery, extreme caution must be used • Never run around the decon area • The decon area will be kept in an order fashion
	Heavy equipment operation	• Never approach a truck until it comes to a complete stop • Truck driver and decon personnel must make eye contact prior to approaching the truck or before truck movement is initiated • Driver shall sound the horn once prior to pulling out to serve as a warning to decon personnel • Decon personnel shall give a visual indication that all is clear prior to the driver

		pulling out of the decon area
	Falling material	• Decon personnel shall take care to avoid standing directly under the trailer as they try to remove pieces of sludge that may be lodged on the truck. • Use extension poles to remove loose material overhead
Backfill excavation	Heavy equipment operations	• Keep proper clearance from equipment • Be aware of heavy truck traffic • Establish eye contact with operator(s) prior to approaching equipment • Listen for backup indicators • To the maximum extent possible, remain clear of confined areas in which multiple pieces of equipment are operating
	Noise	• Use hearing protection and make sure it is inserted properly
	Uneven ground – backfilled ground may be very uneven, padfoot compactor leaves a rough uneven	• Wear steel-toed boots that extend over the ankle • Never run while on the job site; caution should be used while traversing backfilled areas
Soil Sampling (If Needed)	Chemical exposure and Dust exposure	• Perform air monitoring prior to entering excavation area (dust monitor and PID) • Continue to monitor periodically throughout the day • Properly document all calibration activities and readings performed on the proper sheets
	Entering excavations	• NEVER enter an excavation deeper than 4 feet bgs!!! Sampling in deep excavations will be conducted using the backhoe. • Maintain a safe distance from where the current excavation is being conducted. • Be sure the operators are aware of your location at all times. • Always wear proper PPE including gloves while sampling.
Truck/Vehicle Traffic	Contact with Pedestrian and Road Traffic	• Ensure all site personnel are wearing orange safety vests. • If necessary, employ flagmen on public street.
		•
		•
		•
		•
		•
		•
		•
		•
		•

AECOM

Health and Safety Plan

Appendix B of the Site Management Plan

Former Sag Harbor Manufactured Gas Plant Site

Sag Harbor, Suffolk County, New York

February 2014

Contents

1.0 Introduction

This Health and Safety Plan (HASP) is required as an element of the remedial program at the former Sag Harbor Manufactured Gas Plant (MGP) site under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by the New York State Department of Environmental Conservation (DEC). The HASP is appended to the Site Management Plan [(SMP), AECOM, 2010] as Appendix B which was developed in accordance with Order on Consent Index D1-0002-98-11, Site Number 1-52-159 [NYSDEC, 2005], which was executed on October 5, 2005.

It is important to note that:

- This HASP as a part of the SMP details Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of the ECL, 6 NYCRR Part 375 and the Order on Consent (Index Number D1-0002-98-11, Site Number 1-52-159) for the Site, and thereby cause for applicable penalties.

1.1 HASP Purpose

The purpose of this Health and Safety Plan (HASP) is to identify hazards associated with the Former Sag Harbor Manufactured Gas Plant (MGP) site and surrounding off-site areas located in the Village of Sag Harbor, New York and specify engineering and administrative controls and personal protective equipment necessary to mitigate the risks associated with these hazards. This HASP addresses the hazards recognized prior to writing or updating the documents. As new hazards are encountered, a Job Hazard Assessment (JHA) or Job Safety Analysis (JSA) must be conducted and the results input into the HASP.

This HASP also assigns responsibilities for the implementation of safety programs on this project and defines monitoring and emergency response planning specific to the project.

1.2 HASP Applicability

This HASP has been developed by AECOM. It establishes the health and safety procedures required to minimize potential risk to field personnel and contractor personnel involved with:

- Ground intrusive activities (with the exception of normal landscaping to a maximum of 18 inches below ground surface) including utility work, boring completion, monitoring well installation, and excavation; and

- Activities related to implementation of the SMP including soil vapor intrusion and groundwater monitoring.

For purposes of further discussion in this Site Management Plan (SMP), the term "Site" will include the Sag Harbor MGP site as well as all or portions of adjacent private property to the north (31 Long Island

Avenue), all or portions of the adjacent private property to the south (11 Bridge Street), and Village sidewalk and roads to the north and west while the term "off-Site areas " will include all or portions of adjacent private properties to the north, south, and west of the Site; The United States Postal Service Post Office to the east; and a small portion of the Village parking lot to the east as described in Section 1.2.1 of the SMP.

This HASP addresses the hazards associated with the Site and off-Site areas and has been written to comply with the requirements of the Occupational Safety and Health Administration (OSHA) Personal Protective Equipment Standard (29 CFR 1910.132) for all activities and the OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) for tasks where there are potential exposures to subsurface contaminants. All activities covered by this HASP must be conducted in complete compliance with this HASP and with all applicable federal, state, and local health and safety regulations. Personnel covered by this HASP who cannot or will not comply will be excluded from project site activities.

This plan should be distributed to the employees of any contractors who are involved with any activities covered under the Sag Harbor Site Management Plan [(SMP); AECOM, February 2011] and conducted on Site and off-Site areas. Each employee must sign a copy of the attached Acknowledgement and Acceptance form (see Attachment A).

This HASP only pertains to the tasks that are listed in Section 3.0 of the SMP. A task specific HASP or addendum to this HASP will be developed at a later date for any other subsequent investigative/remedial activities at the project site.

1.3 Organization/Responsibility

1.3.1 Project Manager

The project manager is responsible for ensuring that the requirements of this HASP are implemented when applicable. Some of the specific responsibilities for each of the personnel include:

- The PM will assure that all personnel to whom this HASP applies have received a copy of it;
- Providing adequate authority and resources to the on-site SSO to allow for the successful implementation of all necessary safety procedures;
- Supporting the decisions made by the SSO;
- Coordinating the activities of all subcontractors and ensuring that they are aware of the pertinent health and safety requirements for this project.

1.3.2 Site Safety Officer

The SSO will be on-site during all activities covered by this HASP. The SSO is responsible for enforcing the requirements of this HASP once work begins. The SSO has the authority to immediately correct all situations where noncompliance with this HASP, by other staff or contractors, is noted and to immediately stop work in cases where an immediate danger is perceived. Some of the SSO's specific responsibilities include:

- Coordinate work activities, review safety issues, and plan for upcoming activities;
- Assuring that all personnel to whom this HASP applies have submitted a completed copy of the HASP receipt and acceptance form;

- Assuring that all personnel to whom this HASP applies have read the HASP in its entirety prior to any site work and have attended a pre-entry briefing and any subsequent safety meetings that are conducted by and/or the selected Contractor during the implementation of the program;
- Procuring and distributing the PPE and safety equipment needed for this project;
- Verifying that all PPE and health and safety equipment are in good working order;
- Verifying that subcontractors are prepared with the PPE, respiratory protection and safety equipment required for this program;
- Stopping or modifying the contractor’s work, if necessary, to ensure compliance with the Community Air Monitoring Plan;
- Monitoring and controlling the safety performance of all personnel to ensure that required safety and health procedures are being followed;
- Conducting accident/incident investigations and preparing accident/incident investigation reports, in conjunction with the contractor’s SSO;
- Conducting the pre-entry briefing prior to beginning work and subsequent safety meetings as necessary and in coordination with the contractor’s SSO; and,
- Initiating emergency response procedures in accordance with Section 11.0 of this HASP, and in coordination with the contractor’s SSO.

1.3.3 Field Personal

All field personnel covered by this HASP are responsible for following the health and safety procedures specified in this HASP and for performing their work in a safe and responsible manner. Some of the specific responsibilities of the field personnel are as follows:

- Reading the HASP in its entirety prior to the start of project site work;
- Submitting a completed HASP Acceptance Form to the SSO prior to the start of work;
- Attending the required pre-entry briefing prior to beginning on-site work and any subsequent safety meetings that are conducted during the implementation of the program;
- Participating in any site-wide safety meetings;
- Bringing forth any questions or concerns regarding the content of the HASP to the PM or the SSO prior to the start of work;
- Reporting all accidents, injuries and illnesses, regardless of their severity, to the SSO; and,
- Complying with the requirements of this HASP and the requests of the SSO.

1.4 Management of Change/Modification of the HASP

1.4.1 Management of Change

The procedures in this HASP have been developed based on Site history, previous Site investigations, and completed remedial activities. Every effort has been made to address the chemical and physical hazards that may be encountered by personnel during Site activities. However, unanticipated Site-specific conditions or situations may occur during the implementation. As such, this HASP must be considered a working document that is subject to change to meet the needs of this dynamic project.

1.4.2 HASP Modification

Should significant information become available regarding potential on-site hazards, it will be necessary to modify this HASP. All proposed modifications to this HASP must be reviewed and approved by the New York State (NYS) Department of Environmental Conservation (DEC) and the NYS Department of Health (DOH) before such modifications are implemented. Any significant modifications must be incorporated into the written document as addenda and the HASP must be reissued. Sign-off forms will accompany each addendum and must be signed by all personnel covered by the addendum. The HASP addenda should be distributed during the daily safety meeting so that they can be reviewed and discussed. Attendance forms will be collected during the meeting.

1.4.3 Job Safety Analysis (JSA)

A Job Safety Analysis (JSA) will be prepared for each task to be performed prior to commencing work. The use of new techniques will be reviewed and if new hazards are associated with the proposed changes, they will be documented and evaluated on the JSA form. An effective control measure must also be identified for each new hazard. JSA forms will be reviewed by National Grid prior to being implemented. Once approved, the completed forms will be reviewed with all field staff during the daily safety meeting. A blank JSA form is presented as Attachment B.

1.4.4 Employees Working Alone

Employees working alone at project sites will review the JSA for their tasks as they are conducting their daily overview and reconnaissance of the site. After completing the JSA review/revision and site reconnaissance, the employee should call the Project Manager and report any new hazards or site conditions observed.

2.0 Site Description

2.1 Site Location

The former Sag Harbor MGP site is located in the Village of Sag Harbor, Suffolk County, New York and is identified as Block 0002, Lot 9 and Block 002, Lot 10 on the Town of Southampton Tax Map. The former Sag Harbor MGP site is an approximately 0.8 acre area bounded by Long Island Avenue to the north, commercial property and residences to the south, a United States Post Office and a public parking lot to the east, and the Harbor Close Condominium to the west

2.2 Site History

2.2.1.1 Operational/Disposal History

The former Sag Harbor MGP operated from 1859 to 1930. The MGP produced gas from coal or wood rosin before being switched to a water gas process in 1892. The byproducts of gas production that either spilled, leaked, or were disposed on the MGP site are the source of the contamination.

2.2.1.2 Remedial History

The former Sag Harbor MGP site became part of the Sag Harbor Bridge Street Site (Site Number 1-52-126) which was listed as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York in 1987. In 1997, a preliminary site assessment was performed on the MGP site and, as a result, the DEC listed the former Sag Harbor MGP site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York in 1998. Following that listing, an Interim Remedial Measure (IRM) was performed to remove and cap historic piping present at the former Sag Harbor MGP site to prevent migration of MGP by-products.

A Remedial Action (RA) comprising of construction of the SMW, removal and disposal of heavily contaminated residual MGP-related soils, and placing of clean fill material was implemented from August 2008 through June 2009.

2.3 Potential Contaminants of Concern

Potential contaminants of concern in soil and groundwater include:

- VOCs, primarily BTEX
- SVOCs, primarily naphthalene and low molecular weight PAHs
- MGP Tar

3.0 Chemical Hazard Assessment and Control

3.1 Chemical Hazards

Subsurface soils and groundwater on the Site and off-Site areas within the SMP limits are impacted with MGP residuals. Typical wastes associated with former MGP operations could include volatile organic compounds (VOCs) such as benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), tar-like materials, purifier box wastes (potentially containing cyanide complexes and compounds), and certain trace metals associated with ash and clinkers.

3.1.1 Volatile Organic Compounds

The VOCs associated with MGP wastes include BTEX. Exposure to the vapors of BTEX above their respective OSHA permissible exposure limits (PELs) may produce irritation of the mucous membranes of the upper respiratory tract, nose, and mouth. Overexposure may also result in the depression of the central nervous system (CNS). Symptoms of such exposure include drowsiness, headache, fatigue and drunken-like behaviors. Prolonged overexposure to benzene vapors has detrimental effects on the blood-forming system ranging from anemia to leukemia. The PEL for benzene is 1 part per million (ppm), as an 8 hour time-weighted average (TWA). The American Conference of Governmental Industrial Hygienists (ACGIH) recommends a threshold limit value (TLV) of 0.5 ppm, as an 8-hr TWA. The OSHA PEL for ethylbenzene is 100 ppm, as an 8-hr TWA. The PEL for toluene is 200 ppm, as an 8-hr TWA. However, the ACGIH recommends a TLV of 50 ppm for toluene. Xylene is a flammable, colorless liquid with an OSHA PEL of 100 ppm, as an 8-hour TWA. Inhalation of xylene vapors above the PEL may result in motor activity changes, irritability, and drunken-like behaviors. Xylene vapors are also irritating to the eye.

3.1.2 Polycyclic Aromatic Hydrocarbons

Typical coal gasification byproducts (coal tar) are referred to as PAH compounds. PAH compounds are a family of multiple ring aromatic compounds commonly found in fossil fuels and formed from the incomplete combustion of organic materials. Repeated contact with PAH compounds may cause photosensitization of the skin, producing skin burns after subsequent exposure to ultra-violet light. Certain PAHs as a group are considered potential human carcinogens (CaPAH). OSHA regulates PAHs as coal tar pitch volatiles (CTPV) and has established a PEL for CTPV of 0.2 mg/m3, as an 8-hr TWA.

Of the PAH compounds typically present at MGP sites, naphthalene is typically present at higher concentrations than the other compounds. Naphthalene is easily detected due to its characteristic moth-ball like odor. The inhalation of high concentrations of naphthalene vapor may result in nausea, vomiting, abdominal pain, and irritation of the bladder. Prolonged overexposure may result in renal shut down. The OSHA PEL for naphthalene, as an 8-hr TWA, is 10 ppm.

3.1.3 Oxide Box Wastes

Blue staining is the characteristic associated with the presence of oxide box wastes (ferrocyanide). Therefore, the presence of this material is very easily identified during field investigations. The cyanides associated with oxide box wastes are present in a form that is generally unavailable or complexed with metals such as iron, which makes the cyanide more stable. Thus, the reported effects of free cyanide are not applicable. OSHA has not established a PEL for ferro/ferri cyanide compounds. Similarly, the ACGIH has not recommended a TLV for these compounds.

3.1.4 Metals

Lead is a common component of urban fill and soils present at industrial sites, such as former MGP and electrical generating sites. In general, the inhalation of metal dusts is irritating to the upper respiratory tract and nasal mucous membranes. Most metal dusts may cause dermatitis and/or eye irritation. The early symptoms of lead poisoning, as a result of overexposure (either through ingestion or inhalation) include fatigue, sleep disturbance, headache, aching bones and muscles, digestive irregularities, abdominal pains, and decreased appetite. Chronic overexposures to lead affect the CNS and male and female reproductive systems. Lead has also been identified as a fetotoxin. The OSHA PEL for inorganic lead is 50 micrograms per cubic meter (ug/m^3).

3.1.5 Dust

Dust generated during coring or cutting of concrete, boring, or excavations can be hazardous to the respiratory system and irritating to the eyes. Dust can also carry the contaminants of concern potentially exposing workers by skin contact and inhalation. The ACGIH has established an eight-hour exposure limit for dust at 3 mg/M3. The concentrations of the chemicals of concern in the soil are low enough that inhalation of dust would not by itself be an exposure hazard. However contamination of skin and clothing can provide additional exposures. Therefore the generation and contact with dust should be minimized.

Water or other methods should be used to control dust during dusty operations; however care must be used to prevent electrical shock if electric tools are used in the same area. If dusts become irritating and engineering controls such as the application of water cannot be used, respirators should be donned as discussed in Section 7.

3.1.6 Hazardous Substances Brought On-Site

A material safety data sheet (MSDS) must be available for each hazardous substance that are brought on the property. This includes solutions/chemicals that will be used to decontaminate sampling equipment or to calibrate air monitoring equipment. These MSDSs will remain on site for the duration of the program. Additionally, the Contractor will maintain a binder of MSDSs for the materials they are using on site in their trailer for all employees to review, if necessary.

In addition, all containers of hazardous materials that brought on site must be labeled in accordance with OSHA's Hazard Communication Standard. Either the original manufacturer's label or an NFPA 704M label specific for the material (as shown at the right) is considered to be an acceptable label.

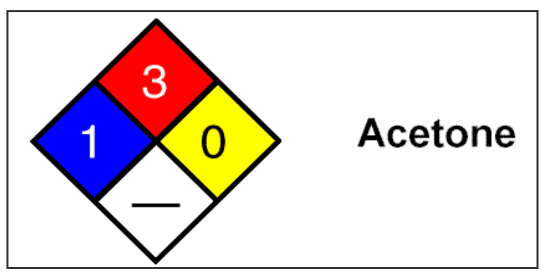


Table 3-1 Summary of Hazardous Properties of Potential Contaminants

Chemical Name	PEL[1]	TLV[2]	VP[3]	VD[4]	SG[5]	SOL[6]	FP[7]	LEL[8]	UEL[9]
Benzene	1	0.5	75	2.8	0.88	<1	12	1.2	7.8
Ethyl Benzene	100	100	7	4	0.88	<1	55	0.8	6.7

Chemical Name	PEL[1]	TLV[2]	VP[3]	VD[4]	SG[5]	SOL[6]	FP[7]	LEL[8]	UEL[9]
Hydrogen Cyanide	10	4.7 STEL	630	.94	0.69	100	0	5.6	40
Naphthalene	10	10	0.08	4.4	1.15	<1	174	0.9	5.9
Toluene	200	50	21	4	0.87	<1	40	1.1	7.1
Xylene	100	100	9	4	0.86	<1	81	1.1	7.0

[1] Permissible Exposure Limit in ppm

[2] Threshold Limit Value in ppm

[3] Vapor Pressure in mm Hg

[4] Vapor Density (air = 1)

[5] Specific Gravity (water = 1)

[6] Solubility in Water in %

[7] Flash Point in □F

[8] Lower Explosive Limit in % by volume

[9] Upper Explosive Limit in % by volume

NA = Not Applicable

? = Not known

C = Ceiling limit not to be exceeded

3.2 Chemical Exposure and Control

3.2.1 Chemical Exposure Potential

Employees can be exposed by inhalation to the chemicals of concern during the installation of the soil borings and sampling activities or utility maintenance or excavation. Another route of potential exposure to the contaminants of concern is via direct dermal contact with soils and groundwater during sampling.

Although highly unlikely, exposure to all of the contaminants of concern can occur via ingestion (hand-to-mouth transfer). The decontamination procedures described in Section 9.0 address personal hygiene issues that will limit the potential for contaminant ingestion.

3.2.2 Chemical Exposure Control

The chemical hazards associated with the ground intrusive activities and SMP monitoring activities can be controlled in several ways, including:

Perform air monitoring (Section 6) in the worker's breathing zone to determine exposure to the chemicals of concern during the installation of soil borings and the sampling program. If exposures exceed the action levels, respiratory protection as discussed in Section 7, will be donned.

To avoid direct dermal contact with contaminated media, protective clothing, as described in Section 7 will be required when collecting samples and decontaminating sampling equipment.

3.3 Hazardous Waste Management

Waste generated as a result of investigation activities will be containerized local to the point of generation, sampled for characterization purposes and secured prior to off-site transportation and disposal. Upon receipt of analytical results, the project team will work with National Grid to properly characterize, profile and dispose of the waste(s).

4.0 Physical Hazards and Controls

4.1 Working Around Heavy Machinery

4.1.1 Drill Rig

Use of a drill rig to advance soil borings and install monitoring wells will require all personnel in the vicinity of the operating rig to wear steel-toed boots, hard hats, hearing protection and safety eyewear. Drill rigs are considered to be heavy equipment, and therefore precautions must be incorporated into job activities when working in close proximity to drill rigs. In addition the wearing the PPE that has been determined to be necessary for the project, employees will need to ensure that Drill Rig Operators conduct inspections of the drill rig on a daily basis. A drill rig inspection is included in Attachment B as a reference. Focal points of the inspection should include checking hydraulic lines, tools and drilling equipment, emergency stop switches, and other parts of the equipment to insure that they are maintained in a safe operating condition.

Employees will also consider the staging their work area so that they are not within the shadow of the drill rig's mast. Working within this area creates a potential to be contacted by the drill rig if it were to tip over on its side. Likewise, when establishing a drilling location, the rig shall be positioned so that it won't clip overhead power lines should it tip over.

Additionally, the following safety requirements must be adhered to:

- All drill rigs and other machinery with exposed moving parts must be equipped with an operational emergency stop device. Drillers and geologists must be aware of the location of this device. This device must be tested prior to job initiation and periodically thereafter.
- The driller must never leave the controls while the tools are rotating unless all personnel are kept clear of rotating equipment.
- A long-handled shovel or equivalent must be used to clear drill cuttings away from the hole and from rotating tools. Hands and/or feet are not to be used for this purpose.
- A remote sampling device must be used to sample drill cuttings if the tools are rotating or if the tools are readily capable of rotating. Samplers must not reach into or near the rotating equipment. If personnel must work near any tools, which could rotate, the driller must shut down the rig prior to initiating such work.
- Driller's Drillers, helpers and geologists must secure all loose clothing, long hair, or jewelry when in the vicinity of drilling operations.
- Only equipment, that has been approved by the manufacturer, may be used in conjunction with drilling equipment Pins that protrude excessively from augers shall not be allowed
- No person shall climb the drill mast while tools are rotating.
- No person shall climb beyond 6 feet above ground on the drill mast without the use of ANSI-approved fall protection (approved belts, lanyards and a fall protection slide rail) or portable ladder that meets the requirements of OSHA standards.
- When using the rig's hoist to lift or move objects other than the equipment associated with the direct push operation, an assessment of the force required to perform the lift and the rig's design

specifications must be made to determine whether the lift can be made safely. In all cases personnel must not be in line with the cable when it is under tension.

- If drilling operations are to be performed within an enclosed space proper procedures must be followed to prevent the accumulation of carbon monoxide within the work area.
- Open doors and windows and provide ventilation to the outside.
- Employ the use of a mechanical ventilation system, i.e. blower or fan, appropriately sized for the room to circulate fresh air.
- Connect equipment exhaust points to hoses that can be direct ventilated to an outside area.

4.1.1.1 Rotary Auger & Rotating Parts

Exposure to rotating parts can occur when working near the drilling rig or the internal combustion engine. All rotating parts should be covered with guards to prevent access by workers. When performing maintenance activities that require the rotating parts to be exposed, workers should not allow loose clothing, hands, or tools to approach the rotating parts. Guards must be replaced as soon as possible after completing the maintenance task.

Operation of drilling equipment also creates hazards associated with pinch points and rotating equipment. Employees will evaluate work procedures to avoid placing their body and extremities in the path of rotating equipment and tools to avoid being struck by moving equipment, tools and machinery. Similarly, these hazards also create pinch point hazards where the body and extremities, especially the hands, can be caught in moving equipment and crushed. Employees will evaluate equipment and tool use procedures to identify pinch points and develop procedures to avoid placing body parts in a position where they can be caught in moving equipment, tools and machinery.

4.1.1.2 Direct Push Hazards

Use of the Direct Push System to advance soil borings and collect soil samples will require all personnel in the vicinity of the operating unit to wear steel-toed boots, hardhats, hearing protection and safety eyewear. Personnel shall not remain in the vicinity of operating equipment unless it is required for their work responsibilities. Additionally, the following safety requirements must be adhered to:

- A remote vehicle ignition is located on the control panel of the Geoprobe unit. This allows the operator to start and stop the vehicle engine from the rear. This device must be tested prior to job initiation and periodically thereafter. All employees should be aware of how to access and operate the rear ignition.
- The driller must never leave the controls while the probe is being driven.
- Drillers, helpers and geologists must secure all loose clothing when in the vicinity of drilling operations.
- The Geoprobe vehicle shall not be moved any distance with the probe in the extended position. Check for clearance at roof or the vehicle before folding the Geoprobe out of the carrier vehicle.
- Be sure the parking brake is set, or vehicle wheels have been chocked, before probing.
- Never allow the derrick foot to be lifted more than 6" off of the ground surface.
- Deactivate hydraulics when adding or removing probe rods, anvils or any tool in the hammer.
- Verify that all threaded parts are completely threaded together before probing.

<u>Cuts and Lacerations</u>

Geoprobe soil samples are collected in acetate liners that must be cut open in order to collect the sample. Additionally, tubing will need to be cut to facilitate groundwater sampling. Additional tasks for the job may also pose laceration hazards. Tube-cutters are available and should be used to eliminate this hazard. However, if it is necessary to use knives or blades, follow the safety precautions listed below:

- Keep your free hand out of the way
- Secure the acetate liner so it won't roll or move while you are cutting
- Use only sharp blades; dull blades require more force which results in less knife control
- Pull the knife at an angle to your body; pulling motions are easier to manage
- Don't put your knife in your pocket
- Use a hooked knife (i.e. linoleum knife) or a utility knife with a self-retracting blade
- Wear leather or Kevlar® gloves when using knives or blades.

4.1.1.3 Sonic Drilling

Use of a Sonic Drill Rig to advance soil borings, collect soil samples and/or install monitoring wells will require all personnel in the vicinity of the operating unit to wear steel-toed boots, hardhats, hearing protection and safety eyewear. Personnel shall not remain in the vicinity of operating equipment unless it is required for their work responsibilities. Additionally, the following safety requirements must be adhered to:

- A remote vehicle ignition may be located on the control panel of the Drill Rig. This allows the operator to start and stop the vehicle engine from the rear. This device must be tested prior to job initiation and periodically thereafter. All employees should be aware of how to access and operate the rear ignition.
- The driller must never leave the controls while the probe is being driven.
- Drillers, helpers and geologists must secure all loose clothing when in the vicinity of drilling operations.
- The Drill Rig shall not be moved any distance with the mast in the extended position. Check for clearance at roof or the vehicle before folding the Rig out of the carrier vehicle.
- Be sure the parking brake is set, vehicle wheels have been chocked and/or outrigger stabilizers have been positioned before drilling.
- Never allow the derrick foot to be lifted more than 6" off of the ground surface.
- Deactivate hydraulics when adding or removing rods, anvils or any tool in the hammer.
- Verify that all threaded parts are completely threaded together before drilling.

4.1.2 Soil Loading Machinery

Heavy equipment including excavators and soil loading machinery will be used to excavate impacted soils. Heavy equipment at the project site requires all employees working in the exclusion zone to wear ANSI-approved hard hats, steel-toed safety shoes/boots, safety glasses and hearing protection, as well as traffic vests as indicated above.

Operators will inspect the equipment daily before use to ensure safe operating conditions and to determine that the brakes and operating systems are in proper working condition and that all required safety devices are in place and functional (i.e., reverse gear alarms are working properly).

All personnel will place the spotter within close proximity to the operating machinery. When working around heavy equipment, employees should:

- make sure that the operator is aware of your presence/activities;
- stay in the operator's line of sight, don't work in his/her blind spot;
- approach areas where equipment is operating from a direction visible to the operator;
- be aware of the swing radius of the excavator;
- do not walk or work underneath loads handled by digging equipment;
- do not ride in buckets of loaders;
- stand away from soil stockpile areas to avoid being struck by any spillage or falling materials.; and,
- develop a series of hand signals to facilitate communication with the operator.

4.2 Trench/Excavation Cave-In or Collapse

The excavation depths vary depending on the activity to be completed. In some instances the proposed depths exceed five feet. Under no circumstances is the project team to enter an unshored or unsloped excavation greater than five feet in depth. If samples need to be collected, they will be collected from the bucket of the backhoe or by using a remote sampling device.

4.3 Concrete and Asphalt Coring & Cutting

Cutting and coring concrete and asphalt can involve numerous hazards. The noise generated as a result of the tools used, and adequate hearing protection is necessary when conditions outlined in the Noise section below are encountered. Tools used which can include drills and saws, must be appropriately guarded to prevent hands, PPE, and other objects from being caught-up in the moving parts and drawing employees in. Dust may also be generated while cutting concrete and either respiratory protection or dust suppression will need to be utilized to prevent exposure. Additional consideration must be given chemical hazard concerns that may exist in the materials underlying the concrete.

4.4 Corrosive Liquids

Site activities may require the use of corrosive liquids for preserving samples once collected, identifying substances in the field, or as part of system operations and maintenance. When corrosive liquids are identified in the work area, PPE upgrades will need to include an appropriate glove to mitigate the hazard, protective eye wear to guard against splashing liquids, and the potential need for poly-coated Tyvek to be worn. Additionally, the job task will be analyzed to determine if splashing and spilling can be minimized through the use of special equipment or procedures. Examples include using a funnel, identifying an alternative substance for use, and more.

4.5 Flying Objects Hazards

Activities involving the use of power tools, drilling rigs, and hand tools, among other activities, can create flying object hazards where objects can become projectiles. When flying objects represent projectiles employees need to use equipment that is appropriately guarded to minimize the creation of projectile hazards, and also use the appropriate PPE including hard hats, safety goggles, face shields to prevent projectiles from causing injuries to employees.

4.6 Hand Safety

4.6.1 Glove Selection

To protect onsite workers from hand injuries, the following gloves will be used for when performing a specific duty:

Brightly colored gloves will be used to help emphasize and easily locate the hands. It is recommended that the color of gloves be changed monthly to draw attention to the hands.

Pinch points are found between a moving object and a stationary object, or between two continuously moving objects. Yellow hand stickers will be placed on equipment to remind workers of pinch points.

4.6.2 Working with Glassware

Glass bottles, laboratory equipment, and VOA vials can break and cause lacerations and puncture wounds. The follow preventive measures should be taken to reduce the potential for broken glassware.

- Package all glassware such that there is no glass to glass contact during transportation or storage;
- Assume that any time glass strikes another object it is damaged;
- Inspect all glassware for cracks, scratches, and other damage before using;
- Lids and caps should be “finger tight” unless there is a torque specification and you use a torque wrench;
- Never fill a glass container (other than VOA vials with a septum) liquid full, always leave an air space to buffer thermal expansion of the liquid; and
- Avoid rapid temperature changes when filling glass containers.

Glass often has flaws that cannot be detected by visual inspection and the force needed to open and tighten lids can cause these flaws to fracture the glass. Any time force is applied to glass, workers should wear leather or preferably Kevlar® gloves. Kevlar® glove liners are available for use under Nitrile or cotton gloves.

4.6.3 Hand Tools

Rules for the safe use of hand tools:

- Select the right size tool for the job. Don’t use “cheaters” and avoid pulling old tools from the waste stream. There’s a reason why they were thrown away!
- All hand tools must be in safe condition.
- Handles must be sound, straight and tight-fitting.

- Always inspect tools before use and replace or repair worn or damaged tools.
- Always keep the cutting edges sharp and never test a cutting edge with your finger.
- When working on an elevated surface (ladder, truck, scaffold), ensure your tools are secure. Falling tools can cause serious injury.
- Always carry your tools correctly and never put sharp or pointed tools in your pocket.
- When carrying hand tools, always point the cutting edge to the ground.
- Always keep your tools in a dry place to prevent rust.
- Cutting tools must be kept sharp and properly shaped.
- Secure work pieces prior to cutting or drilling.
- Keep the unused hand and other people away from the tool.

4.6.4 Specific Tool Use

4.6.4.1 Screwdrivers

Most screwdrivers are not designed to be used on electrical equipment. Use an insulated screwdriver for electrical work.

Do not hold an object in the palm of one hand and press a screwdriver into it; place the object on a bench or table. Never hammer with a screwdriver. Never use a screwdriver with a broken handle, bent or burred blade, etc.

4.6.4.2 Pliers

Do not use pliers as a substitute for hammers, wrenches, pry bars, etc. Use insulated pliers when doing electrical work. Inspect the pliers frequently to make certain that they are free of breaks or cracks.

Use the right type of pliers for the specific task – adjustable, locking (Vise Grip®), standard, bolt size fit, pipe wrench.

4.6.4.3 Hammers

Use the correct hammer for the specific type of striking work (task) to be done. Always wear safety glasses when using a hammer to strike an object. Always use the claw portion of a hammer to remove nails and not as a pick or awl. Have an unobstructed view and swing when using a hammer. Watch for overhead interference on back and forward swing. Use a good grip and use something other than your hand to hold a nail when starting hammering. Check for defects on the handle and head before using. If the hammer head shows signs of mushrooming, replace it immediately.

Handles may be wood, tubular/solid steel or fiberglass. Replace any hammer with a loose handle before the head flies off and causes injury to you or someone else. Tighten loose handles with the proper wedges; never use nails or staples for wedges. If a steel or fiberglass handle is loose replace it, since it is more difficult to repair than a wooden one. Some fiberglass handles can be tightened with the aid of a repair kit with epoxy materials.

4.6.4.4 Wrenches

Select the correct size of wrench for the job. Never use a pipe wrench as a wrench handle extension. Too much leverage can ruin a tool and cause injury.

To avoid sudden slips, stand in a balanced position and always pull on the wrench instead of pushing against the fixed jaw, particularly when a pinch point is created. Wear gloves when using a wrench in a confined space.

Whenever possible use a box end wrench instead of an open end wrench to avoid slipping.

4.6.4.5 Chisels

Always wear safety goggles or a face shield when using a chisel. Drive chisels outward and away from your body. Do not use chisels to pry. Keep edges sharp for most effective work and protect when not in use. Driven tools (chisels, punches, etc.) must be dressed to remove any mushrooming. Use the proper hammer when using a chisel.

4.6.4.6 Knives

Always perform a thorough Job Safety Analysis (JSA) to define the proper cutting tool for the task.

Always place the item to be cut on a solid surface, attempt to hold the cut item without your hand and cut in a direction away from the body and hand.

Always keep hands and body clear of the knife stroke. Always keep the cutting tool blades sharp.

Make sure there is plenty of open space around you when using any cutting tool.

Use the following safer tools in replace of fixed open blade knives (FOBK) whenever possible:

- Self-retracting utility knives
- Guarded utility knives
- Shears, snips, and/or scissors
- Concealed blade cutters
- Pipe cutters
- Specialty cutters (e.g. Geoprobe Acetate Liner Cutter)
- Ratcheting tools

4.6.5 Power Tools

To prevent hazards associated with the use of power tools, workers should observe the following general precautions:

- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords away from heat, oil and sharp edges.
- Disconnect tools when not using them, before servicing or cleaning them and when changing accessories such as blades, bits and cutters.
- If a tool is only temporarily being removed from the power source and the cord is not in the immediate control of the user, it is strongly suggested that a cord plug lockout be used to prevent the tool from accidentally being re-plugged in.

- Secure work with clamps or vise, freeing up both hands to operate the tool.
- Avoid accidental starting. Do not hold fingers on the switch button when carrying a plugged-in tool.
- Keep tools sharp and clean for best performance.
- Wear appropriate clothing. Loose clothing or jewelry can become caught in moving parts.
- Keep all guards in place.

4.6.6 Electric Tools

A variety of power tools may also be used during the proposed activities. When using portable tools that are electrically powered, follow the safety precautions listed below:

- Check to see that electrical outlets used to supply power during field operations is of the three wire grounding type.
- Extension cords used for field operations should be of the three wire grounding type and designed for hard or extra-hard usage. This type of cord uses insulated wires within an inner insulated sleeve and will be marked S, ST, STO, SJ, SJO or SJTO.
- NEVER remove the ground plug blade to accommodate ungrounded outlets.
- Do not use extension cords as a substitute for fixed or permanent wiring. Do not run extension cords through openings in walls, ceilings or floors.
- Protect the cord from becoming damaged if the cord is run through doorways, windows or across pinch points.
- Examine extension and equipment cords and plugs prior to each use. Damaged cords with frayed insulation or exposed wiring and damaged plugs with missing ground blades MUST BE REMOVED from service immediately.
- All portable or temporary wiring which is used outdoors or in other potentially wet or damp locations must be connected to a circuit that is protected by a ground fault circuit interrupter (GFCI). GFCI's are available as permanently installed outlets, as plug-in adapters and as extension cord outlet boxes. DO NOT CONTINUE TO USE A PIECE OF EQUIPMENT OR EXTENSION CORD THAT CAUSES A GFCI TO TRIP.
- When working in flammable atmospheres, be sure that the electrical equipment being used is approved for use in Class I, Division I atmospheres.
- Do not touch a victim who is still in contact with current. Separate the victim from the source using a dry, nonmetallic item such as a broomstick or cardboard box. Be sure your hands are dry and you are standing on a dry surface. Turn off the main electrical power switch and then begin rescue efforts.

4.7 Noise Exposure

The use of drilling equipment and construction machinery can expose the field team to noise levels that exceed the OSHA PEL of 90 dB for an 8-hour day. Exposure to noise can result in the following:

- Temporary hearing losses where normal hearing returns after a rest period;
- Interference with speech communication and the perception of auditory signals;
- Interference with the performance of complicated tasks; and,

- Permanent hearing loss due to repeated exposure resulting in nerve destruction in the hearing organ.

Since personal noise monitoring will not be conducted during the proposed activities, employees must follow this general rule of thumb: If the noise levels are such that you must shout at someone two (2) feet away from you, you need to be wearing hearing protection. Employees can wear either disposable earplugs or earmuffs but all hearing protection must have a minimum noise reduction rating (NRR) of 27 dB.

4.8 Overhead Materials

Overhead materials can include objects, tools, utilities, equipment and machinery that are, or have the potential to be, elevated above the work area. Overhead materials pose a significant safety risk because of the force that can be generated when they fall and strike an employee. Special attention should be paid when setting up a work area to evaluate the potential for overhead materials to cause traumatic blunt force trauma. Consideration must be given to potential for these overhead objects to be contacted during the course of work by employees and Subcontractors, and what the result of contacting these overhead materials will be.

If possible, the work area should be adjusted or moved so that no overhead materials present a hazard. Likewise, if the object overhead can be relocated to remove the hazard, that is the preferred course of mitigation. When the hazard can’t be eliminated, then protective measures to shield the employees from being struck by falling objects should be taken. As a last resort, and as part of the minimum PPE for project site work, employees working in areas where falling objects pose a hazard will wear a hard hat.

4.9 Pinch Points

The use of hand tools, mechanical equipment, heavy machinery and more can create pinch points within the working area. Pinch points can be recognized when moving objects are present in the work space in close proximity to employees, and it is reasonable to assume that a part of the employee’s body can be caught between the moving objects. Pinch points will be considered when performing a Job Safety Analysis for the task being performed and recommendations will be made to reduce the potential for body parts to become caught in moving parts, including but not limited to:

- The use of PPE, e.g. gloves, boots, etc, to protect exposed body parts;
- Guarding machinery and equipment to prevent body parts from being caught in the moving objects;
- Using tools as an extension of the body to avoid placing body parts in the path of harm. When tools are used as an extension of the body consideration will be given to how the tool may become a hazard if it is caught within moving parts.

4.10 Slips, trips and fall hazards

On any work area, it is expected that the ground might be uneven. The ground surface might be unreliable due to settling. Surface debris might be present and wet or swampy areas can exist.

Employees should walk around, not over or on top of debris or trash piles. When carrying equipment, identify a path that is clear of any obstructions. It might be necessary to remove obstacles to create a smooth, unobstructed access point to the work areas on project site.

During the winter months, snow shovels and salt crystals or calcium chloride should be kept on site to keep work areas free of accumulated snow and ice. Furthermore, use sand or other aggregate material to help keep work surfaces from being slippery, especially where salt/calcium chloride cannot be used. In addition, make sure work boots have soles that provide good traction. When walking on ice is necessary crampons or Yaktrax® should be used.

Maintaining a work environment that is free from accumulated debris is the key to preventing slip, trip and fall hazards at construction sites. Essential elements of good housekeeping include

- Orderly placement of materials, tools and equipment;
- Placing trash receptacles at appropriate locations for the disposal of miscellaneous rubbish;
- Prompt removal and secure storage of items that are not needed to perform the immediate task at hand; and,
- Awareness on the part of all employees to walk around, not over or on, equipment that might have been stored in the work area.

4.11 Splashing Liquids

Groundwater sampling activities can produce splashing hazards in the work area. Employees will use techniques that minimize the production of splashing hazards while handling liquids, including groundwater, sample container preservatives, decontamination solutions and any other liquids in the work area. Employees will also evaluate the working tasks to consider the use of goggles while working with liquids.

4.12 Back Safety

Using the proper techniques to lift and move heavy pieces of equipment is important to reduce the potential for back injury. The following precautions should be implemented when lifting or moving heavy objects:

- Use mechanical devices to move objects that are too heavy to be moved manually.
- If mechanical devices are not available, ask another person to assist you.
- Bend at the knees, not the waist. Let your legs do the lifting.
- Do not twist while lifting.
- Bring the load as close to you as possible before lifting.
- Be sure the path you are taking while carrying a heavy object is free of obstructions and slip, trip and fall hazards.

4.13 Traffic Safety

4.13.1 Transportation Plan

The Excavation Work Plan (Appendix A of the SMP) contains a transportation plan for the Site. This plan addresses requirements for accessing the project site, limitations of public use of the streets or sidewalks adjacent to the project site, securing any necessary permits to use and/or close public streets and sidewalks, and the need for flaggers and signage when traffic flow will be impeded on public streets.

4.13.2 Basic Procedures

To make certain that motorists are aware of our presence, all employees who are potentially exposed to traffic hazards should wear orange or yellow ANSI Class II or III safety vests. Work area should be delineated with traffic cones, or other suitable warning barriers, to prevent motorists from inadvertently driving through. As for vests, cones or other barrier materials should be reflectorized if work will be performed during dusk or evening hours. Where it is not feasible to implement such procedures, a standby observer should be assigned to warn the work crew of any impending traffic hazards.

4.13.3 Work On/Adjacent to Public Roadways

For projects that involve potential exposure to traffic on or adjacent to public roadways, consult the "Work Zone Traffic Control" handbook, under "Traffic Control" on AECOM's H&S Website, at the following web address: http://intranet.AECOM.com/healthweb.

The handbook was developed by the State of Maine DOT and provides examples of traffic control applications for typical road work situations (e.g., closure of one lane of a two lane road, stationary work on the shoulder of a road, mobile work along the shoulder of a road, etc.). Although it was written to reflect the basic requirements of Part VI of the Federal Highway Administration's (FHWA) Manual of Uniform Traffic Control Devices (MUTCD), this handbook is not a regulatory document. Since specific requirements will vary from state to state, and within a state, by county, city or town.

4.13.4 Flagging/Redirecting Traffic

Specific requirements exist when traffic must be redirected around a work area that is on or adjacent to a public roadway. In certain locations only police officers may redirect traffic. As a minimum, OSHA requires that flaggers be formally trained in accordance with the requirements specified in ANSI D6.1-1971.

http://www.atssa.com/cs/flagger

When traffic must be redirected, and the local police do not perform that role, a traffic control firm should be hired (these are frequently listed in the yellow pages under "safety").

4.14 Driving Safety

Drivers must be licensed to drive the class of vehicle they are operating and trained in defensive driving. Drivers and passengers must comply with all traffic laws and posted signs, and will not operate a vehicle if under the influence of impairing medication, alcohol, or any other substance.

Make sure that the following basic safe driving practices are followed at all times while working on this project:

- Always wear a seat belt while operating a motor vehicle or while traveling as a passenger.
- Obey speed limits and local traffic laws at all times.
- Obtain proper directions to the project site in advance and take the route that is most likely to be free of known traffic hazards (e.g., congestion, construction, etc.) and that avoids travel through potentially dangerous neighborhoods.
- Abstain from distractions while driving (e.g., the use of cell phones, eating/drinking, reading maps, etc.) If necessary, stop the vehicle and pull over to perform such activities safely.

- Do not operate a motor vehicle if you are tired and/or have not had sufficient rest. AECOM's H&S policy 1.2 limits the maximum length of the workday to 16 hours for fieldwork. This limit includes the time spent driving to/from a site.

- All unattended personnel transport vehicles will not be allowed to idle, and must be turned off when not in use.

4.14.1.1 Planning / Preparation

- Prior to departure, check traffic reports, weather conditions, road construction, and road closures. If necessary, develop an alternate route and new, approved JMP (Journey Management Plan).

- Prior to entering the vehicle, inspect the vehicle.

- Leave early to allow for contingencies.

4.14.1.2 Secure Packing

Do not move your vehicle unless all equipment and supplies are secured. Items and material which may roll, slide, or move about in your vehicle while traveling are a major hazard. Secure the load!

4.14.1.3 Emergency Procedures

Always move out of traffic if possible; even if those in front of you have stopped. Stopping on an active highway can precipitate being hit from the rear. If you must stop on an active roadway, leave at least one car length in front of you, and watch the rear mirror, so you can ease up if someone behind can't stop. Keep your flashers on in this situation. If you are the only driver coming to a stop on an active roadway, leave the flashers on and when safe to do so, exit the car and get to a safe location.

If you must stop due to vehicle failure, etc. try to coast out of traffic. Put on your flashers, and tie a white handkerchief, etc. on the driver's side door or mirror. If you remain in the vehicle, lock the doors. Use your cell phone to summon help.

4.15 Utility Hazards

4.15.1 Underground Utilities

Law requires that a utility clearance be performed prior to initiation of any subsurface work.

Dig Net of New York City and Long island
(800) 272-4480 or http://www.dignetnycli.com/

Call to request a mark-out of natural gas, electric, telephone, cable television, water and sewer lines in the proposed drilling locations. In many locations, a separate location request must be submitted to the municipality providing potable water, sanitary and storm sewerage. Work will not begin until the required utility clearances have been performed.

Utility clearance organizations typically do not mark-out underground utility lines that are located on private property. As such, the drilling contractor must exercise due diligence and try to identify the location of any private utilities on the property being investigated in several ways, including:

- Obtaining as-built drawings for the areas being investigated from the property owner;
- Visually reviewing each proposed soil boring locations with the property owner or knowledgeable site representative;
- Performing a geophysical survey to locate utilities;
- Hiring a private line locating firm to determine the location of utility lines that are present at the property;
- Identifying a no-drill zone; or
- Hand digging in the proposed soil boring locations if insufficient data is available to accurately determine the location of the utility lines.

The client or property owner may have specific requirements and procedures for underground utility clearance.

4.15.2 Overhead Utilities

All overhead lines will be considered “energized” unless properly de-energized, grounded and tested by the utility company before working within the clearance distance as defined below. The SSO must observe de-energizing process and reconfirm that the lines are de-energized on a daily basis.

Any vehicle or mechanical equipment that is capable of having parts of its structure elevated near energized overhead lines shall be operated so that a minimum clearance of 10 feet is maintained at all times. This 10 foot distance shall be increased a minimum of 0.4 inches for each 1 kV over 50 kV. If the voltage of the overhead line is unknown, maintain a clearance distance of 35 feet from ground projection of the nearest power line to the vehicle. Any work within the clearance distance must be approved by the Regional Health and Safety Manager and the utility company.

Precautions must be taken when handling lengths of pipe or tubing that can approach overhead power and utility lines. When working with pipe or tubing, maintain a distance equal to the length of pipe plus the clearance distance defined above.

4.16 Weather

4.16.1 Inclement Weather

The Site Safety Officer will check the weather forecast for the project area each morning prior to mobilization. Predicted weather conditions will be included in the Job Safety Analysis. Weather changes should initiate a review and update of the JSA as necessary.

Severe weather can occur with little warning. The employee must be aware of the potentials for lightning, flash flooding and high wind events.

Be Prepared, Know What is Coming your Way

- Listen to the radio for severe weather alerts.
- Check the Storm Prediction Center's web page for alerts and warnings.

http://www.spc.noaa.gov/products/wwa/

- Pay attention to the weather in your area, up wind of your location, and in the watershed upstream from your location.
- When in the field, be aware of the route you must take to get to shelter.
- When working in low areas be aware of the potential for flash flooding and the route to higher ground.

4.16.2 Heat Stress

4.16.2.1 Types of Heat Stress

Heat related problems include heat rash, fainting, heat cramps, heat exhaustion and heat stroke. Heat rash can occur when sweat isn't allowed to evaporate; leaving the skin wet most of the time and making it subject to irritation. Fainting may occur when blood pools to lower parts of the body and as a result, does not return to the heart to be pumped to the brain. Heat related fainting often occurs during activities that require standing erect and immobile in the heat for long periods of time. Heat cramps are painful spasms of the muscles due to excessive salt loss associated with profuse sweating.

Heat exhaustion results from the loss of large amounts of fluid and excessive loss of salt from profuse sweating. The skin will be clammy and moist and the affected individual may exhibit giddiness, nausea and headache.

Heat stroke occurs when the body's temperature regulatory system has failed. The skin is hot, dry, red and spotted. The affected person may be mentally confused and delirious. Convulsions could occur. EARLY RECOGNITION AND TREATMENT OF HEAT STROKE ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH. A person exhibiting signs of heat stroke should be removed from the work area to a shaded area. The person should be soaked with water to promote evaporation. Fan the person's body to increase cooling.

Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks.

4.16.2.2 Early Symptoms of Heat-Related Health Problems:

decline in task performance	excessive fatigue
incoordination	reduced vigilance
decline in alertness	muscle cramps
unsteady walk	dizziness

4.16.2.3 Susceptibility to Heat Stress Increases due to:

lack of physical fitness	obesity
lack of acclimatization	drug or alcohol use
increased age	sunburn
dehydration	infection

People unaccustomed to heat are particularly susceptible to heat fatigue. First timers in PPE need to gradually adjust to the heat.

4.16.2.4 The Effect of Personal Protective Equipment

Sweating normally cools the body as moisture is removed from the skin by evaporation. However, the wearing of certain personal protective equipment (PPE), particularly chemical protective coveralls (e.g., Tyvek), reduces the body's ability to evaporate sweat and thereby regulate heat buildup. The body's efforts to maintain an acceptable temperature can therefore become significantly impaired by the wearing of PPE.

4.16.2.5 Measures to Avoid Heat Stress:

The following guidelines should be adhered to when working in hot environments:

- Establish work-rest cycles (short and frequent are more beneficial than long and seldom).
- Identify a shaded, cool rest area.
- Rotate personnel, alternative job functions.
- Water intake should exceed sweat produced. Most workers exposed to hot conditions drink less fluids than needed because of an insufficient thirst. **DO NOT DEPEND ON THIRST TO SIGNAL WHEN AND HOW MUCH TO DRINK.** Consume enough liquid to force urination every two hours. In humid climates ice water or ice should be consumed to help maintain normal body temperature since evaporation does not provide an efficient mechanism for heat removal.
- Eat light meals before and during work shifts. Avoid highly salted foods.
- Drink sports drinks such as Gatorade® diluted 1:1 with water.
- Save most strenuous tasks for non-peak heat hours such as the early morning or at night.
- Avoid alcohol during prolonged periods of heat. Alcohol will cause additional dehydration.
- Avoid double shifts and/or overtime.

The implementation and enforcement of the above mentioned measures will be the joint responsibility of the Project Manager and health and the Site Safety Officer. Potable water and fruit juices should be made available each day for the field team.

4.16.2.6 Heat Stress Monitoring Techniques

Site personnel should regularly monitor their heart rate as an indicator of heat strain by the following method:

Radial pulse rates should be checked by using fore-and middle fingers and applying light pressure top the pulse in the wrist for one minute at the beginning of each rest cycle. If the pulse rate exceeds 110 beats/minute, the next work cycle will be shortened by one-third and the rest period will be kept the same. If, after the next rest period, the pulse rate still exceeds 110 beats/minute, the work cycle will be shortened again by one-third.

4.16.3 Cold Stress

4.16.3.1 Type of Cold Stress

Cold injury is classified as either localized, as in frostbite, frostnip or chilblain; or generalized, as in hypothermia. The main factors contributing to cold injury are exposure to humidity and high winds, contact with wetness and inadequate clothing.

The likelihood of developing frostbite occurs when the face or extremities are exposed to a cold wind in addition to cold temperatures. The freezing point of the skin is about 30o F. When fluids around the cells of the body tissue freeze, skin turns white. This freezing is due to exposure to extremely low temperatures. As wind velocity increases, heat loss is greater and frostbite will occur more rapidly.

4.16.3.2 Symptoms of Cold Stress

The first symptom of frostbite is usually an uncomfortable sensation of coldness, followed by numbness. There might be a tingling, stinging or aching feeling in the affected area. The most vulnerable parts of the body are the nose, cheeks, ears, fingers and toes.

Symptoms of hypothermia, a condition of abnormally low body temperature, include uncontrollable shivering and sensations of cold. The heartbeat slows and can become irregular, the pulse weakens and the blood pressure changes. Pain in the extremities and severe shivering can be the first warning of dangerous exposure to cold.

Maximum severe shivering develops when the body temperature has fallen to 95o F. Productive physical and mental work is limited when severe shivering occurs. Shivering is a serious sign of danger. Immediately remove any person who is shivering from the cold.

4.16.3.3 Methods to Prevent Cold Stress

When the ambient temperature, or a wind chill equivalent, falls to below 40o F (American Conference of Governmental Industrial Hygienists recommendation), project site personnel who must remain outdoors should wear insulated coveralls, insulated boot liners, hard hat helmet liners and insulated hand protection. Wool mittens are more efficient insulators than gloves. Keeping the head covered is very important, since 40% of body heat can be lost when the head is exposed. If it is not necessary to wear a hard hat, a wool knit cap provides the best head protection. A facemask may also be worn.

Persons should dress in several layers rather than one single heavy outer garment. The outer piece of clothing should ideally be wind and waterproof. Clothing made of thin cotton fabric or synthetic fabrics such as polypropylene is ideal since it helps to evaporate sweat. Polypropylene is best at wicking away moisture while still retaining its insulating properties. Loosely fitting clothing also aids in sweat evaporation. Denim is not a good protective fabric. It is loosely woven which allows moisture to penetrate. Socks with a high wool content are best. If two pairs of socks are worn, the inner sock should be smaller and made of cotton, polypropylene or similar types of synthetic material that wick away moisture. If clothing becomes wet, it should be taken off immediately and a dry set of clothing put on.

If wind conditions become severe, it might become necessary to shield the work area temporarily. The SSO and the PM will determine if this type of action is necessary. Heated break trailers or a designated area that is heated should be available if work is performed continuously in the cold at temperatures, or equivalent wind chill temperatures, of 20o F.

Dehydration occurs in the cold environment and can increase the susceptibility of the worker to cold injury due to significant change in blood flow to the extremities. Drink plenty of fluids, but limit the intake of caffeine

4.16.4 Work/Rest Cycles for Cold Weather

If wind chill temperatures fall below minus 25o F, breaks from the cold will occur at a rate of one every hour. If wind chill temperatures fall below minus 45o F, all work will cease and persons will be required to go indoors. Also see Section 1.1.1 regarding shift duration. However, these guidelines can be modified at any time based on actual project site conditions and professional judgment rendered by either the Field Manger and/or SSO. For example, the Field Manger and/or SSO will evaluate field crew fitness; the condition of their cold-weather gear, including boots; and will observe employees alertness, including fatigue and rate of cold tolerance/acclimation.

If weather conditions warrant, portable tents might become necessary to shield the work area from wind, rain, snow, etc. The SSO and the Field Manager will determine if this type of action is necessary. However, under no conditions will the tents be heated and as a precautionary measure, a Photoionization Detector (PID) with a 10.6 ev lamp will be used to monitor the breathing zone of personnel inside the tent. See Section 6 for action levels based on PID readings. A JSA should be prepared and discussed with all workers detailing the precautions for working in these cold weather conditions.

4.17 Well Development and Groundwater Monitoring

During purging and development of borings into monitoring wells, the PPE indicated in Section 7 below will be worn to avoid chemical contact / exposure, as well as physical trauma. Bailing wells requires proper gloves, eye protection, and possibly protective coveralls to prevent splashing. Back and lifting precautions outlined in Section 5.1 shall be used to avoid ergonomic injuries.

4.18 Confined Spaces

Confined Space entry may be required for personnel to enter vaults or manholes in the work areas. The following procedures must be followed in an event confined space entry is necessary. Proper permits must be obtained and regulatory agencies notified prior to performing a confined space entry.

When working in industrial settings, it is common to need to enter a confined space to make observations, collect samples, or perform other duties. AECOM employees or sub contractors must not enter any confined space containing a hazard.

A confined space is defined as any space that meets the following criteria:

- Is not designed for human occupancy
  - excludes vehicles, elevator cabins etc,
  - includes elevator shafts and wells, tanks, vaults, etc.
- Is large enough to physically enter with the whole body, and
- Has a restricted exit path (you must climb over pipes, through man ways, etc.)

If the confined space contains any hazard, entry may only be made if permitted in writing by the space owner or the Regional Health and Safety Manger, the entry is monitored by an observer, and with the prior written approval of the Regional Health and Safety Manager.

Typical hazards include but are not limited to:

- Flammable materials
- Toxic materials
- Corrosive materials
- Exposed electrical circuits
- Falls greater than six feet
- Moving machinery
- Oxygen deficient atmosphere

If there is any doubt about whether a space meets the above criteria, call the Health and Safety Staff.

4.19 Hot Work

Prior to initiation of any hot work procedures, a “Hot Work Permit” (Attachment B) must be approved by a National Grid representative and the SSHO.

4.20 Biological Hazards

If the program is implemented in the spring, summer or fall, biological hazards associated with adjacent woods and wetlands may pose a potential concern for employees involved with project oversight.

4.20.1 Poisonous Plants

Persons working on this program should be aware of the possible presence of poisonous plants and insects. **Poison ivy** is a climbing plant with leaves that consist of three glossy, greenish leaflets. Poison ivy has conspicuous red foliage in the fall. Small yellowish-white flowers appear in May through July at the lower leaf axils of the plant. White berries appear from August through November. Poison ivy is typically found east of the Rockies. **Poison oak** is similar to poison ivy but its leaves are oak-like in form. Poison oak occurs mainly in the south and southwest. **Poison sumac** typically occurs as a small tree or shrub and may be 6-20 feet in height. The bark is smooth, dark and speckled with darker spots. Poison sumac is typically found in swampy areas and east of the Mississippi. The leaves have 7-13 smooth-edged leaflets and drooping clusters of ivory-white berries appear in August and last through spring.

The leaves, roots, stems and fruit of these poisonous plants contain urushiol. Contact with the irritating oil causes an intensely itching skin rash and characteristic, blister-like lesions. The oil can be transmitted on soot particles when burned and may be carried on the fur of animals, equipment and apparel.

Proper identification of these plants is the key to preventing contact and subsequent dermatitis. Wear long sleeves and pants when working in wooded areas. In areas of known infestation, wear Tyvek coveralls and gloves. Oils are easily transferred from one surface to another. If you come in contact with these poisonous plants, wash all exposed areas immediately with cool water to remove the oils. Some commercial products such as Tecnu's Poison Oak-n-Ivy Cleanser claim to further help with the removal of oils.

4.20.2 Ticks

Ticks are bloodsuckers, attaching themselves to warm-blooded vertebrates to feed. If a tick is not removed, or if the tick is allowed to remain for days feeding on human blood, a condition known as **tick paralysis** can develop. This is due to a neurotoxin, which the tick apparently injects while engorging. This neurotoxin acts upon the spinal cord causing incoordination, weakness and paralysis.

Deer ticks are associated with the transmission the bacteria that causes Lyme Disease. Female deer ticks are about one-quarter inch in length and are black and brick red in color. Males are smaller and all black. The early stages of Lyme disease, which can develop within a week to a few weeks of the tick bite, is usually marked by one or more of these signs and symptoms:

- Tiredness
- Chills and fever
- Headache
- Muscle and/or join pain
- Swollen lymph glands
- Characteristic skin rash (i.e. bullseye rash)

Tick season lasts from April through October; peak season is May through July. You can reduce your risk by taking these precautions:

- During outside activities, wear long sleeves and long pants tucked into socks. Wear a hat, and tie hair back.
- Use insecticides to repel or kill ticks. Repellents containing the compound DEET can be used on exposed skin except for the face, but they do not kill ticks and are not 100% effective in discouraging ticks from biting. Products containing permethrin kill ticks, but they cannot be used on the skin -- only on clothing. When using any of these chemicals, follow label directions carefully.
- After outdoor activities, perform a tick check. Check body areas where ticks are commonly found: behind the knees, between the fingers and toes, under the arms, in and behind the ears, and on the neck, hairline, and top of the head. Check places where clothing presses on the skin.
- Remove attached ticks promptly. Removing a tick before it has been attached for more than 24 hours greatly reduces the risk of infection. Use tweezers, and grab as closely to the skin as possible. Do not try to remove ticks by squeezing them, coating them with petroleum jelly, or burning them with a match.
- Report any of the above symptoms and all tick bites to the RHSM for evaluation.

4.20.3 Mosquito-Borne Illnesses

4.20.3.1 Eastern Equine Encephalitis

Eastern equine encephalitis is a rare disease that is spread to horses and humans by infected mosquitoes. It is among the most serious of a group of mosquito-borne virus diseases that can affect the central nervous system and cause severe complications and even death. Although relatively small outbreaks of human disease have occurred in the United States, the frequency of this disease is increasing with most cases reported from the eastern seaboard states, the Gulf Coast, and some inland mid-western areas.

After infection, the virus invades the central nervous system, including the spinal cord and brain. Most people have no symptoms; others get only a mild flu-like illness with fever, headache, and sore throat. For people with infection of the central nervous system, a sudden fever and severe headache can be followed quickly by seizures and coma. About half of these patients die from the disease. Of those who survive, many suffer permanent brain damage and require lifetime institutional care. Symptoms usually appear 4 to 10 days after the bite of an infected mosquito. Confirming diagnosis is based on tests of blood or spinal fluid.

4.20.3.2 West Nile Virus

West Nile encephalitis is an infection of the brain caused by the West Nile virus, which is transmitted by infected mosquitoes. Following transmission from an infected mosquito, West Nile virus multiplies in the person's blood system and crosses the blood-brain barrier to reach the brain. The virus interferes with normal central nervous system functioning and causes inflammation of the brain tissue. However, most infections are mild and symptoms include fever, headache and body aches. More severe infections may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis and rarely, death. Persons over the age of 50 have the highest risk of severe disease.

Prevention centers on public health action to control mosquitoes and on individual action to avoid mosquito bites. To avoid being bitten by the mosquitoes that cause the disease, use the following control measures:

- If possible, stay inside between dusk and dark. This is when mosquitoes are most active.
- When outside between dusk and dark, wear long pants and long-sleeved shirts.
- Spray exposed skin with an insect repellent, preferably containing DEET.

4.20.4 Wasps and Bees

Wasps (hornets and yellow-jackets) and bees (honeybees and bumblebees) are common insects that may pose a potential hazard to the field team if work is performed during spring, summer or fall. Bees normally build their nests in the soil. However, they use other natural holes such as abandoned rodent nests or tree hollows. Wasps make a football-shaped, paper-like nest either below or above the ground. Yellow-jackets tend to build their nests in the ground but hornets tend to build their nests in trees and shrubbery.

To avoid bees and wasps when working outdoors:

- Avoid the use of heavily scented soaps, shampoos, perfumes, colognes, after-shaves and cosmetics.
- Avoid shiny buckles and jewelry.
- Cover exposed skin and wear gray, white or tan rather than bright colors. Flowery prints and black especially attract insects.
- Remove food sources from site that may attract bees. Social wasps thrive where humans discard food.

- Check for new nests during the warmer hours of the day during July, August and September. Bees are very active then.

Bees are generally more mild-mannered than wasps and are less likely to sting. Bees can only sting once while wasps sting multiple times because their stinger is barbless. Wasps and bees will sting in defense of itself or its nest. To avoid being stung:

- Slowly raise your hands to protect your face, remaining calm and stationary for a while and then move very slowly away.
- Never swing, strike or run rapidly away since quick movement often provokes attack and painful stings.
- Restrain from throwing rocks or spraying nests with water.
- Avoid creating loud noises and disturbance near the nest

When a wasp or bee stings, they inject a venomous fluid under the skin. The venom causes a painful swelling that may last for several days. If the stinger is still present, carefully remove it with tweezers. Then,

- Wash the area carefully with soap and water. This should be continued several times a day until the skin is healed.
- Apply a cold or ice pack, wrapped in cloth for a few minutes.
- Apply a paste of baking soda and water and leave it on for 15 to 20 minutes.
- Take acetaminophen for pain.

Wasp stings can be life-threatening to persons who are allergic to their venom.

If you develop hives, difficulty breathing or swallowing, wheezing or similar symptoms of allergic reaction, **SEEK MEDICAL ATTENTION IMMEDIATELY**. People with known allergies to insect stings should NEVER work alone.

5.0 Air Monitoring

The Site is known to have tar impacts dating from the Site's historical use as a MGP. As such, the contaminants of concern are VOCs and SVOCs. The primary VOCs of concern are BTEX. The primary SVOCs of concern are PAHs such as naphthalene and benzo(a)pyrene. Airborne dust is also a concern and must be monitored due to its ability to co-transport contaminants and because of its nuisance properties. Odors, though not necessarily indicative of high contaminant concentrations, could create a nuisance and will be monitored and controlled to the extent practicable

5.1 Monitoring

5.1.1 VOC Monitoring

A photoionization detector (PID), such as a RaeSystems MiniRae 2000 PID equipped with a 10.6 ev lamp or equivalent, will be used to screen the breathing zone of employees during all subsurface investigations as Site and off-Site area conditions warrant but no less than at least once every hour. If breathing zone concentrations of total VOCs are sustained (5 minutes) above 5 ppm (calibrated to isobutylene), a measurement will be made for the presence of benzene using a colorimetric detector tube. In the absence of benzene, respiratory protection will be donned if total VOC concentration is sustained at 25 units as indicated by the PID. If benzene is present at concentrations of 1 ppm or more as indicated by the detector tube, respiratory protection will be donned. Requirements for respiratory protection are outlined in Section 6.2 of this HASP.

5.1.2 Dust Monitoring

Dust control measures, as described in this HASP, will be implemented to prevent and/or control the concentration of airborne dust levels during the subsurface activities. A MIE Data-Ram total dust monitor, or its equivalent, will be used to monitor the effectiveness of these engineering controls and to determine if measures to mitigate the dust are effective and/or if respiratory protection is required.

An action level of 0.15 mg/m^3 has been established for total dust (sustained within the breathing zone for 15-minutes) and is based on the PEL for PAHs. The total dust monitor will be used to determine that total dust levels within the established restricted areas are maintained below this action level. The readings will be taken at the locations within the restricted area, and during the time periods, which are likely to represent worst case conditions. The determination of worst case will be made by the SSO and will be dependent upon such variables as the type of work being performed and number of personnel or level of activity in the zone.

Task	Instrument	Action Limit and Action
All tasks involving potential exposure to contaminated soils and/or groundwater	Photoionization Detector	**5 ppm calibrated to isobutylene**; Don respiratory protection as discussed in Section 6
All tasks involving exposure to site chemicals of concern	Colorimetric detector tubes or Draeger Chip System for Benzene	**0.5 ppm Benzene** Don respiratory protection described in section 6.2
All tasks with the potential to generate dust.	Particulate meter	**>0.1 mg/m^3**; Apply dust suppression controls and don respiratory protection **>0.15 mg/m^3**; **STOP WORK** until levels are reduced below 0.15 mg/m^3

5.2 Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) has been developed for the Site and off-Site areas. The Site is located in a residential and commercial community. This CAMP presents methods and procedures that will be used to provide protection for the downwind residences and businesses by assuring that the work activities do not spread constituents off-site through the air.

The community air monitoring will be performed around the project site perimeter and will measure the concentrations of organic vapors and dust. Air monitoring will be continuous during the activities. Monitoring will be conducted prior to mobilization to establish a baseline. The CAMP developed as per the NYSDEC DER-10 (NYSDEC, January 2010) is attached as Attachment C.

5.3 Personal Air Sampling

The need for personal air sampling is not anticipated during the activities covered by this HASP. The Project Manager can prescribe personal air sampling based on observations or concerns recognized during the project.

5.4 Calibration and Recordkeeping

Equipment will be calibrated in accordance with the Contractor's standard operating procedures. A log of the calibrations and readings will be kept in the field notebook. Daily calibration information will also be recorded in the field notebook.

6.0 Personal Protective Equipment

Personal protective equipment (PPE) will be worn during these activities to prevent on-site personnel from being injured by the safety hazards posed by the project site and/or the activities being performed. In addition, chemical protective clothing will be worn to prevent direct dermal contact with the project site's chemical contaminants. The following table describes the PPE to be worn for certain specific tasks. At a minimum, steel toe safety shoes, safety glasses with side shields, and nitrile or NAPL-resistant gloves will be worn when working in the areas with remaining contamination as detailed in the SMP.

6.1 Chemical Protective Clothing

PPE Item	Environmental Monitoring	Excavation and Utility Work	Sample Collection
Hard Hat	✓	✓	✓
Steel Toed Safety Shoes	✓	✓	✓
Safety Glasses with Sideshields	✓	✓	✓
ANSI-approved Class II Traffic Vest	✓	✓	✓
Outer Nitrile Gloves with inner Latex liners			✓
Kevlar gloves			
Hearing Protection	✓	✓	✓

6.2 Engineering Controls to Prevent Exposure to Contaminants of Concern

Engineering controls will be used by the Contractor to control dusts, vapors and odors both inside the structure and at the project site perimeter, if necessary. If the engineering controls are unsuccessful at controlling employee exposures within the structure to below the action limits defined in Section 5.1.1 and 5.1.2 of this HASP, then Level C respiratory protection will be required.

6.3 Respiratory Protection

Respiratory protection, as described below, will be required if worker breathing zone PID concentrations are sustained above the action levels in the following table.

Task	Action Limit	Respiratory Protection	Level
All tasks involving potential exposure to contaminated soils and/or groundwater	5 ppm as Isobutylene for 5 minute	Half or full face mask respirator with combination organic vapor/HEPA cartridges	C
	10 ppm as Isobutylene	Full face respirator with organic vapor/HEPA cartridges	C
	50 ppm as isobutylene	**STOP WORK**	
All tasks involving potential exposure to contaminated soils and/or groundwater	0.5-10 ppm as Benzene on Draeger tube	Half or full face mask respirator with combination organic vapor/HEPA cartridges	C
	10 ppm as Benzene on Draeger tube	Full face respirator with organic vapor/HEPA cartridges	C
	50 ppm as Benzene on Draeger tube	**STOP WORK**	
All tasks with the potential to produce Dust	1.0 mg/m^3 particulates in air	Half or full face mask respirator with combination organic vapor/HEPA cartridges	C
	1.5 mg/m^3 particulates in air	**STOP WORK** and apply dust suppression techniques until levels have returned to ambient conditions	C

Respiratory protection (half or full face mask respirator with combination organic vapor/HEPA cartridges) should also be donned if odors become objectionable at any time or if respiratory tract irritation is noticed.

All employees who are expected to don respiratory protection must have successfully passed a qualitative or quantitative fit-test within the past year for the brand, model and size respirator they plan to don.

If worn, respirators will be cleaned after each use with respirator wipe pads and will be stored in plastic bags after cleaning. Respirators will be thoroughly cleaned using disinfectant material within one week following any respirator use. Refer to the cleaning instructions provided with the respirator or specified by Appendix B-2 to the OSHA regulations at 29 CFR 1910.134.

6.4 Other Safety Equipment

The following is a list of additional safety items that may need to be available at the project site depending on the facility activity level, proximity to emergency assistance and other factors:

- Portable, hand-held eyewash bottles,
- First aid kit,
- Type A-B-C Fire extinguisher,
- Fire blanket,
- Emergency telephone and, if available, two-way radio on facility frequency,
- Emergency air horn,
- Drinking water, ice and cups,
- Caution tape or traffic cones,
- High visibility traffic vests (if working near vehicle traffic),
- Traffic cones or barricades,
- Flashlight/lantern, and
- Spill containment kit.

7.0 Site Control/Decontamination

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, hazardous work areas will be clearly identified and decontamination procedures will be required for personnel and equipment leaving those areas.

7.1 Designation of Zones

AECOM designates work areas or zones as suggested in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH/OSHA/USCG/EPA, November 1985. They recommend that the areas surrounding each of the work areas to be divided into three zones:

- Exclusion or "Hot" Zone
- Contamination Reduction Zone
- Support Zone

7.1.1 Exclusion Zone

An exclusion zone will be established around the work area. The perimeter of the exclusion zone will be marked with caution tape, traffic cones or other identifier so that employees, visitors, and client or host employer personnel are aware of the work being conducted.

All field and contractor personnel entering these work areas must wear the prescribed level of protective equipment.

7.1.2 Contamination Reduction Zone

A decontamination zone will be established adjacent to each work area. Personnel will remove contaminated gloves and other disposable items in this area and place them in a plastic bag until they can be properly disposed of.

7.1.3 Support Zone

The support zone will include the area outside of the exclusion zone.

7.1.4 Site Access Control

The public will be restricted from the project site and monitoring well locations (during monitoring) by fences, barricade tape, traffic cones, and/or signs.

7.1.5 Parking and Staging Areas

Parking will be restricted to areas that have been cleared of tall grass and combustible material. Vehicles parked on the public streets will be marked with cones both in front of and behind the vehicle.

7.1.6 Pedestrian Walkways

Pathways within the work areas will be kept clear of obstructions. Public pathways will be clearly marked to provide access to the business onsite and protect the public from the hazards of the project.

7.2 General Site Safety Practices

The following measures are designed to augment the specific health and safety guidelines provided in this plan.

- The "buddy system" will be used at all times by all field personnel. No one is to perform field work alone. Standby team member must be intimately familiar with the procedures for initiating an emergency response. If an employee will be alone in a work area, they will develop a procedure to contact their Supervisor or PM on a regular schedule to confirm that the employee is safe. Subcontractors working on-site can help fulfill the role of a Buddy while project site activities are occurring.
- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in the immediate work area and the decontamination zone. Water and Ice may be consumed in all areas to prevent heat stress but precautions must be taken to prevent contamination of the water and ice.
- Smoking is prohibited in all work areas. Matches and lighters are not allowed in these areas.
- Hands must be thoroughly washed upon leaving the work area and before eating, drinking or any other activities.
- Beards or other facial hair that interfere with respirator fit are prohibited.
- The use of alcohol or illicit drugs is prohibited during the conduct of field operations.
- All equipment must be decontaminated or properly discarded before leaving the project site in accordance with the project work plan.
- Parking and pedestrian areas will be established and communicated to all workers.

8.0 Decontamination

8.1 Personal Decontamination

Proper decontamination is required of all personnel before leaving the project site. Decontamination will occur within the contamination reduction zone.

Regardless of the type of decontamination system required, a container of potable water and liquid soap should be made available so employees can wash their hands and face before leaving the project site for lunch or for the day.

8.2 PPE Decontamination

Disposable PPE, such as Tyvek coveralls, gloves, etc. will be removed in the decon zone and placed in garbage bags. Final disposal of contaminated PPE will be in accordance with the work plan.

If worn, respirators assigned to an individual will be cleaned after each use with respirator wipe pads and will be stored upright in plastic bags. Respirators will be thoroughly cleaned using disinfectant material within one week following any respirator use. Respirators that have the potential to be shared by employees within the workplace will be completely dismantled and thoroughly cleaned after each use. Refer to the cleaning instructions provided with the respirator or specified by Appendix B-2 to the OSHA regulations at 29 CFR 1910.134.

8.3 Equipment Decontamination

Equipment will be decontaminated prior to being moved to other locations. Decontamination procedures will be specified in the Field Sampling and Analysis Plan (FSAP).

9.0 Medical Monitoring and Training Requirements

Each worker subject to this HASP shall have copies of documentation that the requirements for training, medical surveillance, and respirator use are current. Copies of these documents shall be made available to any owner or their representative upon request.

9.1 Medical Monitoring

All personnel performing activities covered by this HASP must be active participants in a medical monitoring program that complies with 29 CFR 1910.120(f). Each individual must have completed an annual surveillance examination and/or an initial baseline examination within the last year prior to performing any work on the project site covered by this HASP.

9.2 Health and Safety Training

9.2.1 HAZWOPER

All personnel performing activities covered by this HASP must have completed the appropriate training requirements specified in 29 CFR 1910.120 (e). Each individual must have completed an annual 8-hour refresher training course and/or initial 40-hour training course within the last year prior to performing any work on the project sites covered by this HASP.

9.2.2 Pre-Entry Briefing/Tailgate Meetings

Prior to the commencement of daily project activities, a pre-entry briefing or tailgate meeting will be conducted by the SSO to review the specific requirements of this HASP, review and revise the JSA, discuss Incidents, Near Misses and lessons learned from the previous day's activities, and discuss project site conditions that have changed since the previous day or trip to the project site. Attendance at the daily tailgate meeting is mandatory for all personnel covered by this HASP at the project site and must be documented on the attendance form provided in Attachment A. HASP sign-off sheets should also be collected at the time of the tailgate meetings. All documentation should be maintained in the project file.

The pre-entry briefing must be completed for each new employee before they begin work at the project site. Short safety refresher meetings will be conducted, as needed, throughout the duration of the project.

10.0 Emergency Response

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance." This section is written to comply with the requirements of 29 CFR 1910.38 (a).

The basic elements of an emergency evacuation plan include:

- employee training
- alarm systems
- escape routes
- escape procedures
- critical operations or equipment
- rescue and medical duty assignments
- designation of responsible parties
- emergency reporting procedures
- methods to account for all employees after evacuation

10.1 Spill Response

Employees are only authorized to respond to incidental spills and releases of hazardous substances. The following criteria must be met for a spill to be considered incidental with the employee having the ability to respond to the spill:

- Quantity of spilled material is minimal enough where additional, third party assistance is not needed to manage the spill
- Material is not immediately threatening to impact an open water way
- The conditions of the spill do not present a hazardous condition that is immediately dangerous to life and health (IDLH)
- The employee responding has:
  - received training on proper spill response techniques relative to the spilled material
  - full knowledge of what has been spilled and the proper clean up techniques to be used
  - the means to protect themselves against exposure to harmful conditions caused by the spill including the necessary PPE
  - the means to containerize and dispose of the spilled material properly

Employees may be equipped with the following materials, assembled into a spill response kit, to manage incidental workplace spills:

- Absorbent pads or media, i.e. speedy-dry, kitty litter
- Broom and dust pan to clean up spent granular spill control media or impacted earth
- Shovel to clean up impacted earth or create a dam or dyke to prevent the spill area from increasing
- Disposal drums and over-pack drums
- Appropriate waste identification labels
- Appropriate PPE

If a spill is not considered incidental, then additional assistance will be sought to aid in clean-up. The responding employee shall contact the Project Manager and provide initial notification of the release. The Project Manager will then notify the client representative and determine a suitable course of action. Chem-trec may be contacted to provide additional support in responding to a spill. Consideration will need to be given to whether or not the spill is deemed to be a reportable quantity (RQ) by the EPA, if the National Spill Response Center needs to be contacted due to surface water impact, and if local, state or federal agencies need to be contacted to provide information related to public health threats and environmental impact.

All petroleum related spills above 5-gallons on an non-impermeable surface, and in the vicinity of a waterway must be reported to the PM, RSM, and DEC PM, with the PM providing notification to the client representative, no matter how small the spill is. After initial response actions have been completed an incident investigation will be performed to determine the root causes of the incident and corrective actions, and lessons learned shall be shared to prevent future reoccurrence. Once the response is complete, the responding employee will also conduct an inventory of supplies used during the response effort and re-stock any used response equipment that could not be decontaminated and reused.

10.2 Employee Training

Employees must be instructed in the site-specific aspects of emergency evacuation. On-site refresher or update training is required anytime escape routes or procedures are modified or personnel assignments are changed.

10.3 Alarm System/Emergency Signals

An emergency communication system must be in effect at all project sites. The simplest and most and effective emergency communication system in many situations will be direct verbal communications. Each project site must be assessed at the time of initial site activity and periodically as the work progresses. Verbal communications must be supplemented anytime voices cannot be clearly perceived above ambient noise levels (i.e., noise from heavy equipment; drilling rigs, backhoes, etc.) and anytime a clear line-of-sight cannot be easily maintained amongst all personnel because of distance, terrain or other obstructions.

Verbal communications will be adequate to warn employees of hazards associated with the immediate work area. A portable phone will be located at the project site to ensure that communications with local emergency responders is maintained, when necessary.

10.4 Escape Routes and Procedures

The escape route from the project site and an emergency muster point will be determined and provided to all workers during the project mobilization.

Prior to mobilizing to a new project area, the Site Safety Officer or his designee will confirm that the escape routes are clear and lead to a safe area.

10.5 Employee Accounting Method

The SSO is responsible for identifying all personnel on-site at all times. Field personnel and subcontract employees will notify the SSO when they enter and leave the project site. The SSO will account for all FIELD PERSONNEL and its subcontract employees following an evacuation.

10.6 Injuries and Illnesses

The phone numbers of the police and fire departments, ambulance service, and local hospital are provided in the emergency reference sheet on page 1. This sheet will be posted in the site vehicle.

10.6.1 First Aid

Minor injuries will be treated on project site using materials from the first aid kit or other local sources. All cuts and abrasions will be cleaned with potable water and a clean dressing applied. The injured employee will be evaluated at the end of the work day and the following day when the employee arrives at the project site to determine whether the wound has started the healing process. The wound will be protected from contamination during the project activities.

10.6.2 Professional Treatment

In the event an injury or illness requires more than first aid treatment, the SSO will accompany the injured person to the medical facility and will remain with the person until release or admittance is determined. The escort will relay all appropriate medical information to the on-site project manager and the RSM.

If the injured employee can be moved from the accident area, he or she will be brought to the CRZ where their PPE will be removed. If the person is suffering from a back or neck injury the person will not be moved and the requirements for decontamination do not apply. The SSO must familiarize the responding emergency personnel about the nature of the site and the injury. If the responder feels that the PPE can be cut away from the injured person's body, this will be done on-site. If this not feasible, decontamination will be performed after the injured person has been stabilized.

10.7 Designation of responsible parties

The SSO is responsible for initiating emergency response. In the event the SSO can not fulfill this duty, the alternate SSO will take charge.

10.8 Emergency Response Drills

A table-top run through of the evacuations procedures will be conducted the first day on the project site and reviewed with all workers arriving on site after that date.

Emergency Response drills and subsequent personnel briefings on evacuation procedures will be documented in the safety briefing agenda or briefing notes.

10.9 Incident Reporting and Investigation

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an Incident investigation and report. The investigation should be conducted as soon as emergency conditions are under control. The purpose of the investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided. An Incident investigation form is presented in Attachment B of this HASP. The injured employee's supervisor, the Project Manager, and the RSM should be notified immediately of the injury.

If a subcontractor employee is injured, they are required to notify the SSO. Once the incident is under control, the subcontractor will submit a copy of their company's Incident investigation report to the SSO.

10.10 EMERGENCY REFERENCES

Ambulance:	911
Fire:	911
Police:	911
Medical Services:	(631) 726-8200 Southampton Hospital 240 Meeting House Lane Southampton, NY 11968
On Site Telephone:	Bring portable communications.

10.11 Emergency Route Directions

Turn right on Long Island Avenue (west),

Turn right on CR 79/Main St. (South),

Turn right on SR 27/Montauk Hwy (southeast),

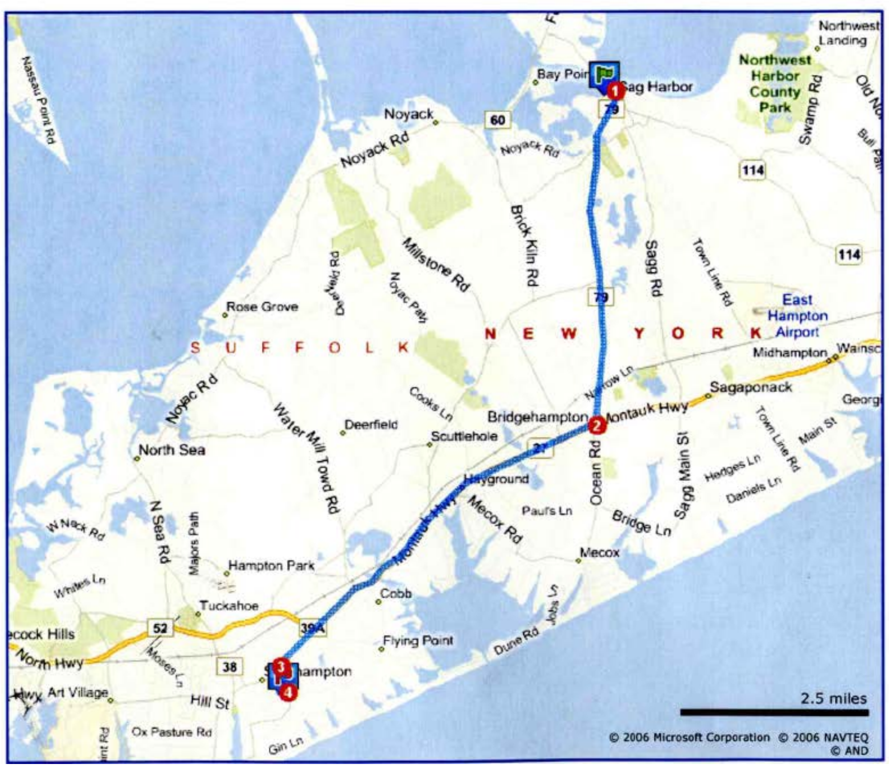
Turn left of Old Town Road (southeast),

Turn right on Meeting House Ln (west).

Directions from Sag Harbor Former MGP Site to

Southampton Hospital

Start:	bridge street and long island ave, sag harbor, NY
End:	240 meeting house lane, southampton, NY
Distance:	10.6 mi
Time:	19 Minutes



Attachments

Attachment A

Health and Safety Plan Receipt and Acceptance Form

Health and Safety Plan Receipt and Acceptance Form

Sag Harbor Former MGP Site

Sag Harbor, New York

I have received a copy of the Health and Safety Plan prepared for the above referenced site, I have read and understand its content and I agree that I will abide by its requirements.

Name	Signature	Company	Date

Attachment B

EHS Field Forms

Blank Job Safety Analysis Form

Job Safety Analysis

AECOM

JSA Type: ☐ Investigation ☐ O&M ☐Office ☐ Construction ☐ Other	☐ New ☐ Revised	**Date**:
Work Activity:		
Personal Protective Equipment (PPE):		

Development Team	Position/Title	Reviewed By	Position/Title	Date

❶ Job Steps[1]	❷ Potential Hazards[2]	❸ Critical Actions[3]	STOP Stop Work Criteria
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•

1 – Target number of job steps: six to ten

2 – Codes for Potential Hazards:

Caught Between (CB)	Contacted By (CBy)	Caught On (CO)	Fall To Below (FB)	Overexertion (O)	Struck Against (SA)
Caught In (CI)	Contact With (CW)	Exposure (E)	Fall - Same Level (FS)	Release To (RT)	Struck By (SB)

3 – Types of Critical Actions: Elimination, Engineering Controls, Safe Work Practice / SOP, Administrative Controls, and/or PPE.

4 – Stop Work Trigger: Condition or situation that would require work to be stopped and hazards re-assessed.

Health and Safety Plan Pre-Entry Briefing Attendance Form

Health and Safety Plan Pre-Entry Briefing Attendance Form

Sag Harbor Former MGP Site

Sag Harbor, New York

Conducted by:		**Date Performed:**	
Topics Discussed:	1. Review of the content of the HASP (Required)		
	2.		
	3.		
	4.		

Printed Name	**Signature**	**Representing**

Drill Rig Inspection Form

Drilling Safety Audit

Project Name: **Project Number**:
Date: **Subcontractor Audited**:
Auditor:

General Safety		
Safety Officer Designated for Job:	☐ Yes	☐ No
Name:		
Safety Meeting Performed (Daily)	☐ Yes	☐ No
Personal Protective Equipment (PPE)		
Hard Hats	☐ Yes	☐ No
Safety Glasses	☐ Yes	☐ No
Steel Toed Boots	☐ Yes	☐ No
Hearing Protection	☐ Yes	☐ No
Work Gloves	☐ Yes	☐ No
Orange Work Vests	☐ Yes	☐ No
Traffic Cones and Signs	☐ Yes	☐ No
Other	☐ Yes	☐ No
Disposal of PPE in Proper Waste Containers (if applicable)	☐ Yes	☐ No
Comments:		
Daily Inspections of Drill Rig:		
Structural Damage, Loose Bolts	☐ Yes	☐ No
Proper Tension in Chain Drives	☐ Yes	☐ No
Loose or Missing Guards, Fluid Leaks	☐ Yes	☐ No
Damaged Hoses and/or Damaged Pressure	☐ Yes	☐ No
Gages and Pressure Relief Valves	☐ Yes	☐ No
Comments:		

Check and test all safety devices such as:		
Emergency shutdown switches, at least daily	☐ Yes	☐ No
Check all gages and warning lights and ensure control levers are functioning properly	☐ Yes	☐ No
First Aid and fire extinguishers on drill rig	☐ Yes	☐ No
Back up alarm functioning properly	☐ Yes	☐ No
Comments:		
Drill Crew Training Requirements:		
40-hour OSHA Training	☐ Yes	☐ No
8-hour Annual Refresher Training	☐ Yes	☐ No
Drill Rig Training/Safe Operating Practices	☐ Yes	☐ No
First Aid/CPR	☐ Yes	☐ No
Emergency Procedures	☐ Yes	☐ No
Emergency Phone Numbers Posted	☐ Yes	☐ No
Site Orientation	☐ Yes	☐ No
Health and Safety Plan Review	☐ Yes	☐ No
Comments:		
Housekeeping:		
Suitable storage for tools, materials, and supplies	☐ Yes	☐ No
Pipes, drill rods, casing, and augers stacked on racks to prevent rolling and sliding	☐ Yes	☐ No
Platforms and other work areas free of debris materials and obstructions	☐ Yes	☐ No
Comments:		

Hand Tools:		
Tools in good condition	☐ Yes	☐ No
Broken tools discarded and replaced	☐ Yes	☐ No
Right tool used for the right job	☐ Yes	☐ No
Comments:		

Drilling Operations:		
Mast or derrick down when moving rig	☐ Yes	☐ No
Overhead obstructions identified before mast is raised	☐ Yes	☐ No
Drill rig stabilized using leveling jacks or solid cribbing	☐ Yes	☐ No
Secure and lock derrick	☐ Yes	☐ No
Comments:		

Overhead and Buried Utilities:		
Buried utilities identified and marked	☐ Yes	☐ No
Safe distance of drill rig from overhead power lines	☐ Yes	☐ No
Comments:		

Wire Line Hoists Wire Rope and Hardware:		
Inspection for broken wires where reduction in rope diameter, wire diameter, fatigue, corrosion, damage from gear jamming, crushing, bird caging, kinking	☐ Yes	☐ No
Inspect and lubricate parts daily	☐ Yes	☐ No
Comments:		

Auger Operations: What to look for:

- A system of responsibility between the operator and the tool handler when connecting and disconnecting auger sections and inserting and removing auger fork.
- During connecting and disconnecting auger sections and inserting auger for the tool, handler should position himself away from the auger column while it is rotating.
- When securing the auger to the power coupling, pin should be inserted and tapped into place using a hammer or other similar device.
- Tool hoist should be used to lower second section of auger into place.
- Both operators should be clear of auger as it is being lifted into place.
- Long-handled shovel should be used to move dirt away from auger.

Overall Summary:

Hot Work Permit Form

Hot Work Permit

Permit Valid
For 1 Work Day

Site Name: ________________________ **Project Number**:______________________

H&S Officer:_______________________ **Client**:________________________

Hot Work Description:____

____

____

Workers/Welders Conducting Hot Work:____

Permits Must be Completed in its Entirety Before Hot Work Begins

	Yes	**No**
Has project supervisor been notified of intended Hot Work?		
Does client representative need to be notified of the intended Hot Work?		
Will Hot Work impact the general public, clients, or operation employees?		
Will the intended Hot Work need to be coordinated with other contractors who may be working on the site to make them aware of any hazards and the scope of work to be performed?		
Have hazardous energy sources been identified, isolated, and locked out – tagged out before the start of the project?		
Will Hot Work be conducted within a confined space?		
All testing equipment (i.e., CGI, oxygen meter, etc.) and firefighting equipment (i.e., extinguisher, etc.) have been checked to ensure proper operation and calibration before the start of this project?		
Has a fire watch been designated and on station?		
Have coatings on metal surfaces been tested for ignitability and flame spread?		
Has the area been cleared of all flammable materials?		
Have all fuel sources been identified and protected?		
Has the area been restricted with proper barriers and signs?		
Has the area been tested to be certain that atmosphere is 0% LEL before starting Hot Work?		
Have flame sensitive areas and equipment (including cylinders and gas delivery lines) exposed to slag and sparks been protected by flame resistant blankets or removed from the area?		
Have all equipment and hoses been protected from falling metal structures and debris?		

Have escape routes been identified before starting work?		
Is ventilation equipment needed? Type needed:		

The Following Protective Equipment Will be Required:

	Yes	No		Yes	No
Welding Goggles/Shield Tint			Supplied Air Respirator		
Safety Boots			Head Protection		
Leather gloves			Safety Harness		
Hearing Protection			Welding Leathers – Top		
APR Cartridge			Welding Leathers - Bottom		

Permit Valid for 1 Work Day

The following procedures will be applicable prior to Hot Work on tanks or other types of enclosed structures. (Check all that apply and fill in appropriate information)

- ☐ Ventilate to 0% LEL
- ☐ Confined Space Entry Permit
- ☐ Mechanical Ventilation Required
- ☐ Cold Cut Only Method Allowed:____
- ☐ Hot Cutting Permitted Method Allowed:____________________________________

Inert to <____________________________% Oxygen

Approvals:

____
Date

____
National Grid Representative

____
Site Safety Officer

____
Fire Watch

____
Performed Hot Work Employee

File Permit in Project Work File and Health and Department

Injury/Exposure Report

Injury/Exposure Report

Name Of Injured:		**Job Title:**	
Male/Female:		**Date of Hire:**	
Date of Birth:		**Date/Time of Injury/Exposure:**	
Supervisor:		**Time Employee Began Work:**	
Project Manager:		**H&S Coordinator:**	
Project Number:		**Log Number:**	

Employee's Home Address:

Place/Location of Injury/Exposure:
Address:

Accident Description:

What was employee doing just before the incident? (Describe)

Severity of Injury/Exposure (non-disabling, disabling, medical treatment, fatality):

☐ First Aid Only ☐ Medical Treatment Only ☐ Non-Occupational ☐ Fatality

Nature of Injury/Exposure (please check):

☐ Fractures	☐ Blisters	☐ Heat Exhaustion	☐ Dislocations
☐ Respiratory Allergy	☐ Toxic Respiratory	☐ Exposure	☐ Concussion
☐ Heat Burns	☐ Toxic Ingestion	☐ Faint/Dizziness	☐ Abrasions
☐ Chemical Burns	☐ Cold Exposure	☐ Lacerations	☐ Radiation Burns
☐ Frostbite	☐ Dermal Allergy	☐ Punctures	☐ Bruises
☐ Heatstroke	☐ Ergonomic	☐ Sprains	☐ Bites

☐ Other:____

Parts of Body Affected (Specify Right/Left):______________________________________

Date Medical Care was received:____

Facility where Medical Care was received:

Clinic/Hospital Name:____

Attending Physician:____

Clinic/Hospital Address:____

Clinic/Hospital Telephone Number:____

Causative agent most directly related to injury/exposure:___________________________

____

____

____

Was weather a factor? (check one) ☐ Yes ☐ No

If yes, describe weather conditions:_______________________________________

____

____

____

Unsafe mechanical/physical/environmental conditions at time of exposure injury (be specific):____

____

____

____

____

Personal factors (list):____

____

____

Was injured person/persons using required PPE? (check one) ☐ Yes ☐ No

Was there any property damage? (check one) ☐ Yes ☐ No

If yes, what was damaged?____

____

____

Estimated Cost of Property Damage: $______________________________________

Present a detailed narrative description of the injury/exposure. How did it occur? Why? Objects, equipment, tools used, circumstances, assigned duties, etc. (be specific):______________________

____

____

____

____

____

Were there any witnesses to injury/exposure? ☐ Yes ☐ No

If yes, list name(s)/office location(s) (including subcontractors):

____

____

____

What can be done to prevent a recurrence of this type of accident?___________________________

____

____

____

Forward this form to the following within 24 hours of the incident

- ☐ Health and Safety Department
- ☐ Regional Manager – Local
- ☐ Human Resources Department
- ☐ Operations Manger – Local
- ☐ Health and Safety Coordinator – Local

________________________________ _______________________
Employee’s Signature Date

________________________________ _______________________
Employee’s Supervisor Signature Date

NOTE: ALL SUPERVISORS ARE REQUIRED TO SUBMIT A ROOT CAUSE ANALYSIS FOR ALL INJURIES OR ILLNESSES.

Attachment C

Community Air Monitoring Plan

Submitted to:
National Grid
Long Island, NY

Submitted by:
AECOM
Manhattan, NY
October 2011

Community Air Monitoring Plan

(Attachment C of the HASP)

Former Sag Harbor MGP Site
Sag Harbor, New York
NYSDEC Site No.: 1-52-159
Order on Consent Index #: D1-0002-98-11

February 2014

Contents

List of Appendices

List of Tables

1.0 Introduction

This document provides the Community Air Monitoring Plan (CAMP) that will be implemented during any subsurface activities covered under the Sag Harbor Site Management Plan [(SMP); AECOM, February 2011] and conducted on the former Manufactured Gas Plant (MGP) site and surrounding off-site areas located within the Village of Sag Harbor in New York. Consistent with the SMP, the term "Site" will include the former Sag Harbor MGP site as well as an adjacent private property to the north (31 Long Island Avenue), portions of the adjacent private property to the south (11 Bridge Street), and the Village sidewalk and roads to the north and west. The term "off-Site areas " will include all or portions of adjacent private properties to the north, south, and west of the Site; and The United States Postal Service Post Office property and a small portion of the Village parking lot to the east consistent with the Record Of Decision [(ROD), DEC, 2006].. This CAMP has been prepared by AECOM Environment (AECOM) on behalf of National Grid to present the methods and procedures that will be used to evaluate air quality in the immediate vicinity of subsurface activities and provide protection to potential off-site receptors.

The former Sag Harbor MGP site is located in the Village of Sag Harbor, Suffolk County, New York and is identified as Block 0002, Lot 10 on the Town of Southampton Tax Map. The former Sag Harbor MGP site is an approximately 0.8 acre area bounded by Long Island Avenue and a private property to the north, commercial property and residences to the south, a United States Post Office and a public parking lot to the east, and Bridge Street and the Harbor Close Condominium to the west.

The objectives of this CAMP are to:

- Ensure that the airborne concentrations of constituents of concern (COC) are minimized to protect human health and the environment
- Provide an early warning system so that potential emissions can be controlled on-site at the source
- Measure and document the concentrations of airborne COC to confirm compliance with regulatory limits

The community air monitoring will be performed around the local work zone perimeter, and will measure the concentrations of organic vapors and dust during all ground-intrusive activities (soil boring, well installations, excavations, utility work, and test pitting).

This CAMP is Attachment C of the site-specific Health and Safety Plan (HASP). The HASP, which is Appendix B of the SMP, is directed primarily toward protection of on-site workers within the designated work zones.

2.0 Constituents of Concern and Action Levels

The Site and off-Site areas potentially have residual subsurface contamination, dating from the Site's historical use as a MGP facility, remaining following the remediation conducted in 2008-2009. The constituents of concern are volatile and semi-volatile organic compounds (VOCs and SVOCs). The primary VOCs of concern are benzene, ethylbenzene, toluene, and xylene (BTEX compounds). VOCs are more volatile than SVOCs and are generally of greater concern when monitoring the air quality during subsurface activities.

Airborne dust is also a concern and must be monitored and controlled due to its ability to co-transport adsorbed constituents and because of its nuisance properties.

Odors, though not necessarily indicative of high constituent concentrations, could create a nuisance (especially when working within or in close proximity to existing buildings and building entrances) and will be monitored and controlled to the extent practicable.

State and federal regulatory agencies have provided action levels for many of these constituents. The action levels are the allowable airborne concentrations above which respiratory protection or other health and safety controls are required. For any subsurface work covered under the SMP, the following levels should not be exceeded for more than 15 consecutive minutes at the downwind perimeter of the project site:

- Benzene 1 part per million (ppm)
- Total VOCs 5 ppm
- Dust 100 micrograms per cubic meter ($\mu g/m^3$)

The action levels cited here are above (in addition to) the background ambient (upwind) concentration.

3.0 Air Monitoring Equipment and Methods

Air quality monitoring will be performed for total VOCs, benzene, and dust as outlined below.

Two perimeter locations will be established each day and an air monitoring technician will check the instrumentation at each of these locations frequently during the work. Typically there will be monitoring locations at one upwind project site perimeter location and one downwind perimeter location. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. Field personnel will be prepared to monitor multiple locations in the event that there is little wind or if the wind direction changes frequently.

The monitoring instruments will be calibrated at the start of each workday, and again during the day if the performance of an instrument is in question.

3.1 Volatile Organic Compounds and Benzene Monitoring

3.1.1 Ambient Air Monitoring

VOC monitoring will be performed using three field photoionization detectors (PIDs) (RAE Systems MiniRAE or equivalent). The monitoring instruments will be checked by a technician every 15 minutes, and the real-time measurements recorded. The PIDs will be equipped with an audible alarm to indicate exceedance of the action level.

A 15-minute running average concentrations will be calculated, which can then be compared to the action levels. If real-time measurements of total VOCs indicate that the action level is exceeded, the benzene concentration will also be determined at that location using benzene-specific colorimetric tubes. The data will be downloaded at the end of each day, and monitoring records will be kept at the project site during the work in case there is an inquiry or complaint.

PID measurements will be made at one upwind and one downwind location around the work area. The locations of the instruments may be changed during the day to adapt to changing wind directions.

3.2 Particulate (Dust) Monitoring

Particulate (dust) monitoring will be performed during intrusive activity (drilling, excavation) at the project site. Two particulate monitors (TSI DustTrak or equivalent) will be used for continuous real-time dust monitoring. The monitoring instruments will be checked by a technician every 15 minutes, and the real-time measurements recorded. A 15-minute average concentration will be determined. The data will be downloaded at the end of each day, and monitoring records will be kept at the project site during the work in case there is an inquiry or complaint.

Measurements will be made at one upwind and one downwind location around the work area. The locations of the instruments may be changed during the day to adapt to changing wind directions. In addition, fugitive dust migration will be visually assessed during all work activities, and the observations recorded.

4.0 Emission Control Plan

4.1 Ambient Air

Odor, vapor, and dust control will be required for this project due to the close proximity of commercial buildings and public roadways and sidewalks. Table 1 provides a response chart for the monitoring and control of vapor emissions. Table 2 provides a list of emergency contacts.

- If the ambient air concentration of total VOC levels at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm (or the benzene level exceeds 1 ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor levels readily decreases (per instantaneous readings) below 5 ppm (and the benzene level drops below 1 ppm) over background, work activities can resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm (or the benzene level persists over 1 ppm) over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions until the concentrations drop below the action levels, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

Project site perimeter particulate concentrations will also be monitored continuously. In addition, dust migration will be visually assessed during all work activities.

- If the downwind particulate level is 100 $\mu g/m^3$ greater than the background (upwind perimeter) level for a 15-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that downwind particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

Typical emission control measures may include:

- Apply water for dust suppression;
- Relocate operations, if applicable; and
- Reassess the existing control measures.

Table 1 Vapor Emission Response Chart

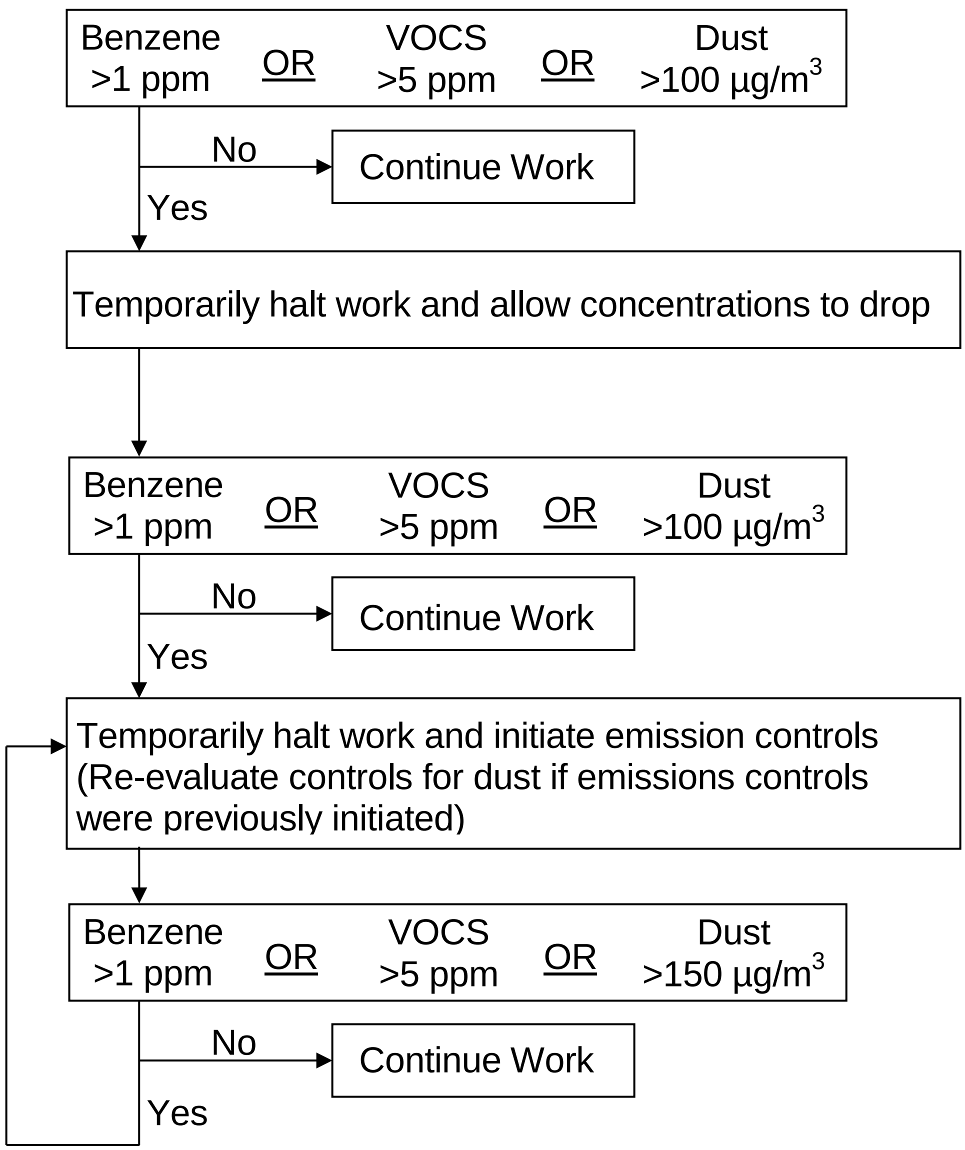


Table 2 Emergency Contacts and Telephone Numbers

Fire:	911	
Police:	911	
Ambulance:	911	
AECOM Environment Contacts	Shail Pandya	(718) 309-5643 cell (212) 798-8513 off
National Grid Contacts	Ted Leissing	(917) 734-3244 cell (516) 545-2563 off

5.0 Odor Control Procedures

This section outlines the procedures to be used to control odors that may be generated during the subsurface activities. The remainder of this section is intended to provide site managers, representatives of NYSDEC and New York State Department of Health (NYSDOH), and the public with information summarizing typical odor control options, and to provide some guidance for their implementation. A description of potential sources of odors and methods to be used for odor control is presented in the following sections.

5.1 Potential Sources of Odors

Generally, the residuals encountered at Site and off-Site areas are well defined. They are related to residual coal tar-like materials and petroleum, and principally contain VOCs, polynuclear aromatic hydrocarbons (PAHs), and a number of inorganic constituents, including metal-complexed cyanide compounds, and metals. Constituents of residual materials can produce odor emissions during subsurface activities when they are unearthed during excavations and soil borings/well installations. When this occurs, VOCs and light-end SVOCs can volatilize into the ambient air. Some Site residuals can cause distinctive odors that are similar to mothballs, roofing tar, or asphalt driveway sealer. However, the constituent concentrations generally associated with these odors are typically significantly less than levels that might pose a potential health risk. It is important to note that the CAMP will provide for continual monitoring of VOCs and dust during the fieldwork to monitor for any potential release of constituents which may pose a threat to health.

5.2 Odor Monitoring

The field personnel will record observations of odors generated during the implementation of the subsurface work. When odors attributable to the uncovering of impacted media are generated in the work area during intrusive activities such as soil borings or excavation, observations will also be made at the down-wind limit of the project site, in order to assess the potential for off-site odors. The down-wind odor monitoring will be performed in conjunction with the vapor and dust monitoring program described in this CAMP.

Upon detection of odors at the project site perimeter, site controls, starting in the work area, will be implemented. The site controls described in the following sections and in the Excavation Work Plan (Appendix A of the Site Management Plan) will be used to assist with odor mitigation to minimize, and to prevent where practicable, the off-site migration of odors. Due to the short distances between any work area at the project site and the property line or nearby potential receptors, site controls will be implemented proactively when odors are detected in the breathing zone at any work area.

Work will not resume until all nuisance odors have been abated. New York State Department of Environmental Conservation and New York State Department of Health will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner’s Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

A three-tiered set of controls are proposed for managing odor:

- Level I - includes proactive measures to minimize the effect of fugitive emissions. Level 1 includes air monitoring to ensure that levels of volatile organic compounds and dust are under site-specific action levels.
- Level II – Procedures that are implemented in response to specific increases in fugitive emissions, but are not likely to have a significant impact in the schedule of the project site activities.
- Level III – More aggressive procedures, also initiated in response to specific increases in fugitive emissions that are likely to have a more significant impact on production schedule and the project site activities.

The Site Manager will be required to progressively implement these options until emission sources are controlled and ambient concentrations no longer have the potential to pose a health risk.

5.2.1 Level 1 controls

Level 1 Controls are built into the design of the field activities and involve physical controls, project site layout, and scheduling.

5.2.1.1 Physical controls

The simplest form of physical control is the use of visual barrier cloth on the project site perimeter fencing. The resistance caused by the visual barrier will elevate the discharge point of emissions leaving the site to the top of the perimeter fence and will promote better mixing and dispersion. Another form of simple physical control is the required use of tarps on trucks that move or transport impacted material. On-site haul routes should be routinely wetted to control dust using a hose, sprinkler, or dedicated water truck.

All stockpiles of impacted material should be covered, if left inactive for a period of more than 2 hours.

For excavations, it may be possible to move some amount of soil around within the footprint of the excavation in order to minimize the amount of soil removal and subsequent stockpiling of impacted soil at the ground surface. The use of in-excavation stockpiling of excavated soil will be evaluated on a case-by-case basis, and will only be performed with the approval of the NYSDEC field representative, and will be completed only if it does not impede the collection of subsurface soils or the full delineation of the subsurface features being investigated.

Drill cuttings from the soil borings will be containerized as soon as possible during completion of each soil boring.

Loading of excavated debris or soil that has been found by the Site manager to be unsuitable material to return to excavation may generate odors. Every effort will be made to complete this work as quickly as possible and to keep these materials covered at all times.

5.2.1.2 Site layout

The dispersion of fugitive emissions is controlled by meteorological conditions and their impact generally decreases with distance from the source. If possible, transfer/storage areas will be placed either downwind or significantly upwind of off-site receptors.

The height of the stockpiles should be lower than the top of the perimeter fencing (8 feet) to utilize the benefit of the barrier cloth. If stockpiles must be staged near the fence line (within 100 feet), they should be less than 8-feet in height.

5.2.1.3 Scheduling

Every effort should be made to minimize the amount of time that potentially contaminated material is stored on-site. Appropriate strategies involve the in-place precharacterization of soils to be excavated and the sampling of stockpiles as soon as they are placed. Efficient scheduling/coordination of operations can also limit the impact of active emission sources. Close coordination of excavation activities can decrease the surface area of disturbed material, thereby reducing the size of the emission source. A smaller source area can facilitate the implementation of additional controls, if required.

5.2.2 Level II controls

Air monitoring will routinely be performed at the fence line of the project site as delineated in the Community Air Monitoring Plan during all work activities. The results will be compared to site-specific action levels for volatile organic compounds and total particulates.

Level II controls will be enacted if the exceedance is confirmed or odors are detected at the fence line. If the action levels are exceeded, additional monitoring will be conducted to confirm the result. Level II controls will be enacted if the exceedance is confirmed. The Site Manager must then work through the applicable list of site controls until the fence line monitoring results for all parameters are determined to be less that their associated action levels. Specific Level II controls are discussed below.

5.2.2.1 Suppressing agents

Several agents that can be applied over emissions sources have been determined to be effective in controlling emissions. These include odor suppressants for volatile organic compounds mitigation and water spray for dust suppression.

The following suppressing agents have been identified for use but additional agents may be used or substituted for other proven agents such as odex, or ecosorb.

<u>Odor suppressant foam</u>

Odor suppressant foam can provide immediate, localized control of volatile organic compounds and odor emissions. The foam is created by the injection of air into a foam concentrate/water mixture using a Pneumatic Foam Unit. The foam is applied via a hose to cover source areas to a depth of 3 to 6 inches. Foam (Rusmar AC-600 or equivalent) is a short term remedy and can be actively used to control volatile organic compounds and odor emissions from active excavations/stockpiles, and during the loading of trucks. It is shipped as a concentrate and diluted with water at the site. Under normal conditions, this foam can last for several hours. However, it has been observed to degrade quickly in direct sunlight or precipitation so it must be applied liberally and frequently to all areas that require odor control.

<u>Water spray</u>

A spray of water can be used to minimize the amount of dust created. A water hose is effective for controlling dust over a small area, while lawn sprinklers or a dedicated water truck may be more efficient for extended control of large areas or on-site haul routes.

Odor Suppressant Solutions – BioSolve™ and Hydromulch

BioSolve™ can provide immediate, localized control of odor emissions. Information regarding the preparation and use of BioSolve™ is provided in Appendix A.

Although it is unlikely that it will be necessary, a modified hydromulch slurry may be used to cover inactive sources for extended periods of time (up to several days). The hydromulch, typically cellulose fibers (HydroSealR) is modified by mixing a tackifier (glue) with the mulch and water to form a slurry. It is applied using a standard hydroseed applicator to a thickness of ¼ inch. The material forms a sticky, cohesive, and somewhat flexible cover. Reapplication may be necessary if the applied layer becomes desiccated or begins to crack.

5.2.2.2 Tarps

Tarps can provide effective control for source areas that are likely to be inactive for extended periods of time. To be effective, the size of the source area should be controlled such that it can be covered using a single tarp. Rolls of 6-mil polyethylene will be used to cover inactive stockpiles. Tarps will also be used for covering exposed soils loaded into trucks. All trucks will be lined with 6 mil polyethylene sheeting, the liners will be large enough to overlap and fully cover the top of the load. Additional automatic mesh tarps will be used to secure the liners.

5.2.2.3 Portable Barriers

The placement of portable barriers close to small active source areas (excavations) can elevate the discharge point of emissions to facilitate dispersion and minimize the effect on downwind receptors. The barriers can be constructed using materials such as plastic “Jersey barriers”, or fence poles and visual barrier fabric/plastic. The barriers are placed as temporary two or three-sided structures around active excavation or other intrusive areas, oriented such that the barriers are placed on the upwind and downwind sides of the source. If only one side of the source can be accessed, then the barrier should be placed on the downwind side.

5.2.3 Level III controls

Level III controls are to be implemented when Level II controls have been exhausted and ambient concentrations of emissions continue to exceed the site-specific action levels. Each of the control options listed in this subsection has the potential to significantly affect the schedule/production rate of site activities. These delays may be required periodically to ensure that acceptable levels of fugitive emissions are maintained, and are preferable to a complete work cessation to control an emission event.

5.2.3.1 Production/schedule

It may be necessary to reduce the excavation rate to reduce the surface area of disturbed media or slow the generation rate of stockpiles. These activities would result in smaller source areas that could be more effectively controlled using Level II techniques.

5.2.3.2 Meteorological conditions

It may be necessary to limit certain activities to those periods when preferred meteorological conditions exist, such as wind direction or low temperatures are present.

5.2.3.3 Relocation of activities

Another option is cease work and move the remedial activities to lesser-impacted areas until adequate control measures can be implemented or more favorable meteorological conditions return. Also, it may be beneficial to temporarily relocate material loading and transfer activity areas to other areas of the project site or within subsurface excavations to utilize the natural dispersion of emissions in the atmosphere, or shelter from the wind.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

5.3 Record Keeping and Communication

Similar to readings recorded during the monitoring specified in the CAMP, all odor monitoring results will be recorded in the field log book or other air monitoring forms, and be available for review by the agencies upon request.

The field representative, in consultation with National Grid, will also provide information on odor monitoring and odor management to residents of the neighborhood should they inquire. In the event that odors persist after these efforts, work will be temporarily discontinued until a mutually agreeable solution with National Grid, NYSDEC, and NYSDOH staff can be worked out which allows the work to be completed while minimizing the off-site transport of nuisance odors.

6.0 Documentation and Reporting

Data generated during perimeter air monitoring will be recorded in field logs and summarized daily in spreadsheets. The electronic measurements from the PIDs and dust meters will be downloaded each day, reviewed, and archived. Exceedances of the action levels, if any, and the actions to be taken to mitigate the situations, will be discussed immediately with the on-site representatives. Summaries of all air monitoring data will be provided to NYSDEC and NYSDOH in electronic format, as requested.

Appendix A

Vapor Suppression Information

BioSolve® Hydrocarbon Mitigation Technology

...Is Making A Difference!

VAPOR SUPPRESSION / ODOR CONTROL

BioSolve® offers a relatively simple and cost effective method of suppressing Odors and VOC release from soils, during excavation, loading, stockpiling, etc. The following guidelines will apply to the most common situations encountered on site.

In most cases a 3% BSW solution (1 part **BioSolve®** concentrate to 33 parts water) will be adequate to keep vapor emissions within acceptable limits and control fugitive odor problems on contact. Although, some sites may only require a 2% solution, up to a 6% solution may be recommended on sites with elevated levels or particularly difficult/ mixed stream contaminants are present.

The **BioSolve®** solution should be applied evenly to the soil surface in sufficient quantity to saturate the surface area. As a general rule, use 1-3 litres of **BioSolve®** solution to 1 square metre of surface area. (1 gallon of **BioSolve®** per solution will cover approximately 4-sq. yd. of soil surface area) **BioSolve®** is a water-based surfactant that will apply like water.

BioSolve®, in its concentrated form, is a viscous liquid material that must be diluted with water. A fluorescent red tracing dye is present in the formula allowing **BioSolve®** to be detected during application. Once diluted, **BioSolve®** can be applied with virtually any equipment that can spray water. **BioSolve®** will not harm equipment or clog pipes. For large sites, applicators such as water truck, portable agricultural sprayers, foam inductors & pressure sprayers can be used. For smaller jobs, garden sprayers, water extinguishers or a garden hose with a fertiliser attachment on the nozzle can be used effectively. This characteristic makes **BioSolve®** very adaptable and much most convenient to use in almost any situation. **BioSolve®** is equally effective when used with all types of water (soft, hard, salt or potable).

On stockpiled soil or other soil that will be left undisturbed, a single application of **BioSolve®** to the exposed surfaces may last up to 10 to 14 days or more (depending on environmental conditions). **BioSolve®,** when applied, will form a "cap" of clean soil. If the soil is not disturbed, via weather, movement, etc. this "cap" will remain functional. During excavation, loading or other movement of the soil, it may be required to spray an additional amount of **BioSolve®** to the freshly exposed surface area to keep emissions at an acceptable level.

In case of an extremely high level of emissions, or if the soil is heavily contaminated, it may be necessary to increase the strength of the **BioSolve®** solution or apply more solution per square metre to reduce emissions adequately. It is important that the site be monitored regularly and that the **BioSolve®** solution be reapplied if and when necessary to insure that VOC emissions and odors remain under control.

BioSolve® is packaged and readily available in 55 gallon (208 liter) drums, 5 gallon (19 liter) pails and in 4X1 gallon (3.8 liter X 4) cases. Contact The Westford Chemical Corporation® Toll Free @ 1-800-225-3909, via e-mail at info@biosolve.com or your Local BioSolve distributor for pricing.

BioSolve® should only be used in accordance with all regulatory rules and regulations.

SOIL VAPOR SUPPRESSION UTILIZING BIOSOLVE

BioSolve is being utilized by numerous environmental consultants, response contractors, and fire departments to suppress VOC's & LEL's as well as problem odors. BioSolve encapsulates the source of the vapor rather than temporarily blanketing it like a foam or other physical barrier. Vapor reduction is so fast and effective that BioSolve is used to comply with the tough emission standards regulated by each State.

BioSolve offers a relatively simple and cost effective method of suppressing VOC vapor release from soils during excavation, loading, stockpiling… The following guidelines will apply to the most common situations encountered on site.

In most cases a 3% solution of BioSolve will be adequate to keep vapor emissions within acceptable limits. Dilute BioSolve concentrate with water at a ratio of 1 part BioSolve to 33 parts water to make a 3% solution.

The BioSolve solution should be applied evenly to the soil surface in sufficient quantity to dampen the surface well, (as a general rule, 1 gallon of BioSolve solution will cover approximately 4 sq. yd. of soil surface area). BioSolve is not a foam, it is a surfactant based product that will apply like water. The solution may be applied with a hand sprayer, high pressure power sprayer, water truck, etc., whichever method best suits the site and/or conditions.

NOTE: In the case of extremely high emission levels and/or very porous soil it may be necessary to increase the strength of the BioSolve solution (6%) or apply more per sq. yd. to reduce emissions adequately. On stockpiled soil or other soil that will be undisturbed, a single application of BioSolve to the exposed surfaces may last 10-14 days or more. During excavation, loading, or other movement of soil it may be necessary or required to spray each freshly exposed surface to keep emissions below acceptable levels.It is important that the site be monitored regularly and the BioSolve solution be reapplied if/when necessary to insure that vapor emissions remain at or below acceptable standards.

MATERIAL SAFETY DATA SHEET

THE WESTFORD CHEMICAL CORPORATION®
P.O. Box 798
Westford, Massachusetts 01886 USA

Ref. No.: 2001
Date: 1/1/2002

Phone: (978) 392-0689
Phone: (508) 878-5895
Emergency Phone-24 Hours: 1-800-225-3909
Fax: (978) 692-3487
Web Site: http://www.BioSolve.com
E-Mail: info@BioSolve.com

SECTION I - IDENTITY

Name:	**BioSolve®**
CAS #:	138757-63-8
Formula:	Proprietary
Chemical Family:	Water Based, Biodegradable, Wetting Agents & Surfactants
HMIS Code:	Health 1, Fire 0, Reactivity 0
HMIS Key:	4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Insignificant

---

SECTION II - HAZARDOUS INGREDIENTS

Massachusetts Right to Know Law or 29 C.F.R. (Code of Federal Regulations) 1910.1000 require listing of hazardous ingredients.

This product does not contain any hazardous ingredients as defined by CERCLA, Massachusetts Right to Know Law and California's Prop. 65.

SECTION III - PHYSICAL - CHEMICAL CHARACTERISTICS

Boiling Point	: 265°F	Specific Gravity	: 1.00 +/-.01
Melting Point	: 32°F	Vapor Pressure mm/Hg	: Not Applicable
Surface Tension- 6% Solution	: 29.1 Dyne/cm at 25°C	Vapor Density Air = 1	: Not Applicable
Reactivity with Water	: No	Viscosity - Concentrate	: 490 Centipoise
Evaporation Rate	: >1 as compared to Water	Viscosity - 6% Solution	: 15 Centipoise
Appearance	: Clear Liquid unless Dyed	Solubility in Water	: Complete
Odor	: Pleasant Fragrance	pH	: 9.1+/-.3
Pounds per Gallon	: 8.38		

SECTION IV - FIRE AND EXPLOSION DATA

Special Fire Fighting Procedures	: None	Flammable Limit	: None
Unusual Fire and Explosion Hazards	: None	Auto Ignite Temperature	: None
Solvent for Clean-Up	: Water	Fire Extinguisher Media	: Not Applicable
Flash Point	: None		

SECTION V - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be taken in Handling and Storage: Use good normal hygiene.
Precautions to be taken in case of Spill or Leak -

Small spills, in an undiluted form, contain. Soak up with absorbent materials.
Large spills, in an undiluted form, dike and contain. Remove with vacuum truck or pump to storage/salvage vessel. Soak up residue with absorbent materials.

Waste Disposal Procedures -

Dispose in an approved disposal area or in a manner which complies with all local, state, and federal regulations.

SECTION VI - HEALTH HAZARDS

Threshold Limit Values: Not applicable
Signs and Symptoms of Over Exposure-

Acute : Moderate eye irritation. Skin: Causes redness, edema, drying of skin.
Chronic: Pre-existing skin and eye disorders may be aggravated by contact with this product.

Medical Conditions Generally Aggravated by Exposure: Unknown
Carcinogen: No
Emergency First Aid Procedures -

Eyes: Flush thoroughly with water for 15 minutes. Get medical attention.
Skin: Remove contaminated clothing. Wash exposed areas with soap and water. Wash clothing before reuse. Get medical attention if irritation develops.
Ingestion: Get medical attention.
Inhalation: None considered necessary.

SECTION VII - SPECIAL PROTECTION INFORMATION

Respiratory Protection	: Not necessary	Local Exhaust Required	: No
Ventilation Required	: Normal	Protective Clothing	: Gloves, safety glasses Wash clothing before reuse.

SECTION VIII - PHYSICAL HAZARDS

Stability	: Stable	Incompatible Substances	: None Known
Polymerization	: No	Hazardous Decomposition Products	: None Known

---

SECTION IX - TRANSPORT & STORAGE

DOT Class	: Not Regulated/Non Hazardous		
Freeze Temperature	: 28°F	Storage	: 35°F-120°F
Freeze Harm	: None (thaw & stir)	Shelf Life	: Unlimited Unopened

---

SECTION X - REGULATORY INFORMATION

The Information on this Material Safety Data Sheet reflects the latest information and data that we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application, which is not described on the Product label or in this Material Safety Data Sheet, is the sole responsibility of the user. This Material Safety Data Sheet was prepared to comply with the OSHA Hazardous Communication Regulation and Massachusetts Right to Know Law.

MATERIAL SAFETY DATA SHEET

LONG DURATION FOAM AC-645

SECTION I: GENERAL INFORMATION

- Manufacturer's Name: RUSMAR INCORPORATED
- Manufacturer's Address: 216 Garfield Avenue • West Chester, PA 19380
- Manufacturer's Phone No.: 610-436-4314
- Chemical Family: Aqueous anionic surfactant mixture
- Trade Name: RUSMAR AC-645

SECTION II: HAZARDOUS INGREDIENTS

- Paints, Preservatives, and Solvents - None
- Alloys and Metallic Coatings - None
- Hazardous Mixtures and Other Materials - None

SECTION III: PHYSICAL DATA

- Boiling Point: 100° C
- Vapor Pressure: 25mm Hg at 25° C
- Vapor Density (Air = 1): N/A
- Water Solubility: Complete
- Appearance/Odor: Translucent, white, milk-like, odorless, viscous liquid
- Specific Gravity: 1.01 to 1.06
- % Volatile, By Volume: None
- Evaporation Rate: N/A

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

- Flash Point (Method): Nonflammable
- Flammable Limits: N/A
- Extinguishing Media: N/A
- Special Fire Fighting Procedures: None
- Unusual Fire and/or Explosion Hazards: None

SECTION V: HEALTH HAZARD DATA

- Threshold Limit Value: Not Determined
- Effects of Overexposure: This material is not expected to present an inhalation or ingestion hazard. It may cause an eye or skin irritation upon direct contact.
- Emergency and First Aid Procedures: Wash thoroughly with clean water

SECTION VI: REACTIVITY DATA

- Material is stable
- No material incompatibility
- Hazardous Decomposition Products: Low levels of sulfur oxides on exposure to high temperatures (concentrate). Foam is non-combustible.
- Polymerization will not occur

SECTION VII: SPILL OR LEAK PROCEDURES

- Steps to be taken in case material is released or spilled: If spilled indoors on a hard surface, the spill area may be slippery and should be thoroughly washed with water. Contain spill and absorb material with dirt or other appropriate absorbent.
- Waste Disposal Method: This material is completely biodegradable and can be disposed of in a sanitary landfill according to local regulations.

SECTION VIII: SPECIAL PROTECTION INFORMATION

- Respiratory Protection: None required for normal operations
- Ventilation: No special requirements
- Protective Gloves: Not required, but recommended
- Eye Protection: Not required, but recommended
- Other Protective Equipment: None

SECTION IX: SPECIAL PRECAUTIONS

- Storing/Handling Precautions: Avoid excessive heat. Material will freeze, but thawing will not cause changes in the product.
- Other Precautions: None

RUSMAR INCORPORATED • 216 Garfield Avenue • West Chester, PA 19380
Toll Free: 1.800.SEE.FOAM • P: 610.436.4314 • F: 610.436.8436 • www.rusmarinc.com

MATERIAL SAFETY DATA SHEET

LONG DURATION FOAM AC-900 SERIES

SECTION I: GENERAL INFORMATION

- Manufacturer's Name: RUSMAR INCORPORATED
- Manufacturer's Address: 216 Garfield Avenue • West Chester, PA 19380
- Manufacturer's Phone No.: 610-436-4314
- Chemical Family: Aqueous anionic surfactant, polymer latex mixture
- Trade Name: RUSMAR AC-900

SECTION II: HAZARDOUS INGREDIENTS

- Paints, Preservatives, and Solvents - None
- Alloys and Metallic Coatings - None
- Hazardous Mixtures and Other Materials - None

SECTION III: PHYSICAL DATA

- Boiling Point: 100° C
- Vapor Pressure: 25mm Hg at 25° C
- Vapor Density (Air = 1): N/A
- Water Solubility: Complete
- Appearance/Odor: Opaque, gray, viscous liquid
- Specific Gravity: 1.01 to 1.06
- % Volatile, By Volume: None
- Evaporation Rate: N/A

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

- Flash Point (Method): Nonflammable
- Flammable Limits: N/A
- Extinguishing Media: N/A
- Special Fire Fighting Procedures: None
- Unusual Fire and/or Explosion Hazards: None

SECTION V: HEALTH HAZARD DATA

- Threshold Limit Value: Not Determined
- Effects of Overexposure: This material is not expected to present an inhalation or ingestion hazard. It may cause an eye or skin irritation upon direct contact.
- Emergency and First Aid Procedures: Wash thoroughly with clean water

RUSMAR INCORPORATED • 216 Garfield Avenue • West Chester, PA 19380
Toll Free: 1.800.SEE.FOAM • P: 610.436.4314 • F: 610.436.8436 • www.rusmarinc.com

SECTION VI: REACTIVITY DATA

- Stability: Material is stable. This material will likely coagulate if frozen.
- Incompatibility: Addition of other materials may cause coagulation
- Hazardous Decomposition Products: Low levels of sulfur oxides on combustion and dense, black smoke
- Polymerization will not occur

SECTION VII: SPILL OR LEAK PROCEDURES

- Steps to be taken in case material is released or spilled: If spilled indoors on a hard surface, the spill area may be slippery and should be thoroughly washed with water. Contain spill and absorb material with dirt of other appropriate absorbent.
- Waste Disposal Method: This material has only a modest BOD and can be deposited in sewers. However, it should be flushed with copious amounts of water. The material can be disposed of in approved landfill; dried waste may be incinerated.

SECTION VIII: SPECIAL PROTECTION INFORMATION

- Respiratory Protection: None required for normal operations
- Ventilation: No special requirements
- Protective Gloves: Not required, but recommended
- Eye Protection: Not required, but recommended
- Other Protective Equipment: None

SECTION IX: SPECIAL PRECAUTIONS

- Storing/Handling Precautions: Avoid excessive heat. Material will freeze, thawing will NOT return product to usable form.
- Other Precautions: None

RUSMAR INCORPORATED • 216 Garfield Avenue • West Chester, PA 19380
Toll Free: 1.800.SEE.FOAM • P: 610.436.4314 • F: 610.436.8436 • www.rusmarinc.com

PRODUCT DATA SHEET

LONG DURATION FOAM AC-645

GENERAL DESCRIPTION

AC-645 Long Duration Foam is a patented product which produces a thick, long-lasting, viscous foam barrier for immediate control of dust, odors and volatile organic compounds (VOCs). AC-645 is designed for use with Rusmar Pneumatic Foam Units.

AC-645 foam is recognized by the Environmental Protection Agency and the U.S. Army Corps of Engineers as providing superior emission control for a period up to 17 hours. AC-645 has been specified for use at Superfund and other hazardous waste sites across the United States and Canada.

FEATURES

- Biodegradable
- Will not add to treatment costs
- No ambient temperature limitations
- Easy to use
- More effective than tarps
- Non-reactive
- Non-hazardous
- Safe for workers and the environment
- Requires only water dilution
- No clean up necessary
- Non-combustible
- Covers any contamination source

APPLICATIONS

The primary application for AC-645 is control of odors, VOCs and dust during active excavation and for overnight coverage of contaminated soils at hazardous waste sites. AC-645 can also be applied on top of liquid surfaces.

SPECIAL ODOR CONTROL PROBLEMS

The remediation of hazardous waste sites often includes excavation of soil contaminated with odorous compounds. AC-645 has little or no odor itself, although a pleasant wintergreen or vanilla scent can be added. It forms a barrier between contaminants and the atmosphere and can be applied during active excavation to provide an immediate and effective barrier to minimize odors. It is completely biodegradable and poses no threat to workers, neighboring residents or ground water. AC-645 will not add to soil volume or treatment costs.

RUSMAR INCORPORATED • 216 Garfield Avenue • West Chester, PA 19380
Toll Free: 1.800.SEE.FOAM • P: 610.436.4314 • F: 610.436.8436 • www.rusmarinc.com

AC-645 can also be applied on top of trucks for emission control during transport of materials such as contaminated soils or sewage sludge. Ammonia tests performed on trucks containing sewage sludge resulted in a drop of concentration levels from 170 ppm prior to foaming down to 6 ppm after coverage with AC-645.

- Minimizes worker exposure
- Maintains fence-line odor and VOC emission limits
- Works on lagoon and pond closures
- Can be applied to near vertical or liquid surfaces

FUGITIVE DUST

At hazardous waste sites, fugitive dust can present a health hazard. AC-645 can be applied on top of the dusty material to prevent any wind-borne emissions. There is no need to mobilize equipment to immediately cover with soil or tarps. The Pneumatic Foam Unit can be filled and placed at the site to be used at a moment's notice.

EMERGENCY SPILL CLEAN UP

In emergency spills, odor and VOC control is often difficult because of the terrain and accident conditions. AC-645 Long Duration Foam can be applied to any shaped object, as well as steep slopes, water, mud, snow and ice. It is non-flammable and non-reactive - difficult spill problems can be accommodated.

METHOD OF APPLICATION

AC-645 Long Duration Foam is supplied in either 450 pound (55 gal.) drums or by bulk load (approximately 46,000 pounds). Bulk shipments can be stored outside in a Rusmar Bulk Storage-Dilution System. The Bulk Storage and Dilution system is comprised of a 7000 gallon heated and stirred chemical storage tank and a microprocessor to accurately dilute and transfer the chemical. AC-645 is designed to be applied with a Rusmar Pneumatic Foam Unit. The Pneumatic Foam Units are available in a variety of sizes to accommodate a range of site conditions and application needs.

RUSMAR INCORPORATED • 216 Garfield Avenue • West Chester, PA 19380
Toll Free: 1.800.SEE.FOAM • P: 610.436.4314 • F: 610.436.8436 • www.rusmarinc.com

PRODUCT DATA SHEET

LONG DURATION FOAM AC-900 SERIES

GENERAL DESCRIPTION

The AC-900 Series Long Duration Foam products produce an impermeable, flexible membrane that seals a surface to prevent emissions. AC-900 Series foam products utilize foam as a distribution method for latex. After the foam has been applied, the air bubbles begin to collapse and the latex coagulates to form a continuous flexible membrane that adheres to the substrate. AC-900 Series products are designed for use with Rusmar Pneumatic Foam Units.

AC-900 Series foams are recognized by the Environmental Protection Agency and the U.S. Army Corps of Engineers as providing superior emission control for periods up to 6 months. AC-900 Series foams have been specified for use at Superfund and other hazardous waste sites across the United States and Canada.

FEATURES

- Adheres to vertical and irregular surfaces
- Completely controls odors & VOCs
- Prevents erosion
- Easy to use, no mixing necessary
- Available in black, red, green or brown
- Non-hazardous
- Controls dusting
- Repels water
- No temperature limitations
- More effective than tarps

APPLICATIONS

AC-900 Series foams are the technology of choice when conditions demand superior coverage for periods up to 6 months. Some of the more common uses are:

ODOR AND VOC CONTROL

As a medium for controlling odors and VOCs, AC-900 Series has proven to be very effective with diverse applications.

- Can be left in place or disposed of with soil - will not interfere with thermal or bioremediation process
- Extended odor & VOC control of open excavations or exposed trash
- Extended odor & VOC control of stockpiled soils or debris
- Special odor control problems, such as sewage sludge
- Baled trash cover – the membrane seals the surface completely

RUSMAR INCORPORATED • 216 Garfield Avenue • West Chester, PA 19380
Toll Free: 1.800.SEE.FOAM • P: 610.436.4314 • F: 610.436.8436 • www.rusmarinc.com

PRODUCT DATA SHEET

LONG DURATION FOAM AC-900 SERIES

FUGITIVE DUST

Exposed soil can often become a dust problem in windy locations, presenting a potential health hazard. Hazardous waste sites, receiving periodic shipments of dusty materials, can prevent windborne dust by immediately applying AC-900 Series foam.

- No need to mobilize equipment to immediately cover with soil or tarps. The Pneumatic Foam Unit can be filled and placed at the site to be used at a moment's notice.
- Extended dust control of stockpiled soils or debris

EROSION CONTROL

Graded areas can be covered with AC-900 Series Membrane reducing erosion damage caused by rain, melting snow or ice and wind.

- On outside slopes of the landfill – prevents trash from being exposed
- On landfill caps - prevents erosion before growth of new vegetation
- Stockpiles

SEALING HIGH PERCOLATION SOILS

Sand and other high percolation soils do not effectively repel rain water or melting snow and ice. Covering areas with AC-900 Series foam dramatically reduces soil permeability.

- Improved run-off from inside surfaces of the landfill
- Reduced leachate generation

WASTE TRANSPORTATION

Trucks or railcars transporting trash, odorous or dusty materials can be quickly covered with AC-900 Series foam to form a complete barrier between emissions and the atmosphere.

- No wind blown losses
- Produces a better visual appearance

RUSMAR INCORPORATED • 216 Garfield Avenue • West Chester, PA 19380
Toll Free: 1.800.SEE.FOAM • P: 610.436.4314 • F: 610.436.8436 • www.rusmarinc.com

METHOD OF APPLICATION

AC-900 Series Long Duration Foam products are supplied in either 450 pound (55 gal.) drums or by bulk load (approximately 46,000 pounds). Bulk shipments can be stored outside in a Rusmar Bulk Storage-Dilution System. The Bulk Storage and Dilution system is comprised of a 7000 gallon heated and stirred chemical storage tank and a microprocessor to accurately transfer the chemical.

AC-900 Series products are designed to be applied with a Rusmar Pneumatic Foam Unit. The Pneumatic Foam Units are available in a variety of sizes to accommodate a range of site conditions and application needs.

RUSMAR INCORPORATED • 216 Garfield Avenue • West Chester, PA 19380
Toll Free: 1.800.SEE.FOAM • P: 610.436.4314 • F: 610.436.8436 • www.rusmarinc.com

REMEDIATION PRODUCT DATA SHEET

PNEUMATIC FOAM UNIT 1600/40

A completely self-contained and portable foam generating system designed to withstand the rugged demands and harsh elements found at remediation sites. Quick start-up time means that emission control is available when you need it. Recommended for medium to large size remediation projects, dredging operations and hazardous waste sites. Can be towed around site with a back-hoe or other large vehicle. Typically, foam is applied using a hand-line.

System includes air compressor, pump, hoses, nozzles, solution storage tank and proprietary foam generating technology. Unit has freeze protection for outdoor storage year-round.

FEATURES

- Simple to operate
- Durable, rugged construction
- No clean-up necessary
- Can be filled and placed aside until needed

SPECIFICATIONS

Solution Storage Tank...........1600 Gallons
Coverage Rate........................430 Sq. Ft./Min. @3" depth
Coverage Area........................18,000 - 22,000 Sq. Ft.
Size..24' L x 8' W x 8'6" H
Weight...................................17,000 Pounds
Hose......................................200 Feet of 1-1/2" Diameter
Products................................All Long Duration and Soil Equivalent Foam Products
Freeze Protection System......120V or 230V, 30 amp, single phase

RUSMAR INCORPORATED • 216 Garfield Avenue • West Chester, PA 19380
Toll Free: 1.800.SEE.FOAM • P: 610.436.4314 • F: 610.436.8436 • www.rusmarinc.com

RUSMAR FOAM TECHNOLOGY

REMEDIATION PRODUCT DATA SHEET

PNEUMATIC FOAM UNIT 400/25

A completely self-contained and portable foam generating system designed to withstand the rugged demands and harsh elements found at remediation sites. Quick start-up time means that emission control is available when you need it. Recommended for small to medium size remediation projects, dredging operations and hazardous waste sites.
Can be towed around site with a pick-up truck. Foam is applied using a hand-line.

System includes air compressor, pump, hoses, nozzles, solution storage tank and proprietary foam generating technology. Unit has freeze protection for outdoor storage year-round.

FEATURES

- Simple to operate
- Durable, rugged construction
- No clean-up necessary
- Can be filled and placed aside until needed

SPECIFICATIONS

Solution Storage Tank...........400 Gallons
Coverage Rate........................270 Sq. Ft./Min. @3" depth
Coverage Area per fill............2,000 - 6,000 Sq. Ft.
Size..16'8” L x 8'6” W x 7'8” H
Dry Weight.............................6,880 Pounds
Hose...................................... 200 Feet of 1-1/2" Diameter
Products................................All Long Duration and Soil Equivalent Foam Products
Freeze Protection System......120V or 230V, 30 amp, single phase

RUSMAR INCORPORATED • 216 Garfield Avenue • West Chester, PA 19380
Toll Free: 1.800.SEE.FOAM • P: 610.436.4314 • F: 610.436.8436 • www.rusmarinc.com

Appendix C

Annual Inspection and Certification Checklist

Annual Inspection Checklist and Certification
National Grid Former Sag Harbor MGP Site
Sag Harbor, New York

Property: ____________________

Type	Inspection Task	Status	Condition	Date Completed	Initials	Remarks
Infrastructure	Building (s)					
	Building Slabs and Floor					
	Pavements					
	Underground Services					
	New Structures					
	Monitoring Wells					
Physical	Site Fences					
	Topography					
	Surface Drainage					
	Depressions					
	Vegetation					
	Ground Cover					
	Surface Soil					
Contamination	Odors					
	Staining					
	Sheens					
Property Owner/ Representative	New					
	Interview					

Inspection and Interview Acknowledgement	Signature/Date: ____________________	____________________
	Name: ____________________	____________________
	National Grid/Representative	Property Owner/Representative

Notes:

Status - Modified/Unchanged

Condition - Unchanged/Deteriorated

Interview - Work completed during the previous year and future plans

Soil Removal - Any soil removal activities will be detailed here and Figures 1-8, 1-9, and 1-10 of the SMP revised accordingly.

Appendix D

Monitoring Well Installation Report (Compact Disc Copy Only)

nationalgrid

Sarah Aldridge
Project Manager

June 17, 2011

Mr. Douglas MacNeal
Project Manager
New York State Department of Environmental Conservation
Remedial Action Bureau C, Division of Environmental Remediation
Bureau of Western Remedial Action, 11th Floor
625 Broadway
Albany, New York 12233-7017

Re: Installation and Replacement Monitoring Well Installation Report
Sag Harbor Former Manufactured Gas Plant Site
Sag Harbor, New York
Site ID No. 1-52-159

Dear Mr. MacNeal,

On behalf of National Grid, GEI Consultants, Inc. (GEI) has prepared this letter report to summarize the field activities, present the analytical results, and provide an assessment of the findings for the replacement monitoring well installation program at the Sag Harbor former Manufactured Gas Plant (MGP) site in Sag Harbor, New York. The work was completed consistent with the work plan dated October 12, 2010 and approved by the New York State Department of Environmental Conservation (NYSDEC).

Field Activities

The scope of work included the installation and development of new and replacement groundwater monitoring wells at and adjacent to the site. Field activities were conducted on October 25 through 29, November 1 through 5 and November 11, 2010. These wells were installed to replace monitoring wells that were destroyed, damaged or abandoned during the remedial excavation activities conducted at the site, with the exception of SHMW-01D and SHMW-02S. The replacement monitoring wells are designated with an "R" at the end of each well identification. Monitoring wells SHMW-02IR and SHMW-04SR were installed as larger diameter wells to serve as potential dense non-aqueous phase liquid (DNAPL) collection wells. In addition, monitoring wells SHMW-07S and SHMW-07I, which were damaged, were abandoned and replaced as part of this program. A summary of the well construction details is provided on **Table 1** and the locations of the wells are shown on **Figure 1**.

Prior to monitoring well installation, a soil boring was conducted at each of the monitoring well cluster locations. The soil borings were advanced using direct push Geoprobe® methodology. Prior to drilling activities, utility mark-outs were obtained and all drilling locations were hand-cleared to a depth of 5 feet below ground surface. Each boring was advanced to the depth of the deepest proposed monitoring well of that cluster. Soil samples were collected from each boring using 5-foot long MacroCores®. Each soil boring was logged at continuous intervals from the surface and screened for the presence of volatile organic vapors using a photoionization detector (PID), and for sensory evidence of impacts, such as odors or staining. Boring logs were prepared and are included as **Attachment A**.

Up to four soil samples from each boring were selected for chemical analysis to evaluate soil quality and the presence of potential MGP-related impacts. One sample was collected from the groundwater interface, and additional samples were collected from intervals indicative of contamination, based on the field screening results. If impacts were identified in a boring, a final sample was collected from an apparent unimpacted zone beneath the contamination, or the bottom of the boring if impacts were still present.

Each soil sample was analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) by United States Environmental Protection Agency (EPA) Method 8260, and polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270, by a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (NYS-ELAP) certified laboratory. Quality assurance/quality control (QA/QC) samples were collected as part of the project. One set of QA/QC samples, consisting of a matrix spike, matrix spike duplicate, a blind duplicate and field blank were collected and analyzed. All sample data was validated. Soil analytical results were compared to the Commercial Use Soil Cleanup Objectives (SCOs) in New York Code of Rules and Regulations, Chapter IV, Part 375-6 (6 NYCRR 375-6). The sample results are presented in **Table 2**.

Two monitoring wells (SHMW-07S and SHMW-07I) were abandoned by grouting in-place and 11 monitoring wells were installed at five locations (**Figure 1**). Monitoring well construction logs are included as **Attachment B**. Excluding SHMW-02I and SHMW-04S, each monitoring well was installed using the direct-push method and a 3.25-inch casing and was constructed of one-inch inside diameter (ID), flush-threaded Schedule 40 PVC solid casing from ground surface to the well screen, a 0.020 slot screen. As previously stated, monitoring wells SHMW-02IR and SHMW-04SR will also serve as potential DNAPL collection wells. These wells were drilled with 6.25-inch ID hollow-stem augers (HSA) and constructed of four-inch ID, flush-threaded Schedule 40 PVC solid casing from ground surface to the 0.020 slot screen well screen, and a sump, installed 2 feet below the well screen. Monitoring well SHMW-01I, initially planned as a 4-inch potential DNAPL collection well, was modified to a 1-inch well monitoring well due to the lack of impacts observed in the soil at this location.

175 East Old Country Road, Hicksville, NY 11801
T: 516.545.2568 F: 516.545.2582 Sarah.Aldridge@us.ngrid.com www.nationalgrid.com

Each monitoring well was finished at the surface with a flush-mounted curb box secured in cement. In addition, the curb boxes of several of the existing monitoring wells at the site were repaired.

Downhole drilling equipment was decontaminated between each sample location on polyethylene sheeting at a staging area constructed at the site. The soil cuttings and decontamination fluids were collected in 55-gallon USDOT drums and properly disposed off-site at a National Grid-approved disposal facility.

Each monitoring well was developed after installation. Development was performed by alternately surging and pumping, using either a centrifugal or peristaltic pump, for a maximum of one hour or until the turbidity of the development water was less than 50 nephelometric turbidity units (NTUs). A field turbidity meter was used to monitor NTU levels.

The monitoring wells and current site features were surveyed subsequent to completion of the field work. This survey data was used to update the site and well location map.

Upon completion, all of the new and replacement groundwater monitoring wells were sampled as part of the quarterly groundwater sampling program. The groundwater samples were analyzed for BTEX and PAHs via USEPA Methods 8260 and 8270, respectively, by a NYSDOH-ELAP certified laboratory. The results from the groundwater monitoring will be provided in the subsequent quarterly groundwater monitoring reports.

Findings

Soil Borings

Limited visual impacts were identified in the soil borings. Tar stained soil was identified in borings SHSB-02, SHSB-02A, SHSB-04A and SHSB-07. In boring SHSB-02, tar staining was identified in the 12 to 13-foot interval, and tar stained bands were identified in the 30 to 31.25-foot interval and the 35 to 36.5-foot interval. Minimal tar staining was identified in SHSB-02A, present in the 33.2 to 33.3-foot interval. In SHSB-04A, staining was identified throughout the 5 to 10-foot interval, and three 1-inch tar saturated bands along with a visible sheen were noted in the 10 to 15-foot interval. Tar stained bands were identified in the 7 to 8.5-foot interval in SHSB-07. Elevated PID readings and naphthalene-like odors were observed in all of the borings excluding SHMW-01.

Two borings were drilled in the planned locations of potential DNAPL recovery wells SHMW-02 and SHMW-04 in an attempt to optimize the locations of the wells for maximum product recovery. Based on the results of the soil characterization, recovery well SHMW-02IR was installed at the original SHSB-02 location, and recovery well SHMW-04SR was installed at the SHSB-04A location.

Sample Results

Exceedances of the SCOs in the replacement monitoring well soil borings were limited to PAHs identified in samples from SHSB-02 (11 to 11.5 and 30 to 30.5-foot intervals), SHSB-04 (6 to 8 and 13 to 15-foot intervals), SHSB-04A (5 to 5.5, 6 to 9, and 10.5 to 13.5-foot intervals) and SHSB-07 (4 to 5 and 6.5 to 8.5-foot intervals) (**Table 2**). These results are generally consistent with the findings of the soil characterization as described above. The exception was SHSB-07 (4 to 5 foot-intervals) in which no impacts were noted (visual/olfactory observations and field screening) during the field soil characterization. The analytical results from this sample exceeded the standards for several PAHs.

At locations were impacts were identified, samples were collected from an apparent unimpacted zone beneath the contamination, or the bottom of the boring if impacts were still present. No exceedances of the SCOs were identified in the samples taken from near the bottom SHSB-02 (70 to 72-foot intervals) and from apparent unimpacted zones located beneath overlying contamination in SHSB-05 (15 to 16-foot intervals) and SHSB-07 (16 to 18-foot intervals). Concentrations in the samples were significantly lower than the concentrations in the samples taken from shallower intervals at these locations, with the concentrations in SHSB-05 (15 to 16-foot intervals) being below detection levels. Exceedances of the SCOs were identified in the samples collected from near the base of the borings at SHSB-04 and SHSB-04A; however, the magnitude of the concentrations from the sample collected near the base of SHSB-04A (10.5 to 13.5-foot intervals) were significantly lower than those in the shallower interval.

Summary

The field characterization observations and analytical results from the soil borings indicate impacts to the soil in the majority of the soil borings, excluding SHMW-01, with limited impacts identified at SHMW-05. Tar saturated soil was limited to three, 1-inch bands at approximately 11 feet in SHMW-04A. No free-product was identified.

Following development of these wells, trace amounts of light non-aqueous phase fluid (LNAPL) were found and DNAPL was noted on the tubing in wells SHMW-04SR and SHMW-07SR. Going forward, non-aqueous phase liquid (NAPL) monitoring will be conducted during the quarterly sampling events.

If you have any questions, or require any additional information, please contact me at (516) 545-2568.

Sincerely,

For Sarah Aldridge
Project Manager

Enclosures

cc: W. Parish (NYSDEC, Region I)
R. Ockerby (NYSDOH)
R. Paulsen (SCDHS)

H:\WPROC\Project\KEYSPAN\Sag Harbor\Replacement Wells\2011\Monitoring Well Install and Replace report6-17-11.docx

Tables

Table 1
Sag Harbor Former MGP Site
Groundwater Monitoring Program
Summary of New/Replacement Monitoring Wells

Well No.	Former Screen Interval (feet)	Current Screen Interval (feet)	Screen Diameter (inches)
SHMW-01SR	1 - 6	1 - 6	1
SHMW-01IR	35 - 45	35 - 45	1
SHMW-01D	--	65 - 75	1
SHMW-02S	--	1 - 6	1
SHMW-02IR	35 - 45	27 - 37	4
SHMW-02DR	65 - 75	65 - 75	1
SHMW-04SR	2- 12	2- 12	4
SHMW-05SR	2- 12	2- 12	1
SHMW-05IR	35 - 45	35 - 45	1
SHMW-07SR	1 - 11	1- 11	1
SHMW-07IR	35 - 45	35 - 45	1

Table 2
Analytical Soil Results Summary
Sag Harbor Replacement Well Installation Program
Sag Harbor Former MGP Site
Sag Harbor, New York

Sample Name: Sample Interval (ft.): Sample Date:	6 NYCRR 375 SCO RESTRICTED USE COMM	SHSB-02 (11-11.5) 10/26/2010	SHSB-02 (30-30.5) 10/26/2010	SHSB-02 (70-72) 10/26/2010	Duplicate of: SHSB-02 (70-72) 10/26/2010	SHSB-04 (6-8) 10/26/2010	SHSB-04 (13-15) 10/26/2010	SHSB-04A (5-5.5) 11/1/2010	SHSB-04A (6-9) 11/1/2010	SHSB-04A (10.5-13.5) 11/1/2010	SHSB-05 (10-10.5) 10/27/2010	SHSB-07 (4-5) 11/1/2010	SHSB-07 (6.5-8.5) 11/1/2010	SHSB-07 (16-18) 11/1/2010
BTEX (mg/kg)														
Benzene	44	0.086	0.057 UJ	0.012 U	0.008	0.002 J	0.012 U	0.067	0.056 U	4.9	0.005 J	0.012 U	0.45	0.012 U
Toluene	500	0.15	0.68	0.012 U	0.004 J	0.004 J	0.012 U	0.037	0.022 J	0.005 J	0.012 U	0.012 U	0.61	0.012 U
Ethylbenzene	390	0.86	17	0.006	0.02	0.77	0.012 U	1.1	17	25	0.026	0.012 U	23	0.012 U
Xylene, total	500	2.4	32	0.013 J	0.044 J	1.4	0.012 U	1.1	15	0.22	0.023	0.012 U	16	0.012 U
Total BTEX	NE	3.496	49.68	0.019	0.076	2.176	ND	2.304	32.022	30.125	0.054	ND	40.06	ND
Other VOCs (mg/kg)														
Acetone	500	0.07 U	0.057 UJ	0.012 U	0.012 U	0.43	0.012 U	0.098 J	0.056 UJ	0.019 UJ	0.012 U	0.012 UJ	0.26 J	0.012 UJ
Butanone,2-	500	0.058 U	0.057 UJ	0.012 U	0.012 U	0.037	0.012 U	0.058 U	0.056 U	0.012 U	0.012 U	0.012 U	0.12 U	0.012 U
Carbon disulfide	NE	0.058 U	0.057 UJ	0.012 U	0.012 U	0.012 U	0.012 U	0.058 U	0.056 U	0.002 J	0.004 J	0.012 U	0.12 U	0.012 U
Methylene chloride	500	0.058 U	0.057 UJ	0.012 U	0.012 U	0.012 U	0.012 U	0.058 U	0.056 U	0.012 U	0.012 U	0.012 U	0.12 U	0.012 U
Styrene	NE	0.058 U	7.3	0.003 J	0.011	0.012 U	0.012 U	0.058 U	0.056 U	0.012 U	0.012 U	0.012 U	0.12 U	0.012 U
Trichloroethene	200	0.058 U	0.018 J	0.012 U	0.012 U	0.012 U	0.012 U	0.058 U	0.056 U	0.012 U	0.012 U	0.012 U	0.12 U	0.012 U
Non-carcinogenic PAHs (mg/kg)														
Acenaphthene	500	22	87 J	0.4 U	0.38 U	18	18	59	240	31	0.37	0.18 J	410	0.15 J
Acenaphthylene	500	3	390	0.4 U	0.38 U	1.3	1.3	12	14	2	0.41 U	6	30	0.38 U
Anthracene	500	11	220	0.4 U	0.38 U	7.3	7.6	84	90	12	0.41 U	32	180	0.085 J
Benzo[g,h,i]perylene	500	5.4	35	0.4 U	0.38 U	1.9	2	13	14	1.8 J	0.41 U	16	26	0.38 U
Fluoranthene	500	22	320	0.4 U	0.14 J	9.6	10	98	120	16	0.41 U	29	220	0.11 J
Fluorene	500	10	210	0.4 U	0.38 U	6.3	7	58	90	12	0.41 U	0.63	170	0.078 J
Methylnaphthalene,2-	NE	20	590	0.4 U	0.38 U	20	20	3.8 U	270	31	0.41 U	0.83	460	0.1 J
Naphthalene	500	37	1600	0.4 U	0.38 U	31	31	10	760	85	0.57	1.9	1400	0.13 J
Phenanthrene	500	51	970	0.14 J	0.29	35	37	320	400	53	0.41 U	9.2	690	0.35
Pyrene	500	31	440	0.092 J	0.18 J	13	14	130	160	22	0.41 U	46	310	0.17 J
Carcinogenic PAHs (mg/kg)														
Benz[a]anthracene	5.6	11	150	0.4 U	0.38 U	5.3	5.8	60	54	7.6	0.41 U	20	120	0.38 U
Benzo[a]pyrene	1	10	130	0.4 U	0.38 U	4.1	4.4	24	46	5.4	0.41 U	26	91 J	0.38 U
Benzo[b]fluoranthene	5.6	7.8	82 J	0.4 U	0.38 U	3.3	4	37	28	6.1 J	0.41 U	25	59 J	0.38 U
Benzo[k]fluoranthene	56	2.5	32	0.4 U	0.38 U	1.5	1.2	12 J	18	1.8 J	0.41 U	15	37	0.38 U
Chrysene	56	10	140	0.4 U	0.38 U	4.3	4.3	56	46	6.7	0.41 U	24	100	0.38 U
Dibenz[a,h]anthracene	0.56	1.2	8.7 J	0.4 U	0.38 U	0.5	0.6	3.5 J	4.3 J	0.48 J	0.41 U	3.7 J	7.9 J	0.38 U
Indeno[1,2,3-cd]pyrene	5.6	3.7	27	0.4 U	0.38 U	1.3	1.3	9.7	11	1.3 J	0.41 U	12	22	0.38 U
Total PAHs (mg/kg)														
Total PAHs	NE	258.6	5431.7	0.232	0.61	163.7	169.5	986.2	2365.3	295.18	0.94	267.44	4332.9	1.173
Other SVOCs (mg/kg)														
Carbazole	NE	0.16 J	1.3 J	0.4 U	0.38 U	0.39 U	0.38 U	3.8 U	1.7 J	0.4 U	0.41 U	0.12 J	2.7	0.38 U
Dibenzofuran	350	0.81	15	0.4 U	0.38 U	0.42	0.43	3.6 J	6.8	0.97	0.41 U	0.4 U	19	0.38 U
Methylphenol, 4-	500	0.38 U	3.8 U	0.4 U	0.38 U	0.39 U	0.38 U	3.8 U	3.7 U	0.13 J	0.41 U	0.4 U	3.9 U	0.38 U
Other (mg/kg)														
Moisture, percent	NE	0.0141	0.0124	0.0176	0.0133	0.0153	0.0142	0.0132	0.0113	0.0172	0.0195	0.0172	0.0147	0.0132

Table 2
Analytical Soil Results Summary
Sag Harbor Replacement Well Installation Program
Sag Harbor Former MGP Site
Sag Harbor, New York

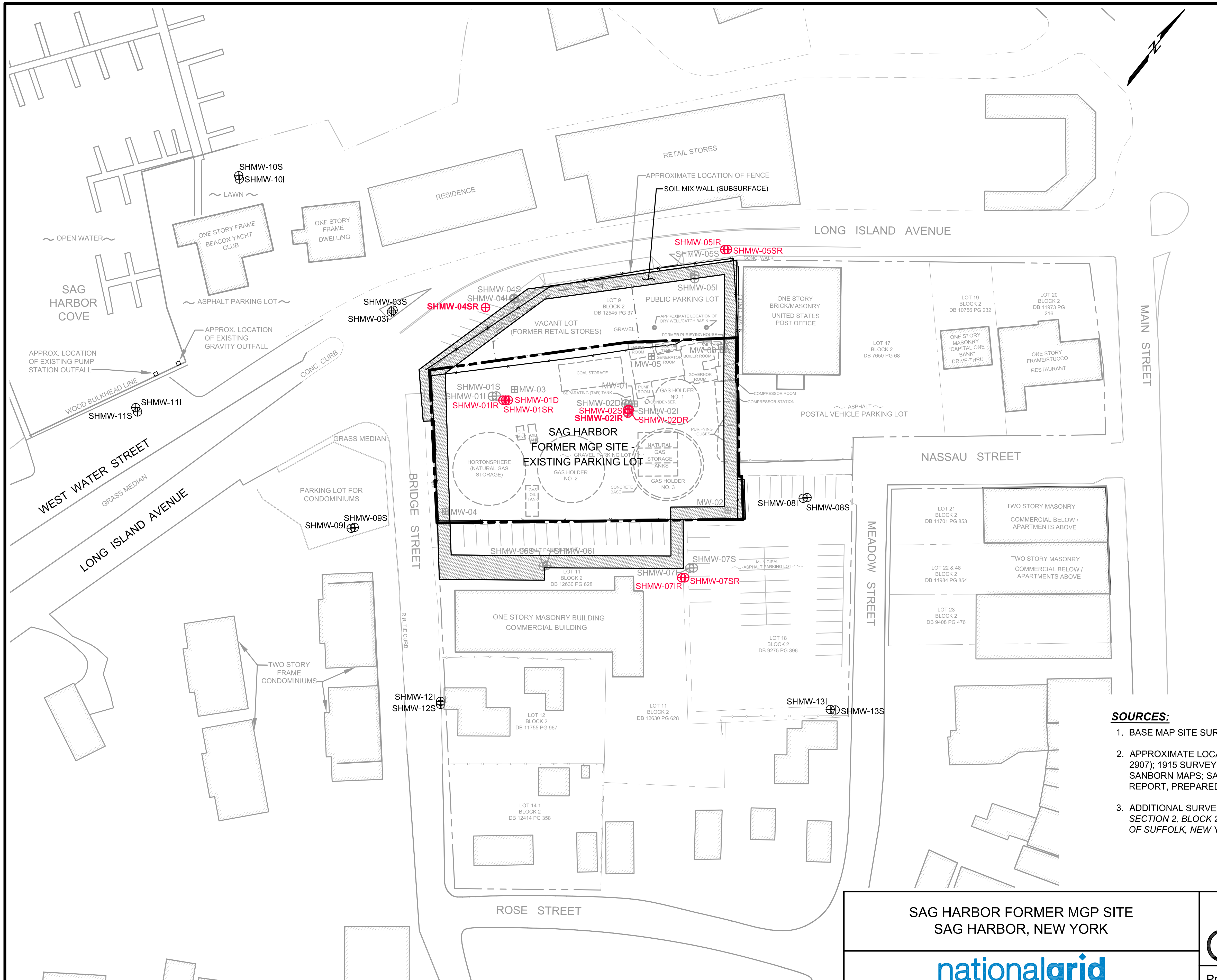
Notes:
mg/kg - milligrams/kilogram or parts per million (ppm)
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOCs - volatile organic compounds
PAHs - polycyclic aromatic hydrocarbons
SVOCs - semivolatile organic compounds
Total BTEX and Total PAHs are calculated using detects only.

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

Bolding indicates a detected concentration
Gray shading and bolding indicates that the detected result value exceeds established 6 NYCRR SCO COMM

Validation Qualifiers:
J - estimated value
U - indicates not detected at or above the reporting limit shown.
UJ - not detected at or above the reporting limit shown and the reporting limit is estimated

Figure



LEGEND

- APPROXIMATE LOCATION OF FORMER MGP STRUCTURE
- LOCATION OF EXISTING STRUCTURE
- CURRENT SITE BOUNDARY
- ADJACENT SITE BOUNDARY
- CHAIN-LINK FENCE
- STOCKADE FENCE
- SHMW-05S — FORMER MONITORING WELL (WELL ABANDONED OR DESTROYED)
- SHMW-03S — MONITORING WELL LOCATION
- SHMW-01IR — NEW/REPLACEMENT MONITORING WELL LOCATION
- SHMW-02IR, SHMW-04SR — POTENTIAL DNAPL COLLECTION WELL

0 80 160

SCALE, FEET

SOURCES:

1. BASE MAP SITE SURVEY DATA PROVIDED BY KEYSPAN ENERGY SURVEY DIVISION.
2. APPROXIMATE LOCATIONS OF FORMER MGP STRUCTURES BASED ON: 1916 SITE PLAN (DWG 2907); 1915 SURVEY BY THE TITLE GUARANTEE & TRUST CO. OF N.Y. (DWG 2290); AND SANBORN MAPS; SAG HARBOR FORMER MGP SITE DRAFT FINAL REMEDIAL INVESTIGATION REPORT, PREPARED BY DVIRKA & BARTILUCCI, DATED DECEMBER 2002.
3. ADDITIONAL SURVEY DATA FROM DRAWING TITLED *BOUNDARY AND TOPOGRAPHIC SURVEY SECTION 2, BLOCK 2, LOT 10, VILLAGE OF SAG HARBOR, TOWN OF SOUTHAMPTON, COUNTY OF SUFFOLK, NEW YORK* PROVIDED BY KS ENGINEERS, P.C, NEWARK, NJ., DATED 12/02/10

SAG HARBOR FORMER MGP SITE SAG HARBOR, NEW YORK	GEI Consultants	**MONITORING WELL LOCATION MAP**
nationalgrid	Project 093190-2-1203	March 2011 Figure 1

I:\PROJECT\NATIONAL GRID\SAG HARBOR\GROUNDWATER-QUARTERLY MONITORING\SAG HARBOR-GW WELL REPLACEMENTS.DWG

Attachment A

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG

SHSB-01

GROUND SURFACE ELEVATION (FT): 3.78
LOCATION: Onsite
NORTHING (FT): 308683 **EASTING (FT):** 1454145
TOTAL DEPTH (FT): 75.0
DRILLED BY: Zebra Environmental
DATUM VERT. / HORZ.:
LOGGED BY: Chris Anastasiou
DATE START / END: 10/25/2010
DRILLING DETAILS: Geoprobe
WATER LEVEL DEPTHS (FT):

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC IN./IN.	SAMPLE INFO: FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
0	0			PID= 0.1 PID= 0.2			(0'- 1') WIDELY GRADED SAND WITH GRAVEL (SW); ~75% sand, fine to coarse, ~25% gravel; brown, Hand cleared from 0-5 ft. (1'- 5') WIDELY GRADED SAND WITH GRAVEL (SW); ~85% sand, fine to coarse, ~15% gravel, fine to coarse; brown.
-5	5	S1	60/50	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.2		Env. Sample ID= SHSB(8-10)	(5'- 6.5') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~20% gravel, fine to coarse; brown. (6.5'- 7.5') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to medium, ~5% fines; brown. (7.5'- 10') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, ~5% fines; wet, brown.
-10	10	S2	60/60	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.1 PID= 0.2 PID= 0.2			(10'- 10.83') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to medium, ~5% fines; wet, brown. (10.83'- 13.66') WIDELY GRADED SAND WITH SILT (SW-SM); ~80% sand, fine to coarse, ~10% gravel, fine to medium, ~10% fines; wet, brown, Bog like odor. (13.6'- 15') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; wet, brown, Bog like odor.
-15	15	S3	60/36	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(15'- 17.91') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to medium, ~5% fines; wet, brown, Bog like odor. (17.91'- 19') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~10% gravel, fine; wet, dark brown. (19'- 20') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, light brown.
-20	20	S4	60/37	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(20'- 20.08') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, brown, brown/ red iron striations throughout. (21'- 25') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; wet, light brown.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG

SHSB-01

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC IN./IN.	SAMPLE INFO: FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
	25	S5	60/16	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(25'- 30') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; wet, light brown.
-25							
	30	S6	60/30	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(30'- 31') NARROWLY GRADED SAND (SP); ~90% sand, fine, ~5% gravel, fine, ~5% fines; wet, light brown. (31'- 35') SILTY SAND (SM); ~85% sand, fine gravel, ~15% fines; wet, tan brown.
-30							
	35	S7	60/36	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(35'- 36.75') SILTY SAND (SM); ~85% sand, fine, ~15% fines; wet, tan brown. (36.75'- 38.25') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; wet, light brown. (38.25'- 40') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine to medium, ~5% fines; red orange.
-35							
	40	S8	60/21	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(40'- 41.75') SILTY SAND (SM); ~85% sand, fine, ~15% fines; wet, brown. (41.75'- 43.25') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; wet, light brown. (43.25'- 50') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine to coarse, ~5% fines; wet, red orange.
-40							
	45	S9	60/25	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(45'- 50') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine to coarse, ~5% fines; wet, light brown, Iron (red) straitions from 13'-15'.
-45							
	50	S10	60/28	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(50'- 55') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; wet, light brown.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG
PAGE 3 of 3
SHSB-01

ELEV. FT.	DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
-50	55	S11	60/20	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(55'- 60') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; wet, light brown.
-55	60	S12	60/23	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(60'- 62.5') NARROWLY GRADED SAND (SP); ~95% sand, fine, ~5% fines; wet, light brown. (62.5'- 65') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; wet, light brown.
-60	65	S13	60/16				(65'- 65.5') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; wet, light brown. (65.5'- 66.5') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; wet, red orange. (66.5'- 70') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; wet, light brown.
-65	70	S14	60/10	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(70'- 75') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines.
-70	75						End of Boring at 75 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG

SHSB-02

GROUND SURFACE ELEVATION (FT): 4.14
LOCATION: Onsite
NORTHING (FT): 308710 **EASTING (FT):** 1454242
TOTAL DEPTH (FT): 75.0
DRILLED BY: Zebra Environmental
DATUM VERT. / HORZ.:
LOGGED BY: Chris Anastasiou
DATE START / END: 10/26/2010
DRILLING DETAILS: Geoprobe
WATER LEVEL DEPTHS (FT):

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	VISUAL IMPACTS	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
	0			PID= 0.0 PID= 0.0					(0'- 1') WIDELY GRADED SAND WITH GRAVEL (SW); ~85% sand, fine to coarse, ~15% gravel, fine to coarse; wet, brown, Hand cleared 0-5 ft, rock (1/4"-2") brown fill. (1'- 5') WIDELY GRADED SAND WITH GRAVEL (SW); ~85% sand, fine to coarse, ~15% gravel; wet, brown.
0									
	5	S1	60/28	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0				Env. Sample ID= SHSB-02(4-5')	(5'- 10') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, ~5% fines; wet, brown.
-5									
	10	S2	60/36	PID= 0.0 PID= 94.7 PID= 22.2					(10'- 12') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, ~5% fines; wet, brown.
				PID= 28.5 PID= 11.3			NLO	Env. Sample ID= SHSB-02(11-11.5')	(12'- 13') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; strong naphthalene-like odor, wet, Tar Stained.
-10							NLO		(13'- 15') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; moderate naphthalene-like odor, wet, red brown.
	15	S3	60/48	PID= 54.0 PID= 36.3 PID= 42.7 PID= 32.0 PID= 38.7			NLO		(15'- 17.5') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; moderate naphthalene-like odor, wet, red brown.
-15				PID= 40.1 PID= 32.3 PID= 9.4			NLO		(17.5'- 20') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; moderate naphthalene-like odor, wet, brown.
	20	S4	60/30	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0				Env. Sample ID= SHSB-02(20-22')	(20'- 23') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, light brown.
									(23'- 24') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; wet, light brown.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants, Inc. 455 Winding Brook Road Glastonbury, CT 06033 (860) 368-5300	CLIENT: National Grid PROJECT: Sag Harbor MGP CITY/STATE: Sag Harbor, NY GEI PROJECT NUMBER: 093190-2-1204	BORING LOG PAGE 2 of 3	SHSB-02

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	VISUAL IMPACTS	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
									(24'- 25') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; light brown.
	25	S5	60/14	PID= 0.1 PID= 0.1					(25'- 30') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, light brown.
-25									
	30	S6	60/24	PID= 126.6 PID= 26.6 PID= 0.6 PID= 0.5			NLO	Env. Sample ID= SHSB-02(30-30.5')	(30'- 31.25') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; moderate naphthalene-like odor, wet, gray, gray stained, tar staining bands throughout. (31.25'- 35') SILTY SAND (SM); ~55% sand, fine, ~45% fines; wet, light brown.
-30									
	35	S7	60/21	PID= 10.2 PID= 48.8 PID= 20.4 PID= 10.4			NLO NLO		(35'- 36.5') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine to medium, ~15% gravel, fine, ~15% fines; moderate naphthalene-like odor, wet, gray, gray stained, 3-4" tar stained. (36.5'- 40') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine, ~5% fines; slight naphthalene-like odor, wet, light brown.
-35									
	40	S8	60/28	PID= 1.6 PID= 0.4 PID= 0.4 PID= 0.3 PID= 0.4					(40'- 45') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to medium, ~5% fines; wet, light brown.
-40									
	45	S9	60/29	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0					(45'- 49.5') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine, ~5% fines; wet, light brown.
-45									(49.5'- 50') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; wet, red orange.
	50	S10	60/28	PID= 0.1 PID= 0.4 PID= 0.0 PID= 0.0					(50'- 54') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, ~5%

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED

Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG

SHSB-02

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC IN./IN.	SAMPLE INFO: FIELD TEST DATA	STRATA	VISUAL IMPACTS	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
				PID= 0.0					fines; wet, light brown.
-50									(54'- 55') WIDELY GRADED SAND WITH GRAVEL (SW); ~85% sand, fine to coarse, ~15% gravel, fine to coarse; wet, light brown, red band 1/4".
	55	S11	60/20	PID= 0.1 PID= 0.2 PID= 0.1 PID= 0.1			NLO		(55'- 60') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; moderate naphthalene-like odor, wet, light brown, Sheen atop rock w/ NLO.
-55									
	60	S12	60/24	PID= 4.3 PID= 0.4 PID= 1.5 PID= 4.0			NLO		(60'- 61.5') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, ~5% fines; slight naphthalene-like odor, wet, light brown.
							NLO		(61.5'- 65') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, ~5% fines; slight naphthalene-like odor, wet, orange brown.
-60									
	65	S13	60/16	PID= 0.0 PID= 0.0 PID= 0.0					(65'- 70') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, ~5% fines; wet, light brown.
-65									
	70	S14	60/20	PID= 0.3 PID= 0.4 PID= 0.3 PID= 0.2				Env. Sample ID= SHSB-02(70-72')	(70'- 75') WIDELY GRADED GRAVEL WITH SAND (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, ~5% fines; wet, light brown.
-70									
	75								End of Boring at 75 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT:	National Grid
PROJECT:	Sag Harbor MGP
CITY/STATE:	Sag Harbor, NY
GEI PROJECT NUMBER:	093190-2-1204

BORING LOG

PAGE 1 of 2

SHSB-02A

GROUND SURFACE ELEVATION (FT):		LOCATION:	Onsite
NORTHING (FT):	EASTING (FT):	TOTAL DEPTH (FT):	40.0
DRILLED BY:	Zebra Environmental	DATUM VERT. / HORZ.:	
LOGGED BY:	Chris Anastasiou	DATE START / END:	10/28/2010
DRILLING DETAILS:	Geoprobe		
WATER LEVEL DEPTHS (FT):			

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC IN./IN.	SAMPLE INFO: FIELD TEST DATA	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	0							Move 15 feet north of SHSB-02, collect sample from 30-40 feet for DNAPL check.
	5							
	10							
	15							
	20							

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED

Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG

SHSB-02A

ELEV. FT.	DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
	25							
	30	S1	60/29	PID= 5.0 PID= 5.4 PID= 450 PID= 19.7 PID= 6.0 PID= 2.0			NLO	(30'- 33.2') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, ~5% fines; moderate naphthalene-like odor, wet, light brown.
							NLO	(33.2'- 33.5') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; moderate naphthalene-like odor, wet, tar stained.
							NLO	(33.5'- 34') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine to medium, ~10% fines; moderate naphthalene-like odor, wet, light brown.
							NLO	(34'- 35') SILTY SAND (SM); ~50% sand, ~50% fines; slight naphthalene-like odor, wet, light brown.
	35	S2	60/35	PID= 4.0 PID= 1.8 PID= 1.1 PID= 1.4 PID= 0.8 PID= 0.5			NLO	(35'- 40') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; slight naphthalene-like odor, wet, light brown.
	40							End of Boring at 40 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants
GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG
PAGE 1 of 1
SHSB-04

GROUND SURFACE ELEVATION (FT):
LOCATION:
NORTHING (FT):
EASTING (FT):
TOTAL DEPTH (FT): 15.0
DRILLED BY: Zebra Environmental
DATUM VERT. / HORZ.:
LOGGED BY: Chris Anastasiou
DATE START / END: 10/26/2010
DRILLING DETAILS: Geoprobe
WATER LEVEL DEPTHS (FT):

ELEV. FT.	DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
	0			PID= 0.0				(0'- 1') Hand cleared from 0-5 ft. Asphalt, rock.
				PID= 0.0				(1'- 3') Rock (1/4"-1), concrete.
				PID= 1.4				(3'- 5') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~10% gravel, fine; light brown.
	5	S1	60/60	PID= 22.3 PID= 17.9 PID= 21.3 PID= 22.5 PID= 21.3 PID= 19.8 PID= 20.7 PID= 21.3		NLO	Env. Sample ID= SHSB-04(6-8')	(5'- 10') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% gravel, fine; moderate naphthalene-like odor, moist, brown.
	10	S2	60/57	PID= 74.3 PID= 78.3 PID= 73.8 PID= 49.3 PID= 45.4 PID= 76.3 PID= 73.2 PID= 76.8		NLO	Env. Sample ID= SHSB-04 (13-15)	(10'- 15') WELL GRADED SAND (SW); ~95% sand, fine to coarse, ~5% gravel, fine; moderate naphthalene-like odor, wet, brown.
	15							End of Boring at 15 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG
PAGE 1 of 1
SHSB-04A

GROUND SURFACE ELEVATION (FT): 4.43
LOCATION: 37 feet south of SHSB-04A
NORTHING (FT): 308748 **EASTING (FT):** 1454104
TOTAL DEPTH (FT): 15.0
DRILLED BY: Zebra Environmental
DATUM VERT. / HORZ.:
LOGGED BY: Chris Anastasiou
DATE START / END: 11/1/2010
DRILLING DETAILS: Geoprobe
WATER LEVEL DEPTHS (FT):

ELEV. FT.	DEPTH FT.	TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	ODOR	REMARKS
	0			PID= 0.0		
				PID= 0.0		
0				PID= 1.5	NLO	
	5	S1	60/44	PID= 47.4	NLO	Env. Sample ID= SHSB-04A(5-5.5')
				PID= 60.2		
				PID= 45.6	NLO	Env. Sample ID= SHSB-04A(6-9')
				PID= 54.4	NLO	
				PID= 62.2	NLO	
				PID= 51.3	NLO	
				PID= 50.8		
-5				PID= 52.3	NLO	
	10	S2	60/48	PID= 24.8		Env. Sample ID= SHSB(10.5-13.5')
				PID= 91		
				PID= 36		
				PID= 19		
				PID= 21.2	NLO	
				PID= 23.2		
				PID= 19.5		
				PID= 18.7		
-10	15			PID= 16.8		

SOIL / BEDROCK DESCRIPTION

(0'- 1') Hand cleared from 0-5 ft. Asphalt, rock 1/4-1".

(1'- 4') WIDELY GRADED SAND WITH GRAVEL (SW); ~85% sand, fine to coarse, ~15% gravel, fine to coarse, ~5% fines; light brown.

(4'- 4') WIDELY GRADED SAND WITH GRAVEL (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; slight naphthalene-like odor, moist.
(5'- 6') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; moderate naphthalene-like odor, tar stained.
(6'- 6.25') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; moderate naphthalene-like odor, gray, gray stained.
(6.25'- 6.75') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; moderate naphthalene-like odor, wet, tar stained.
(6.75'- 7.5') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; moderate naphthalene-like odor, wet, light gray, gray stained.
(7.5'- 8') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~9% gravel, fine, ~5% fines; moderate naphthalene-like odor, wet, light gray, tar stained band.
(8'- 10') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; moderate naphthalene-like odor, wet, light gray, tar stained DNAPL at 23-24", 26-27", 28-29", 33-34", 40-41".
(10'- 15') NARROWLY GRADED SAND (SP); fine, ~95% sand, fine to medium, ~5% fines; moderate naphthalene-like odor, wet, light gray, tar bands at 3-4", 6-7", 11-12", sheen noted on soil throughout boring.
End of Boring at 15 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG
PAGE 1 of 2
SHSB-05

GROUND SURFACE ELEVATION (FT): 5.42
LOCATION:
NORTHING (FT): 308859 **EASTING (FT):** 1454270
TOTAL DEPTH (FT): 45.0
DRILLED BY: Zebra Environmental
DATUM VERT. / HORZ.:
LOGGED BY: Chris Anastasiou
DATE START / END: 10/27/2010 - 10/28/2010
DRILLING DETAILS: Geoprobe
WATER LEVEL DEPTHS (FT):

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
5	0			PID= 0.0 PID= 0.0				(0'- 1') Hand cleared from 0-5 ft, asphalt, concrete, rock (1/4"-2"). (1'- 5') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~20% gravel, fine to coarse; brown black.
0	5	S1	60/53	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			Env. Sample ID= SHSB-05(5-7')	(5'- 6.5') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; wet, brown. (6.5'- 8.75') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine to coarse, ~5% fines; wet, light brown. (8.75'- 9.2') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine to coarse, ~5% fines; wet, dark brown. (9.2'- 10') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine to medium, ~5% fines; wet, black.
-5	10	S2	60/46	PID= 14.5 PID= 0.5 PID= 1.5 PID= 0.4 PID= 0.3 PID= 0.2 PID= 1.0 PID= 1.2		NLO	Env. Sample ID= SHSB-05(10-10.5')	(10'- 10.5') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; slight naphthalene-like odor, wet, dark gray. (10.5'- 15') NARROWLY GRADED SAND (SP); ~90% sand, fine, ~10% fines; brown red, bog like material and odor.
-10	15	S3	60/40	PID= 1.0 PID= 0.4 PID= 1.7 PID= 0.7 PID= 0.4 PID= 1.2			Env. Sample ID= SHSB-05(15-16')	(15'- 20') NARROWLY GRADED SAND (SP); ~95% sand, fine, ~5% fines; wet, brown, bog like odor.
-15	20	S4	60/40	PID= 1.2 PID= 4.3 PID= 3.5 PID= 2.1 PID= 1.2 PID= 0.7 PID= 1.7 PID= 2.1				(20'- 25') NARROWLY GRADED SAND (SP); ~95% sand, fine, ~5% fines; wet, brown, bog like odor.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants, Inc. 455 Winding Brook Road Glastonbury, CT 06033 (860) 368-5300	CLIENT: National Grid PROJECT: Sag Harbor MGP CITY/STATE: Sag Harbor, NY GEI PROJECT NUMBER: 093190-2-1204	BORING LOG PAGE 2 of 2	SHSB-05

ELEV. FT.	DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
-20	25	S5	60/39	PID= 0.3 PID= 0.1 PID= 0.4 PID= 0.2 PID= 0.1 PID= 0.2 PID= 0.3				(25'- 30') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, light brown brown.
-25	30	S6	60/14	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0				(30'- 35') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, light brown.
-30	35	S7	60/26	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0				(35'- 40') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, light brown, Lost macro in boring hole on 10/27/10. heavy rain and wind.
-35	40	S8	60/23	PID= 0.0 PID= 0.0 PID= 0.0			Env. Sample ID= SHSB-05(40-42')	(40'- 45') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, light brown.
	45			PID= 0.0				End of Boring at 45 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG

SHSB-07

GROUND SURFACE ELEVATION (FT): 3.74
LOCATION:
NORTHING (FT): 308597 EASTING (FT): 1454329
TOTAL DEPTH (FT): 45.0
DRILLED BY: Zebra Environmental
DATUM VERT. / HORZ.:
LOGGED BY: Chris Anastasiou
DATE START / END: 11/1/2010
DRILLING DETAILS:
WATER LEVEL DEPTHS (FT):

ELEV. FT.	DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	VISUAL IMPACTS	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
	0			PID= 0.0					(0'- 1') gray, Hand cleared from 0-5 ft, grass, topsoil, loom.
				PID= 0.0					(1'- 3') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~10% gravel, fine to coarse; brown.
0				PID= 0.0					(3'- 5') NARROWLY GRADED SAND (SP); ~85% sand, fine to medium, ~10% gravel, fine to coarse, ~5% fines; black, black organic sand, organic odor.
	5	S1	60/43	PID= 0.0 PID= 4.9 PID= 130			NLO	Env. Sample ID= SHSB-07(4-5')	(5'- 6.5') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~20% gravel, fine to coarse; moderate naphthalene-like odor, wet, black brown.
				PID= 160			NLO	Env. Sample ID= SHSB-07(6.5-8.5')	(6.5'- 7') moderate naphthalene-like odor, wet, brown, peat bog material, organic mix.
-5				PID= 112 PID= 65 PID= 23			NLO		(7'- 9.5') NARROWLY GRADED SAND (SP); ~85% sand, fine to medium, ~10% gravel, fine, ~5% fines; moderate naphthalene-like odor, wet, brown gray, Tar staining band 20-23", 29-30".
									(9.5'- 10') Bog material.
	10	S2	60/44	PID= 26.2			NLO		(10'- 10.2') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; moderate naphthalene-like odor, wet, gray, gray stained.
				PID= 21.3 PID= 22.4 PID= 17.9					(10.2'- 11.7') wet, brown, bog like material, organic odor.
				PID= 13.6					(11.7'- 12.2') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; wet, light brown, bog like odor.
				PID= 20.9					(12.2'- 13.2') NARROWLY GRADED SAND (SP); ~95% sand, fine, ~5% fines; wet, black brown, organic odor.
-10									(13.2'- 15') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; wet, orange, organic odor.
	15	S3	60/40	PID= 1.4 PID= 0.4 PID= 0.4 PID= 0.1				Env. Sample ID= SHSB-07(16-18)	(15'- 17') NARROWLY GRADED SAND (SP); ~85% sand, fine, ~10% gravel, ~5% fines; wet, light brown, 6-7" dark striation band, organic odor.
-15				PID= 0.2 PID= 0.3 PID= 0.4					(17'- 20') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine to medium, ~10% fines; wet, light brown, slight organic odor, slight organic odor.
-20	20	S4	60/36	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0					(20'- 25') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; wet, light brown.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: Sag Harbor MGP
CITY/STATE: Sag Harbor, NY
GEI PROJECT NUMBER: 093190-2-1204

BORING LOG

SHSB-07

ELEV. FT.	DEPTH FT.	TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	VISUAL IMPACTS	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
	25	S5	60/29	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0					(25'- 30') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; wet, light tan brown.
-25									
	30	S6	60/19	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0					(30'- 35') NARROWLY GRADED SAND (SP); ~95% sand, fine, ~5% fines; wet, light brown.
-30									
	35	S7	60/36	PID= 0.0 PID= 0.0 PID= 0.0 PID= .0 PID= 0.0					(35'- 35.8') SILTY SAND (SM); ~50% sand, ~50% fines; light brown. (35.8'- 40') NARROWLY GRADED SAND (SP); ~95% sand, fine, ~5% fines; wet, lgiht dark gray.
-35									
	40	S8	60/38	PID= 0.0 PID= 0. PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0					(40'- 44.2') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, fine, ~5% fines; wet, light brown.
-40									(44.2'- 45') WIDELY GRADED SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; wet, brown.
	45								End of Boring at 45 feet.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

IN. = INCHES
FT. = FEET
TSF = TONS PER SQUARE FOOT

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR
SeLO= SEWAGE LIKE ODOR

NA = NOT APPLICABLE
NM = NOT MEASURED

Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

Attachment B

GROUNDWATER OBSERVATION WELL REPORT

Project	Sag Harbor former MGP Site		
Location	Sag Harbor, New York		
Client	National Grid		
Contractor	Zebra Environmental	Driller	
Inspected by	Chris Anastasiou	Date Started	10/27/10
Checked by	Chris Morris	Date Completed	10/27/10

PG.	1 OF 1
Boring No.	SHMW-01D
Location	Onsite
Project No.	093190-2-1204

SURVEY DATUM N 308682.7 E 1454144.9

GROUND ELEVATION 3.78

Sand throughout boring

GENERAL SOIL CONDITIONS (Not to Scale)

LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	0.5'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	1"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	3.25"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	61'
TYPE OF SEAL	
DEPTH BOTTOM OF SEAL (FT)	63'
DEPTH TOP OF PERVIOUS SECTION	65'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	1"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	75'
DEPTH BOTTOM OF SAND COLUMN (FT)	75'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	none

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

Project	Sag Harbor former MGP Site	PG.	1 OF 1
Location	Sag Harbor, New York	Boring No.	SHMW-01SR
Client	National Grid	Location	Onsite
Contractor	Zebra Environmental	Driller	
Inspected by	Chris Anastasiou	Date Started	10/27/10
Checked by	Chris Morris	Date Completed	10/27/10
		Project No.	093190-2-1204

SURVEY DATUM: N 308683.0, E 1454145.5

GROUND ELEVATION: 3.99

GENERAL SOIL CONDITIONS (Not to Scale): Sand throughout boring

LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	0.5'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	1"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	3.25"
TYPE OF BACKFILL AROUND RISER PIPE	sand
DEPTH TOP OF SEAL, IF ANY (FT)	none
TYPE OF SEAL	
DEPTH BOTTOM OF SEAL (FT)	none
DEPTH TOP OF PERVIOUS SECTION	1'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	1"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	6'
DEPTH BOTTOM OF SAND COLUMN (FT)	6'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	none

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

Project	Sag Harbor former MGP Site	PG.	1 OF 1
Location	Sag Harbor, New York	Boring No.	SHMW-01IR
Client	National Grid	Location	Onsite
Contractor	Zebra Environmental	Driller	
Inspected by	Chris Anastasiou	Date Started	11/1/10
Checked by	Chris Morris	Date Completed	11/1/10
		Project No.	093190-2-1204

SURVEY DATUM N 308682.6 E 1454144.3

GROUND ELEVATION 3.96

GENERAL SOIL CONDITIONS (Not to Scale)

Sand throughout boring

LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	1"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	3.25"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	31'
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	33'
DEPTH TOP OF PERVIOUS SECTION	35'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	1"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	45'
DEPTH BOTTOM OF SAND COLUMN (FT)	47'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	# 1 Sand

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

Project	Sag Harbor former MGP Site	PG.	1 OF 1
Location	Sag Harbor, New York	Boring No.	SHMW-02S
Client	National Grid	Location	Onsite
Contractor	Zebra Environmental	Driller	
Inspected by	Chris Anastasiou	Date Started	10/28/10
Checked by	Chris Morris	Date Completed	10/28/10
		Project No.	093190-2-1204

SURVEY DATUM N 308709.1 E 1454240.6

GROUND ELEVATION 4.21

GENERAL SOIL CONDITIONS (Not to Scale)

Sand throughout boring

LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	0.5'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	1"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	3.25"
TYPE OF BACKFILL AROUND RISER PIPE	sand
DEPTH TOP OF SEAL, IF ANY (FT)	none
TYPE OF SEAL	
DEPTH BOTTOM OF SEAL (FT)	none
DEPTH TOP OF PERVIOUS SECTION	1'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	1"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	6'
DEPTH BOTTOM OF SAND COLUMN (FT)	6'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	none

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

Project	Sag Harbor former MGP Site		
Location	Sag Harbor, New York	PG.	1 OF 1
Client	National Grid	Boring No.	SHMW-02IR
Contractor	Zebra Environmental	Driller	
Location	Onsite		
Inspected by	Chris Anastasiou	Date Started	11/11/10
Checked by	Chris Morris	Date Completed	11/11/10
Project No.	093190-2-1204		

SURVEY DATUM N 308707.0 E 1454241.5

GROUND ELEVATION 4.32

GENERAL SOIL CONDITIONS (Not to Scale)

Sand throughout boring

LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	4"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6.25"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	23
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	25
DEPTH TOP OF PERVIOUS SECTION	27
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	4"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	37
DEPTH BOTTOM OF SAND COLUMN (FT)	39
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	# 1 Sand

NOTES: 2' Sump

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

Project	Sag Harbor former MGP Site	PG.	1 OF 1
Location	Sag Harbor, New York	Boring No.	SHMW-02DR
Client	National Grid	Location	Onsite
Contractor	Zebra Environmental	Driller	
Inspected by	Chris Anastasiou	Date Started	10/28/10
Checked by	Chris Morris	Date Completed	10/28/10
		Project No.	093190-2-1204

SURVEY DATUM N 308709.7
E 1454241.6

GROUND ELEVATION 4.14

GENERAL SOIL CONDITIONS (Not to Scale)

Sand throughout boring

LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	0.5'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	1"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	3.25"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	61'
TYPE OF SEAL	
DEPTH BOTTOM OF SEAL (FT)	63'
DEPTH TOP OF PERVIOUS SECTION	65'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	1"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	75'
DEPTH BOTTOM OF SAND COLUMN (FT)	75'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	none

NOTES:

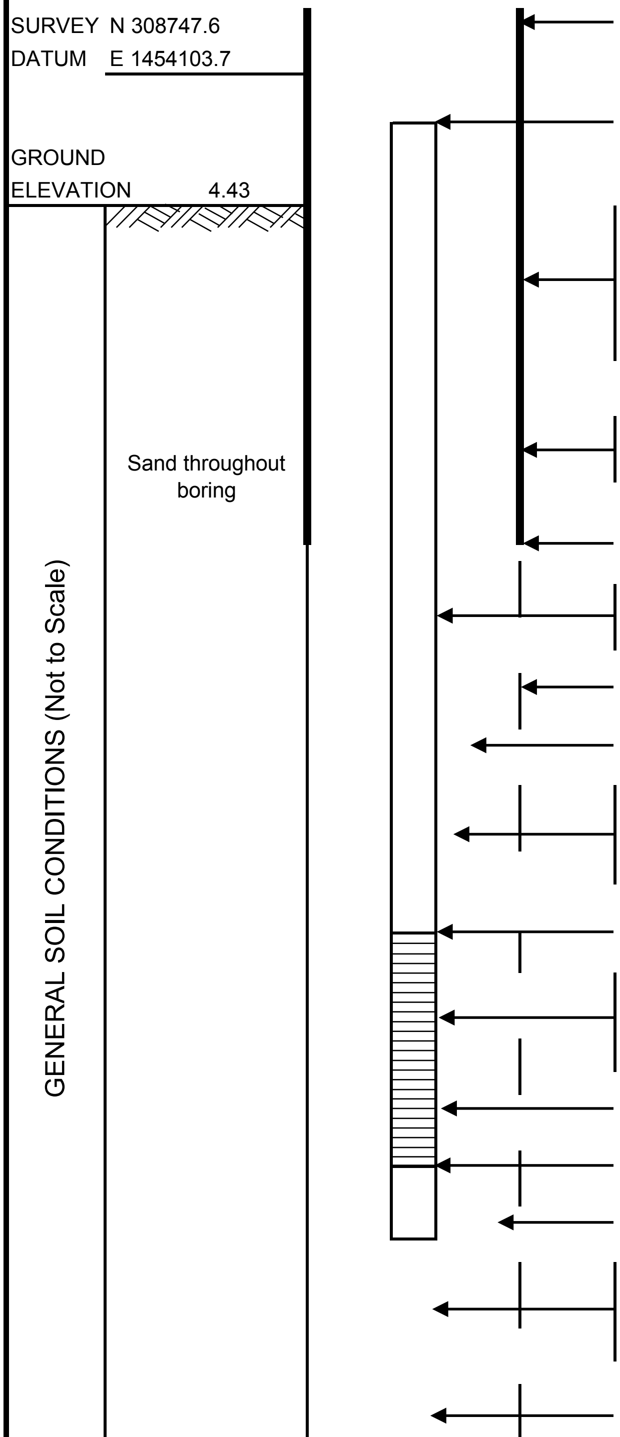
GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

Project	Sag Harbor former MGP Site		
Location	Sag Harbor, New York	PG.	1 OF 1
Client	National Grid	Boring No.	SHMW-04SR
Contractor	Zebra Environmental	Driller	
Location	Offsite		
Inspected by	Chris Anastasiou	Date Started	11/2/10
Checked by	Chris Morris	Date Completed	11/2/10
Project No.	093190-2-1204		

SURVEY DATUM N 308747.6 E 1454103.7

GROUND ELEVATION 4.43



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	4"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	6.25"
TYPE OF BACKFILL AROUND RISER PIPE	bentonite
DEPTH TOP OF SEAL, IF ANY (FT)	0.5
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	1
DEPTH TOP OF PERVIOUS SECTION	2'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	4"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	12.0
DEPTH BOTTOM OF SAND COLUMN (FT)	14.0
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	# 1 Sand

NOTES: 2' Sump

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

Project	Sag Harbor former MGP Site		
Location	Sag Harbor, New York		
Client	National Grid		
Contractor	Zebra Environmental	Driller	
Inspected by	Chris Anastasiou	Date Started	10/27/10
Checked by	Chris Morris	Date Completed	10/27/10

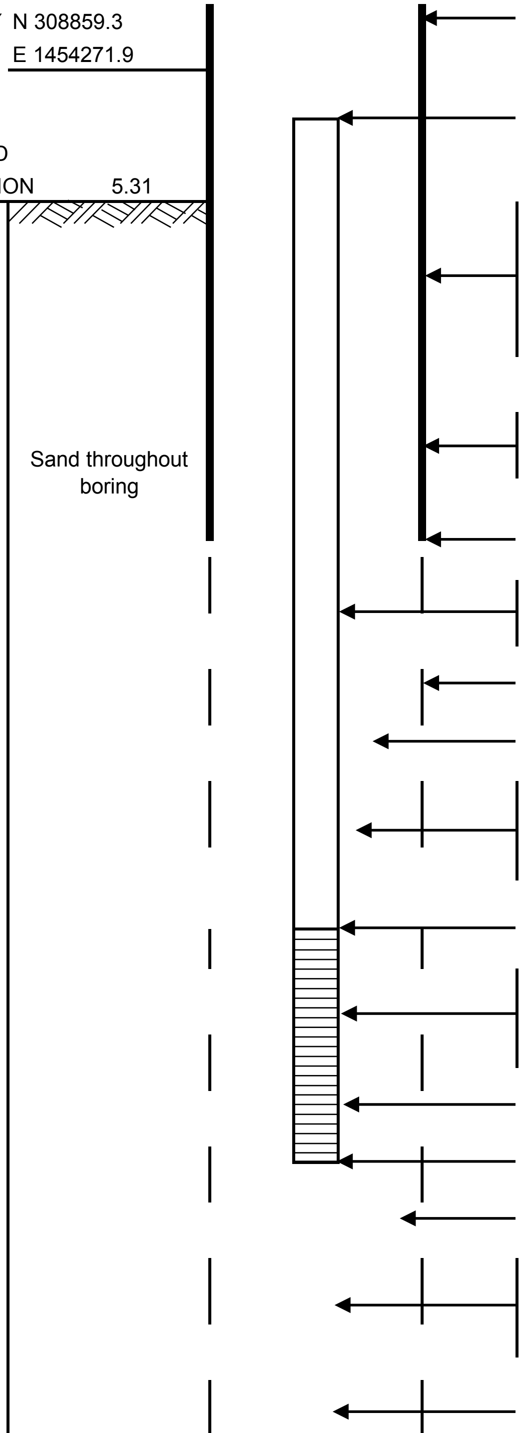
PG. 1 OF 1

Boring No.	SHMW-05SR
Location	Offsite
Project No.	093190-2-1204

SURVEY DATUM N 308859.3 E 1454271.9

GROUND ELEVATION 5.31

GENERAL SOIL CONDITIONS (Not to Scale)



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	0.5'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	1"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	3.25"
TYPE OF BACKFILL AROUND RISER PIPE	sand
DEPTH TOP OF SEAL, IF ANY (FT)	none
TYPE OF SEAL	
DEPTH BOTTOM OF SEAL (FT)	none
DEPTH TOP OF PERVIOUS SECTION	2'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	1"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	12"
DEPTH BOTTOM OF SAND COLUMN (FT)	12'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	none

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

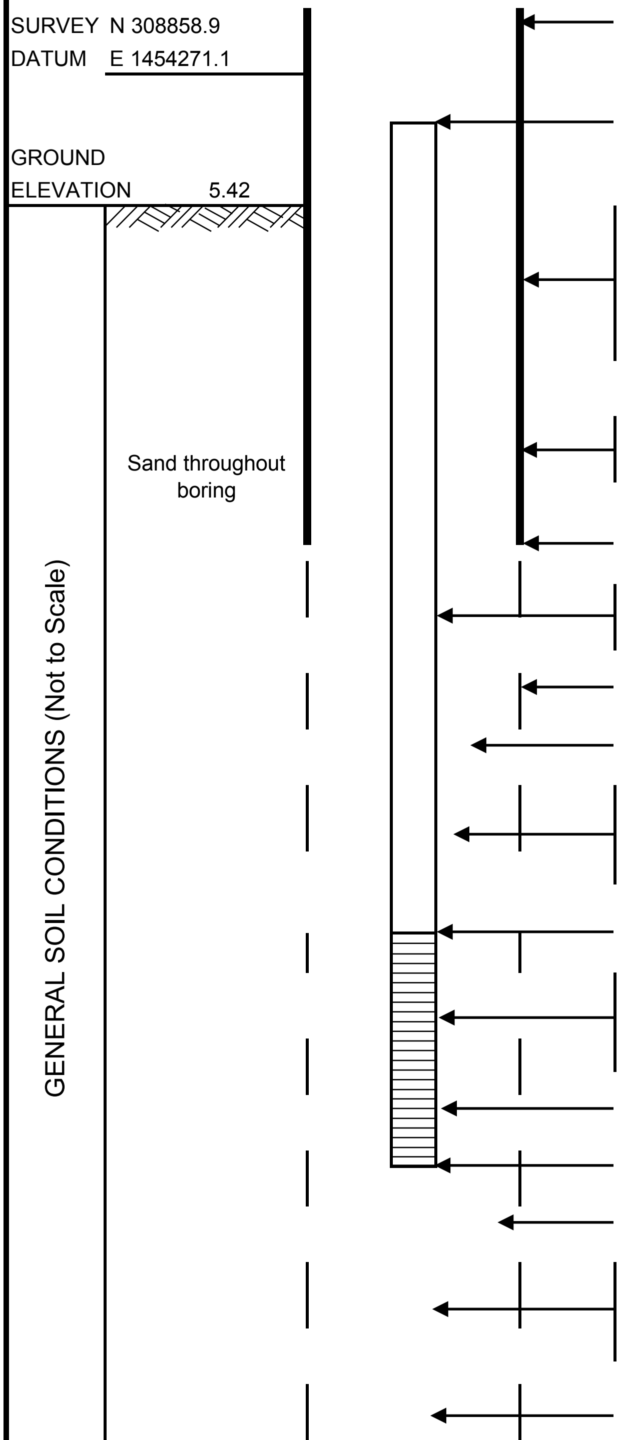
Project	Sag Harbor former MGP Site
Location	Sag Harbor, New York
Client	National Grid
Contractor	Zebra Environmental
Driller	
Inspected by	Chris Anastasiou
Date Started	10/27/10
Checked by	Chris Morris
Date Completed	10/27/10

PG. 1 OF 1

Boring No.	SHMW-05IR
Location	Offsite
Project No.	093190-2-1204

SURVEY DATUM N 308858.9 E 1454271.1

GROUND ELEVATION 5.42



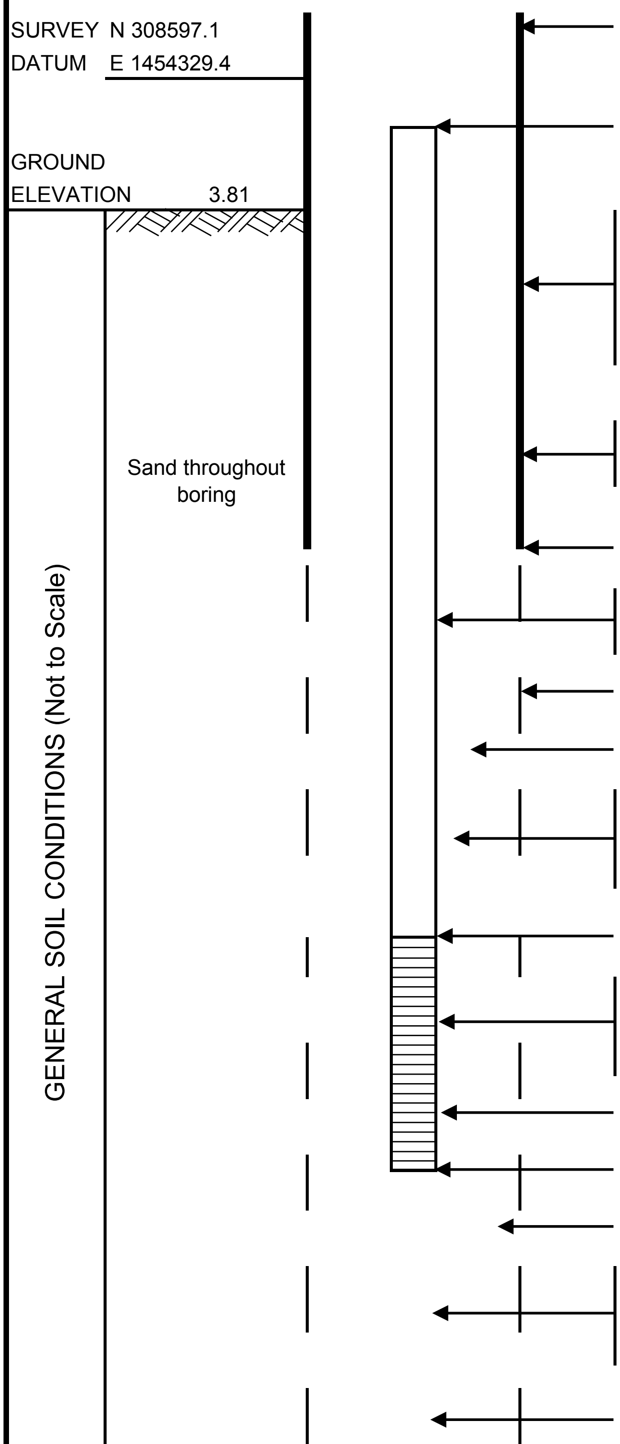
LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	1"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	3.25"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	31'
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	33'
DEPTH TOP OF PERVIOUS SECTION	35'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	1"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	45'
DEPTH BOTTOM OF SAND COLUMN (FT)	45'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	none

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

Project	Sag Harbor former MGP Site	PG.	1 OF 1
Location	Sag Harbor, New York	Boring No.	SHMW-07SR
Client	National Grid	Location	Offsite
Contractor	Zebra Environmental	Driller	
Inspected by	Chris Anastasiou	Date Started	11/1/10
Checked by	Chris Morris	Date Completed	11/1/10
		Project No.	093190-2-1204



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	0.5'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	1"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	3.25"
TYPE OF BACKFILL AROUND RISER PIPE	sand
DEPTH TOP OF SEAL, IF ANY (FT)	none
TYPE OF SEAL	
DEPTH BOTTOM OF SEAL (FT)	none
DEPTH TOP OF PERVIOUS SECTION	1'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	1"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	11'
DEPTH BOTTOM OF SAND COLUMN (FT)	11'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	none

NOTES:

GEI Consultants

GROUNDWATER OBSERVATION WELL REPORT

Project	Sag Harbor former MGP Site	PG.	1 OF 1
Location	Sag Harbor, New York	Boring No.	SHMW-07IR
Client	National Grid	Location	Offsite
Contractor	Zebra Environmental	Driller	
Inspected by	Chris Anastasiou	Date Started	11/1/10
Checked by	Chris Morris	Date Completed	11/1/10
		Project No.	093190-2-1204

SURVEY DATUM: N 308596.7, E 1454328.8

GROUND ELEVATION: 3.74

GENERAL SOIL CONDITIONS (Not to Scale)

Sand throughout boring

LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)	0.0 (flush-mounted)
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	1'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	8"
TYPE OF SURFACE CASING	Steel
DEPTH BOTTOM OF CASING (FT)	1'
RISER PIPE DIAMETER(IN)	1"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	3.25"
TYPE OF BACKFILL AROUND RISER PIPE	cement/bentonite grout
DEPTH TOP OF SEAL, IF ANY (FT)	31'
TYPE OF SEAL	bentonite pellets
DEPTH BOTTOM OF SEAL (FT)	33'
DEPTH TOP OF PERVIOUS SECTION	35'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	1"
TYPE OF BACKFILL AROUND PERVIOUS SECTION	# 1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	45'
DEPTH BOTTOM OF SAND COLUMN (FT)	45'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	none
ELEV./DEPTH BOTTOM OF SEAL (FT)	
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	none

NOTES:

GEI Consultants

Appendix E

Field Sampling & Analysis Plan (Compact Disc Copy Only)

Prepared for:
National Grid
Hicksville, New York

Field Sampling and Analytical Plan (Appendix E of Site Management Plan)

Former Sag Harbor MGP Site
Sag Harbor, New York
NYSDEC Site No.: 1-52-159
Order on Consent Index #: D1-0002-98-11

AECOM
February 2014
Document No.: 60137358

Contents

Appendices

List of Tables

List of Figures

1.0 Introduction

This Field Sampling and Analytical Plan (FSAP) presents the methods and procedures to be used for performing any ground intrusive, maintenance, and monitoring activities covered under the Sag Harbor Site Management Plan [(SMP); AECOM, 2014] and conducted on the former Manufactured Gas Plant (MGP) site and surrounding off-site areas located within the Village of Sag Harbor in New York.

1.1 Project Description

This document is required as an element of the remedial program at the former Sag Harbor MGP site under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by the NYS Department of Environmental Conservation (DEC). The former MGP site and surrounding off-site areas were remediated in accordance with Order on Consent Index D1-0002-98-11, Site Number 1-52-159 [NYSDEC, 2005], which was executed on October 5, 2005. The site location and layout is shown on Figures 1-1 and 1-2 of the SMP.

The Order on Consent required National Grid, to investigate and remediate contaminated media at the MGP site and surrounding off-site areas. For purposes of further discussion in this Site management Plan (SMP), the term "Site" will include the former Sag Harbor MGP site as well as an adjacent private property to the north (31 Long Island Avenue), portions of the adjacent private property to the south (11 Bridge Street), and the Village sidewalk and roads to the north and west. The term "off-Site areas " will include all or portions of adjacent private properties to the north, south, and west of the Site; and The United States Postal Service Post Office property and a small portion of the Village parking lot to the east consistent with the Record Of Decision [(ROD), DEC, 2006].

After completion of the remedial work described in the Remedial Design (RD) / Remedial Action (RA) Work Plan [AECOM, 2008], some contamination was left in the subsurface of the Site and off-Site areas, which is hereafter referred to as ”remaining contamination.” This FSAP was developed as an appendix (Appendix E) to the SMP which was prepared to manage remaining contamination at the Site in perpetuity or until extinguishment of the Environmental Easement in accord with NYS Environmental Conservation Law (ECL) Article 71, Title 36.

This document was prepared by AECOM, on behalf of National Grid, in accord with the requirements in DEC DER-10 Technical Guidance for Site Investigation and Remediation [(DER-10); DEC, 2002] and the guidelines provided by DEC.

1.2 Scope of Work

The scope of work at the Site and off-Site areas covered under this FSAP includes.

- Underground utility work
- Surface/shallow subsurface soil sampling and analysis
- Soil boring advancement, subsurface soil sampling and analysis
- Excavation

- Monitoring well installation and development
- Groundwater sampling and analysis
- Indoor air and ambient air sampling and analysis
- Investigation-derived waste management
- Community air monitoring
- Data validation evaluation, and reporting

This FSAP will be modified for specialized work including:

- Sheet Pile Installation
- Confined Space Activities
- Groundwater Dewatering, Treatment, and Discharge

Any modification to the FSAP will require approval in writing from the DEC. The property owner or its representative must notify National Grid of any scheduled ground intrusive work at least 15 days prior to the start of field activity.

2.0 General Field Guidelines

2.1 Site Hazards

Potential Site surface hazards, such as sharp objects, overhead power lines, energized areas, vehicular traffic, and building hazards will be identified prior to initiation of the fieldwork. Generally, potential hazards at the project site will be identified during a project site reconnaissance by the project team on the first day of any field activity. Additional safety measures to be undertaken for the work performed during any project site work are addressed in the Health and Safety Plan [(HASP), Appendix B of the SMP].

2.2 Underground Utilities

Underground utilities, including electric lines, gas lines, water lines, storm and sanitary sewers, and communication lines will be identified prior to initiation of any subsurface work. Underground utility location will be accomplished as follows:

- All work areas will be flagged or marked out with white paint.
- Dig Safely of New York (800) 272-4480 will be contacted to initiate the locating activities. New York State law requires that Dig Safely of New York be notified at least two working days, and not more than 10 working days, before subsurface work is conducted.
- Companies with subsurface utilities present will locate and mark out all subsurface utility lines.
- Geophysical methods may be used to further evaluate the potential presence of underground utilities in the area of each proposed project site location.
- Subsurface locations may be hand cleared to five feet below ground surface (bgs) prior to advancing borings with mechanized equipment.

2.3 Field Log Books

All field activities will be carefully documented in field log books. Entries will be of sufficient detail that a complete daily record of significant events, observations, and measurements is developed. The field log book will provide a legal record of the activities conducted at the site. Accordingly:

- Field books will be assigned a unique identification number.
- Field books will be bound with consecutively numbered pages.
- Field books will be controlled by the Site Manager while fieldwork is in progress.
- Entries will be written with waterproof ink.
- Entries will be signed and dated at the conclusion of each day of fieldwork.
- Erroneous entries made while fieldwork is in progress will be corrected by the field person that made the entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing the correction.

- Corrections necessary after departing the field will be made by the person who entered the original information. Corrections will be made by drawing a line through the error, entering the correct information, and initialing and dating the time of the correction.

At a minimum, daily field book entries will include the following information:

- Location of field activity;
- Date and time of entry;
- Names and titles of field team members on site and site contacts;
- Names, titles of any site visitors, as well as the date and time entering and leaving the site;
- Weather information, for example: temperature, cloud coverage, wind speed, and direction;
- Purpose of field activity;
- A detailed description of the fieldwork conducted;
- Sample media (soil, sediment, groundwater, etc.);
- Sample collection method;
- Number and volume of sample(s) taken;
- Description of sampling point(s);
- Volume of groundwater removed before sampling;
- Preservatives used;
- Analytical parameters;
- Date and time of collection;
- Sample identification number(s);
- Sample distribution (e.g., laboratory);
- Field observations;
- All field measurements made, such as volatile organic compounds (VOCs) using a PID, pH, temperature, conductivity, water level, etc.;
- References for all maps and photographs of the sampling site(s); and
- Information pertaining to sample documentation such as:
  - Bottle lot numbers;
  - Dates and method of sample shipments;
  - Chain-of-custody (COC) record numbers; and
  - Federal Express air bill number.

3.0 Field Equipment Decontamination and Management of Project Site Work-Derived Residuals

3.1 Decontamination Area

A temporary decontamination area lined with polyethylene sheeting will be constructed on the project site for use during decontamination of the drilling and test pitting equipment. Water collected from the decontamination of activities will be collected in 55-gallon drums or a bulk tank and managed as described in Section 3.3.

3.2 Equipment Decontamination

The following procedures will be used to decontaminate equipment used during any activities.

- All equipment including the backhoe bucket; drilling rig; augers; bits; rods; tools; split-spoon samplers; and tremie pipes will be cleaned with a high-pressure, hot water pressure washing unit between locations and following completion of activities.
- Tools, drill rods, and augers will be placed on polyethylene plastic sheets following pressure washing. Direct contact with the ground will be avoided.
- All earth moving equipment, the back of the drill rig and all tools, augers, and rods will be decontaminated at the completion of the work and prior to leaving the project site.

3.2.1 Sampling Equipment Decontamination

Suggested Materials:

- Potable water;
- Phosphate-free detergent (such as Alconox™);
- Distilled water;
- Aluminum foil;
- Plastic/polyethylene sheeting;
- Plastic buckets and brushes; and
- Personal protective equipment (PPE) in accordance with the HASP.

Procedures:

- Prior to sampling, all non-dedicated sampling equipment (bowls, spoons, interface probes, etc.) will be washed with potable water and a phosphate-free detergent (such as Alconox™). Decontamination may take place at the sampling location as long as all liquids are contained in pails, buckets, etc.
- The sampling equipment will then be rinsed with potable water followed by a de-ionized water rinse.

- Between rinses, equipment will be placed on polyethylene sheets or aluminum foil, if necessary. At no time will washed equipment be placed directly on the ground.
- Equipment will be wrapped in polyethylene plastic or aluminum foil for storage or transportation from the designated decontamination area to the sampling location.

3.3 Management of Project Site Work-Derived Residuals

3.3.1 Decontamination Fluids

Hot water pressure wash and decontamination fluids will be collected in 55-gallon drums or a bulk tank. The storage drums or tank will be labeled as “pending analysis – project site work-derived residual decon water” and temporarily stored in a plastic-lined containment area pending characterization and proper disposal.

3.3.2 Drill Cuttings

Drill cuttings will be contained in 55-gallon drums. The drums will be labeled as “pending analysis – project site work-derived residual – soil from drill cuttings” and temporarily stored in a plastic-lined containment area pending characterization and proper disposal.

3.3.3 Development and Purge Water

All development and purge water will be contained in 55-gallon drums or a bulk tank. The drums or tank will be labeled as “pending analysis - investigation derived residual development and purge water” and temporarily stored in a plastic-lined containment area pending characterization and proper disposal.

3.3.4 Personal Protective Equipment

All PPE will be placed in 55-gallon drums or a lined cardboard yard box for proper disposal.

3.3.5 Dedicated Sampling Equipment

All dedicated groundwater sampling equipment will be placed in 55-gallon drums for disposal.

4.0 Soil Sampling and Well Installation Procedures

4.1 Introduction

Surface and subsurface activities to be conducted at the Site and off-Site areas may consist of utility work; excavation; the advancement of soil borings; collection of soil samples; groundwater monitoring, soil vapor intrusion sampling, and the installation of monitoring wells. These activities will require the use of the following equipment and material:

- Field book;
- Project plans;
- PPE in accordance with the HASP;
- Stakes, flagging and marking paint;
- Plastic bags for soil screening samples;
- Stainless steel or disposable bowls and spoons/spatulas;
- Tape measure;
- Decontamination supplies;
- Water level indicator;
- Electronic oil/water interface probe
- Clear polyethylene disposable bailers (NAPL confirmation in wells);
- Polyethylene disposable bailers (well development);
- Polypropylene rope (well development);
- Waterra™ pump or other purge pump (well development);
- Submersible electric pump (well development);
- Stainless steel or glass beakers (well development);
- Turbidity meter (well development);
- Temperature, conductivity, pH meter (well development).
- PID with a 10.2 or 10.6 eV lamp;
- Camera;
- Clear tape, duct tape;
- Laboratory sample bottles;
- Coolers and ice; and
- Shipping supplies.

Procedures for these activities are described in the following sections.

4.2 Excavation

Excavation activities will be dictated by the Contractor hired to conduct the work and will follow the Excavation Work Plan included as Appendix A of the SMP [AECOM, 2010]. During field activities, personnel will stand upwind of the excavation area to the extent possible. Air monitoring and odor mitigation (if necessary) will be conducted in accordance with the Community Air Monitoring Project (CAMP) and HASP. Excavation materials will be photographed and logged for future reference. Material removed from the excavation will be placed on polyethylene sheeting. The location and size of the excavation will be measured and described in the field logbook.

Visually clean soils, such as surface soils, will be segregated from soils that may be impacted. The visually clean soils may be placed back in the excavation in the reverse order that it was removed from the excavation (i.e. “Last out, first in.”). At a minimum, the top 2 feet of backfilled soil will be certified to meet the necessary soil cleanup objectives from 6 NYCRR part 375.. The excavation will be backfilled as soon as possible after completion and in general prior to the cessation of activities at the end of the day. If excavation resulted in removal of any remaining contamination, a demarcation layer as detailed in Appendix A of the SMP [AECOM, 2010] will be placed over the surface prior to backfilling. Following restoration of the excavation, the excavation will be staked/marked to facilitate subsequent location by surveying crews.

4.2.1 Soil Borings

Soil borings, if any, will be advanced and sampled with a combination of either rotosonic drilling methods equipped with 4-inch diameter sampling cores or hollow-stem augers (HSAs) equipped with 2-inch or 3-inch diameter split-spoon samplers. In some instances, a direct-push (Geoprobe™) drilling rig equipped with 4-foot long, 2-inch diameter Macro-Core™ samplers may be used if there are access limitations. All drilling equipment will be decontaminated between each boring in accordance with methods specified in Section 3.2.

All locations will be properly abandoned following the collection of samples. Boreholes for the direct-push borings will be filled with bentonite chips. All rotosonic or auger soil borings not used for the construction of monitoring wells will be tremie grouted to the ground surface following the completion of the soil sampling to prevent cross-contamination of permeable zones. The borings will be filled using a cement/bentonite grout mixture with the following specifications:

- Bentonite will be powdered sodium montmorillonite furnished in moisture resistant sacks without additives.
- Cement shall be a low-alkaline Portland cement, Type I in conformance with ASTM C-150 and without additives.
- The cement/bentonite grout mixture shall be to the following proportion:
  - Three sacks (94 pounds) of Type I Portland cement;
  - 14 pounds of granular bentonite (5% mix); and
  - 25 gallons of water.

The cement will be mechanically mixed, above ground, with water from a potable water source. Bentonite will be added to ensure a lump-free consistency. The mixture will be pumped through a tremie pipe as the drill is being withdrawn.

4.2.2 Geologic Logging Methods

The field geologist will log borehole geology and headspace measurements, and any other observations (e.g., odors, non aqueous phase liquid (NAPL), soil staining, etc.), in the field book and the Drilling Record shown in Figure 4-1, or similar form. Soil samples retrieved from the borehole/test pit will be visually described for: 1) percent recovery, 2) soil type, 3) color, 4) moisture content, 5) texture, 6) grain size and shape, 7) consistency, 8) visible evidence of staining or other hydrocarbon-related impacts, and 9) any other relevant observations. The descriptions will be in accordance with the Unified Soil Classification System (USCS) and the American Society for Testing and Materials (ASTM) guidelines. Descriptions will also follow National Grid's internal field description guidance [KeySpan, 2005] included in Appendix E SOPs of the SMP [AECOM, 2010].

Immediately after describing the core/test pit wall, a representative soil sample will be placed in a re-sealable plastic (e.g., "ziplock") bag filled approximately half full. The bag will be labeled with the boring number and interval sampled. After allowing the bagged soil to warm the tip of the sample probe attached to the PID will be inserted into the bag to measure the headspace for organic vapors. Soil remaining after completion of sample description, collection, and field screening will be disposed of properly.

4.2.3 Collection of Samples

The number and frequency of samples to be collected from each boring and the associated analytical parameters will be based on the field activity. The sample locations, descriptions, and depths will be recorded on the borelogs in the field book.

Samples for laboratory analyses will be collected directly from the sampling spoon (test pits), acetate liners, split-spoons, or core barrel and placed into appropriate containers (for VOC analyses); homogenized (for non-VOC analyses); and compacted to minimize headspace and pore space. Soil used for headspace analysis will not be used for laboratory VOC analysis. The sampling equipment will be decontaminated between samples in accordance with procedures described in Section 3. Soil remaining after completion of sample description, collection, and field screening will be disposed of properly.

The sample containers will be labeled, placed in a laboratory-supplied cooler, and packed with ice. The coolers will then be shipped to the laboratory for analysis. COC procedures will be followed as outlined in Appendix H Quality Assurance Project Plan (QAPP) of the SMP. If there is a delay of sample shipment due to insufficient samples to warrant overnight delivery, the samples will be stored in a cool, secure place with sufficient ice to maintain a temperature of 4˚ C.

4.3 Monitoring Well Installation and Development

The following methods will be used for drilling, installing, and developing the monitoring wells;

4.3.1 Overburden Monitoring Well Installation

Figure 4-2 illustrates the construction details for a typical overburden monitoring well. Specific details regarding the depth and anticipated screened interval of proposed monitoring wells is provided in the SMP. In general, monitoring wells will be installed according to the following specifications:

- The monitoring well borings will be advanced with either 4.25-inch inner diameter (ID) hollow-stem augers or 4-inch ID flush casing.

- Wells will be constructed with 2-inch ID, threaded, flush-joint, Schedule 40 PVC casings and screens.
- Screens will be 10-feet long with 0.01-inch slot openings (or 0.02-inch, if NAPL present) with a 2-foot DNAPL sump at the base. Alternative screen lengths up to 20 feet long may be used at the discretion of the field geologist and with the approval of DEC, based on site conditions.
- The annulus around the screens will be backfilled with clean silica sand having appropriate size (e.g., Morie No. 1) to a minimum height of 2 feet above the top of the screen. Auger flights or casing will be withdrawn as sand is poured in a manner that will minimize hole collapse and bridging.
- A bentonite chip seal with a minimum thickness of 2 feet will be placed above the sand pack. The bentonite seal will be hydrated with clean, potable water before placement of grout above the seal layer.
- The remainder of the annular space will be filled with cement-bentonite grout to ground surface. The grout will be allowed to set for a minimum of 24 hours before wells are developed.
- Each monitoring well will be a flush-mounted installation with a locking cap.
- The concrete seal or pad will be sloped to channel water away from the well, and be deep enough to remain stable during freezing and thawing of the ground.
- The top of the PVC well casing and ground surface will be marked and surveyed to 0.01 foot, and the elevation will be determined relative to a fixed benchmark or datum.
- The measuring point on all wells will be on the innermost PVC casing.
- Monitoring well construction details will be recorded in the field book and on the Construction Log shown in Appendix F of the SMP.
- If commercially available nested wells are considered to sample multiple aquifer depth zones in the same borehole, they will be discussed with DEC prior to installation.

4.3.2 Monitoring Well Development

- After a minimum of 24 hours after installation, the monitoring wells will be developed by surging and pumping. Surging will be performed periodically, across the lengths of screen in 2-foot increments prior to, at interim periods of pumping, and immediately before the final pumping. Pumping methods may include using a centrifugal, submersible, or peristaltic pump and dedicated polyethylene tubing, using a Waterra™ positive displacement pump and dedicated polyethylene tubing, or other methods at the discretion of the field geologist.
- Water levels will be measured in each well to the nearest 0.01 foot prior to development.
- The wells will be developed until the water in the well is reasonably free of visible sediment (50 NTU if possible or until pH, temperature, and specific conductivity stabilize). A portable nephelometer will be used to make the turbidity measurement.
- Development water will be contained in and properly disposed of.

Following development, wells will be allowed to recover for at least 14 days before groundwater is purged and sampled. All monitoring well development will be performed or overseen by a field geologist and recorded in the field book.

5.0 Groundwater Sampling Procedures

5.1 Introduction

Procedures for obtaining samples of groundwater are described in this section. Groundwater samples will be collected using low-flow, low-stress purge and sampling methods.

Procedures for conducting aquifer conductivity testing are also described in this section. Aquifer conductivity testing will be done by using slug or pneumatic testing methods.

5.2 Groundwater Sampling

The number and frequency of the samples that will be collected for laboratory analysis from each well and the analytical parameters are listed in Table 3-1 in the SMP [AECOM2014].

The following method will be used to collect groundwater samples from monitoring wells:

5.2.1 Required Equipment and Supplies

- Field book
- Project plans
- PPE in accordance with the HASP
- Electronic oil/water interface probe
- Disposable polyethylene bailers and low-flow sampling pump
- Polypropylene rope
- Temperature, conductivity, and pH meter
- Turbidity meter
- Flow-through cell
- Decontamination supplies
- Peristaltic or submersible pump capable of achieving low-flow rates (i.e., 0.5 liters per minute or less)
- Plastic tubing
- Plastic sheeting
- PID
- Clear tape, duct tape
- Coolers and ice
- Laboratory sample bottles
- Federal Express labels

5.2.2 Groundwater Sampling Method

5.2.2.1 Purging

- Prior to sampling, the static water level and thickness of any light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL) will be measured to the nearest 0.01 foot from the surveyed well elevation mark on the top of the PVC casing with a decontaminated oil/water interface probe. NAPL thickness will be confirmed using a clear bailer or a weighted string. The measurement will be recorded in the field book.
- The probe will be decontaminated between uses.
- Groundwater from the well will be purged until field parameters stabilize, after at least three well volumes are removed, or five well volumes are removed. Field parameters are considered to be stable when three consecutive readings are within the stabilization criteria for that parameter. The stabilization criteria are as follows: 10% or below 10 NTUs for turbidity, 3% for conductivity and temperature, 0.1 unit for pH, and 10 mV for ORP. Purging will be conducted using the low-flow sampling technique specified by the United States Environmental Protection Agency (USEPA) Region 1 in its guidance document entitled “Low-Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells”.
- The flow rate measurement will be approximately 0.5 liter per minute or less.
- If a well goes dry before the required volumes are removed, it will be allowed to recover, purged a second time until dry or the required parameters are met, and sampled when it recovers sufficiently, in accordance with low-flow sampling protocol.
- Purge water will be managed and disposed of properly.
- Peristaltic pumps will not be used to collect VOC samples.

5.2.2.2 Sampling

- Samples will be collected using dedicated 1/4- or 3/8-inch polyethylene tubing and/or bailers.
- Prior to filling the sample bottles, the temperature, pH, conductivity, dissolved oxygen, and oxidation reduction potential (ORP) will be measured within a flow-through cell. Turbidity will be measured with a hand-held turbidity meter. All measurements will be recorded in the field book.
- Three 40-ml VOA vials with Teflon™ lined septa and hydrochloric acid as a preservative will be filled for analysis of VOCs. The VOA vials will be filled to ensure that no bubbles are in the sample. Two 1-liter amber glass sample bottles for SVOC analysis and two 1-liter amber glass bottles for PCB analysis will then be filled followed by a 500 milliliter (mL) plastic bottle preserved with nitric acid for the total metals analysis. An opaque, 500 mL plastic bottle, with sodium hydroxide added for preservative to achieve a pH of >12 will then be filled for the analysis of total cyanide.
- The sample containers will be labeled, placed in a laboratory-supplied cooler, and packed on ice (to maintain a temperature of 4ºC). The cooler will be shipped overnight or delivered to the laboratory for analysis.
- COC procedures will be followed as outlined in the QAPP (Appendix G of the SMP).

- Well sampling data will be recorded on the Groundwater Sampling Record shown in Figure 5-1, or similar form.

6.0 Indoor Air Sampling

An indoor air evaluation will be performed at the Site and off-Site areas to establish post remedy conditions. The work will be performed in accordance with *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* [DOH, 2006] and the USEPA document entitled *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, Office of Solid Waste and Emergency Response* [USEPA, 2002]. Methods will also be consistent with National Grid's Draft Standard Operating Procedure for Soil Vapor Intrusion Evaluations at National Grid MGP Sites in New York State. A draft Indoor Air Sampling Plan will be submitted to DEC for approval [GEI, 2010] which outlines the locations and frequency of the samples.

A pre-sampling survey and a product inventory will be conducted on the day of sampling. The surveys and inventories will be completed in accordance with the NYDOH guidance. The chemical inventory check will be performed at each location to document current conditions with the regard to the storage of chemicals. The previous surveys will be reviewed and any changes in conditions from the previous sampling will be noted. As with previous surveys, a screening for total volatiles will be conducted with a ppbRAE. An ambient air sample will be collected concurrently with the indoor air samples for each property.

The methods to be used for the collection of the indoor air samples and the ambient air sample are summarized as follows:

- The indoor air sample will be collected from a minimum of two-feet above the floor surface.
- The ambient air sample will be collected at a location determined to be upwind at time of sampling.
- The indoor air and ambient air samples will be collected as an integrated (not grab) sample. A laboratory-provided flow controller fixed to a negative pressure vessel (a batch certified clean 6-liter Summa™ canister) will be used to collect the integrated sample. The controller will be a fixed-rate flow controller and the approximate length of the sample time will be set by the laboratory. The flow controllers are fitted with an internal filter to prevent particulates from entering the Summa™ Canister.
- The sample time for the canisters will be set to 8 hours. The collection of the samples in 6-liter canisters over an approximate 8-hour interval will ensure that the samples are collected at the rate specified by the NYSDOH (less than 0.2 liters per minute).
- The sample tubing will be attached to the sampling canister with Swagelok™ fittings.
- Prior to sampling, the initial vacuum in each canister will be checked prior to use to ensure mechanical integrity of the canister. The initial vacuum should be approximately 30 inches mercury (in. Hg).
- To start sampling, the canister ball valve is opened and the initial time and vacuum is recorded.
- The final vacuum should be between 10 and 4 in. Hg, with a target of 5 in. of Hg. The initial and final vacuum in each canister will be recorded on the laboratory chain-of-custody form to be returned to the laboratory with the samples. The gauges provided with the canisters are

accurate only for “indication of change”, and are not sufficiently accurate to provide gauge-to-gauge comparisons. The final vacuum will also be measured in the laboratory.

- Following collection of the sample, the canister will be sealed by closing the ball valve and fitting on the canister inlet. The inlet will then be capped with a laboratory-provided threaded end cap.
- Following collection of the sample, the PID will be used to obtain a final reading from the probe assembly or tubing for the concentration of total organic vapors.
- Quality assurance and quality control samples will include one field duplicate, one trip blank, a laboratory blank and laboratory quality control samples as required by the analytical method.
- The site name, sample identification, canister number, canister certification number, sampler’s name, sample times and date will be recorded on a tag that is attached to each canister.
- The indoor air samples will be shipped overnight to a NY ELAP-certified laboratory for analysis.

The field sampling team will record all information regarding the sampling on field forms. Copies of the field forms that will be used are included as Figures 6-2 and 6-3. Information that will be recorded will include the following: sample identification, date and times of sample collection, identity of the field personnel, sampling methods and equipment, purge volumes and rates, tracer test results, and any other relevant observations made during the sampling. A DOH indoor air quality questionnaire and building inventory form will also be filled out prior to indoor air sampling (Figure 6-4).

7.0 Air monitoring

7.1 Introduction

Two types of air monitoring will be performed during project site work: 1) work zone monitoring for protection of the workers performing the project site work, and 2) community air monitoring at the perimeter of the work site for protection of the local community.

7.2 Breathing Zone Air Monitoring During Drilling and Sampling

Monitoring of air in the breathing zone within the work site will be conducted periodically during all drilling and sampling activities.

- An organic vapor meter (OVM) equipped with a PID will be used to monitor for VOCs or other organic vapors in the breathing zone and borehole, and to screen the samples.
- Additional air monitoring may be required as specified in the HASP (Appendix B of the SMP)..

The PID readings will be recorded in the field book and on the boring log during drilling activities. The procedure for the PID operation and calibration is included in the HASP. Note that equipment calibration will be performed as often as needed to account for changing conditions or instrument readings. The minimum frequency of calibration is specified in the HASP; more frequent calibration will be performed if spurious readings are observed or there are other problems with the instruments.

7.3 Community Air Monitoring

Community air monitoring requires real-time monitoring for VOCs, particulates (i.e., dust), and MGP-related odors at the downwind perimeter of each designated work area when certain activities are in progress at impacted sites. The community air monitoring is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels for community air monitoring require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, community air monitoring helps to confirm that work activities do not spread contamination off site through the air.

The procedures and action levels for community air monitoring are presented in the CAMP and in the HASP.

8.0 Field Instruments and Calibration

All field analytical equipment will be calibrated immediately prior to each day's use and more frequently if required. The calibration procedures will conform to manufacturer's standard instructions. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. All instrument calibrations will be documented in the project field book and in an instrument calibration log. Records of all instrument calibration will be maintained by the Field Team Leader. Copies of all of the instrument manuals will be maintained on site by the Field Team Leader. All changes to instrumentation will be noted in the field log book.

The following field instruments will be used during any project site work:

- PID
- Particulate monitors
- Multi-parameter meter (pH, specific conductivity, dissolved oxygen, oxidation reduction, and temperature meter)
- Turbidity meter

8.1 Portable Photo-Ionization Detector (PID)

- The photo-ionization detector will be equipped with either a 10.2 or 10.6 eV lamp. In this configuration, the PID is capable of ionizing and detecting compounds that account for over 70% of the VOCs on the USEPA Target Compound List.
- Calibration must be performed at the beginning of each day of use with a standard calibration gas having a concentration of 100 parts per million of isobutylene. If the unit experiences abnormal perturbation or erratic readings, more frequent or additional calibration will be required.
- All calibration data must be recorded in the project field notebooks.
- A battery check must be completed at the beginning and end of each working day.
- All changes to the PID will be noted in the field notes (such as lamp or filter cleaning or replacement or change of instrument).

At least one backup meter will also be present on-site in the event of a malfunction.

8.2 Particulate Monitors

- Particulate monitors will be TSI DustTrac, or its equivalent to measure total dust.
- Calibration must be performed at the beginning of each workday with atmospheric zero, and again during the day if the performance of an instrument is in question

- The monitoring instruments will be checked by a technician every 15 minutes, and the real-time measurements recorded. A 15-minute average concentration will be determined.
- The data will be downloaded at the end of each day, and monitoring records will be kept at the project site during the work in case there is an inquiry or complaint.
- A battery check must be completed at the beginning and end of each working day.
- All changes to the particulate meter will be noted in the field notes (such as filter cleaning or replacement or change of instrument).

8.3 Multi-Parameter Meter

- Calibration of the meter (YSI or equivalent) must be performed at the start of each day of use, and after very high or low readings as required by this Plan, according to manufacturer's instructions.
- National Institute of Standards and Technology - traceable standard calibration solutions will be used (where applicable). At least one backup meter will also be present on-site in the event of a malfunction.
- The calibration data must be recorded in the project field book each time it is performed.

8.4 Turbidity Meter

The turbidity meter must be checked at the start of each day of use according to manufacturer's instructions.

9.0 Analytical Program

9.1 Environmental Sample Analyses

The laboratory samples for each media and the chemical analyses to be performed are summarized in Table 3-1 of the SMP.

9.1.1 Soil Analyses

The majority of the soil samples will be analyzed for the following parameters:

- VOC compounds by USEPA Method 8260B;
- Semi-volatile organic compounds (SVOCs) by USEPA Method 8270C;

A subset (approximately 20%) of the total number of soil samples will be analyzed for an expanded list of the following parameters:

- Full TCL VOCs by USEPA Method 8260B;
- Full TCL SVOCs by USEPA Method 8270C;
- TAL Metals by USEPA Method 6000-7000 Series;
- Free Cyanide with extraction by USEPA Method 9013A and analysis by ASTM Method D4282-02 (microdiffusion);
- TCL Pesticides by USEPA Method 8081A;
- TCL Herbicides by USEPA Method 8151A; and
- PCBs (as Aroclors) by USEPA Method 8082.

9.1.2 Groundwater Analyses

Similar to soils, the majority of groundwater samples will be analyzed for the following parameters:

- VOC compounds by USEPA Method 8260B;
- SVOC compounds by USEPA Method 8270C.

A subset (approximately 20%) of the total number of groundwater samples will be analyzed for an expanded list of the following parameters:

- Full TCL VOCs by USEPA Method 8260B;
- Full TCL SVOCs by USEPA Method 8270C;
- TAL Metals by USEPA Method 6000-7000 Series;
- Total Cyanide by USEPA Method 9012;
- TCL Pesticides by USEPA Method 8081A;

- TCL Herbicides by USEPA Method 8151A; and
- PCBs (as Aroclors) by USEPA Method 8082.

9.1.3 Indoor Air/Ambient Air Analyses

The indoor air and ambient air samples will be analyzed for VOCs by USEPA Method TO-15 (including naphthalene). The indoor air samples will also be analyzed for helium by ASTM Method ASTM D-1945. In addition to the standard TO-15 list of compounds, several additional compounds will be analyzed for, including: 1,2,3-trimethyl benzene, 1-methylnaphthalene, 2-methylnaphthalene, tetramethylbenzene, indene, indane, thiophene , 2-methylpentane, isopentane, and 2,3-dimethylpentane.

9.1.4 Waste Characterization/Profiling

Sufficient samples (a minimum of two) will be collected during any project site work and analyzed for full RCRA Hazardous Characteristics testing to determine if materials exhibiting hazardous characteristics may be present at the site and to support waste disposal profiling purposes. The analyses to be performed may include, but not be limited to, the following, depending on the medium and the selected disposal facility:

- Total Metals by USEPA Method 6010B (Mercury 7470A);
- Total Petroleum Hydrocarbons (DRO and GRO) by USEPA Method 8015 modified;
- PCBs by USEPA Method 8082;
- TCLP ZHE Extraction by USEPA Method 1311;
- TCLP VOC by USEPA Method 8260B;
- TCLP SVOC by USEPA Method 8270C;
- TCLP RCRA Metals by USEPA Method 6010B (Mercury 7470A);
- Corrosivity by USEPA Method 9045C;
- Ignitability/Flashpoint by USEPA Method 1010A;
- Reactive Cyanide and Reactive Sulfide by USEPA SW-846 Chapter 7, Sections 7.3.3.2 and 7.3.4.2; and
- Total Organic Halogens – USEPA Method 9020B.

9.2 Field Quality Control Samples

Field quality control samples will be collected and analyzed to document the accuracy and precision of the samples. The quality control samples are described as follows:

- Trip Blank: One trip blank will accompany each shipment of samples for VOC analysis sent to the laboratory. The trip blank will be analyzed to test for any contaminants introduced while samples are being stored or transported to the laboratory. The trip blanks will be analyzed for volatiles only.
- Field Equipment Blanks: The purpose of the equipment blank is to detect any contamination from sampling equipment, cross-contamination from previously sampled locations, and

contamination caused by conditions at sampling locations (e.g., airborne contaminants). One equipment blank will be collected for every 20 samples per medium collected during sampling with non-disposable sampling equipment. The samples will be collected by pouring analyte-free water, prepared in the laboratory, over decontaminated sampling equipment and collecting it in sample jars. The blanks will be collected in the vicinity of a sample location. This field blank will be analyzed for VOCs, SVOCs, PCBs, total or free cyanide (depending if the blank is from groundwater or soil sampling equipment), and TAL metals.

- Field Duplicates: Field duplicates are collected to determine the precision of the soil samples collected. This is achieved by homogenizing soil (for non-VOC analyses) and splitting it evenly between separate sample jars. Duplicate samples will be collected and analyzed for VOC, SVOCs, PCBs, total or free cyanide (depending if the duplicate sample is from groundwater or soil), and TAL metals. The minimum required number of field duplicates is one for every 20 samples.
- Matrix Spikes, and Matrix Spike Duplicates: These samples are laboratory quality control samples and will be completed as part of the laboratory analytical batch quality control. These samples will be collected in the same manner as the field duplicates. Both the matrix spike and matrix spike duplicate will be collected at the same sample location.

9.3 Sample Location Numbering System

- Surface soil samples will be numbered consecutively beginning with SS19 (if applicable).
- Subsurface soil borings will be numbered consecutively beginning with SB240 (soil borings) or SHMW1 (monitoring well borings). Individual samples will also be designated with a depth code (see below).
- Monitoring wells will be numbered consecutively beginning with SHMW1.

9.4 Sample Identification

Each sample will be given a unique alphanumeric identifier in accordance with the following classification system:

Table 9-1 Sample Identification

LL* Sample Type	NN* Sample Number	N-N Depth Code	LL QC Identifier

Sample Type:	GW – Boring Groundwater Grab SB – Soil Boring SS – Surface Soil AMB – Ambient Air	MW – Monitoring Well SV – Soil Vapor IA – Indoor Air
Sample Number:	Number referenced to a sample location map.	
Depth Code:	Depth in feet of sample interval (0-0.5, 2-4, 10-12, etc.)	
QC Identifier:	TB – Trip Blank	MS – Matrix Spike

EB – Equipment Blank	MSD–Matrix Spike Duplicate
	MB – Matrix Blank

* L = Letter
* N = Number

Field duplicate samples will be assigned identifiers that do not allow the laboratory to distinguish them as field duplicates. Each sample container will be labeled prior to packing for shipment. The sample identifier, site name, date and time of sampling, and analytical parameters will be written on the label in waterproof ink and recorded in the field book.

9.5 Chain-of-Custody

- A Chain-of-Custody (COC) record (Figure 9-1 or similar) will accompany the sample containers during selection and preparation at the laboratory, during shipment to the field, and during return shipment to the laboratory.
- The COC will include the sample identities of each sample container and the analytical parameters for each, and will list the field personnel that collected the samples, preservation method, the project name and number, the name of the analytical laboratory that will receive the samples, and the method of sample shipment.
- If samples are split and sent to different laboratories, such as to a specialty laboratory for fingerprint analysis, a copy of the COC record will be sent with each sample shipment.
- The COC will be completed by field personnel as samples are collected and packed for shipment.
- Erroneous markings will be crossed-out with a single line and initialed by the author.
- The REMARKS space will be used to indicate if the sample is a matrix spike, matrix spike duplicate, or matrix duplicate.
- Trip and field blanks will be listed on separate rows.
- After the samples have been collected and sample information has been listed on the COC form, the method of shipment, the shipping cooler identification number(s), and the shipper airbill number will be entered on the COC.
- Finally, a member of the sampling team will write his/her signature, the date, and time on the first RELINQUISHED BY space.
- One copy of the COC will be retained by sampling personnel. The other copy and the original will be sealed in a plastic bag and taped inside the lid of the shipping cooler.
- Sample shipments will be refrigerated at 4˚C, typically by packing with bagged ice, to preserve the samples during shipment.
- After the shipping cooler is closed, custody seals provided by the laboratory will be affixed to the latch and across the front and back of the cooler lid, and signed by the person relinquishing the samples to the shipper.
- The seal will be covered with clear tape, and the cooler lid will be secured by wrapping with packing tape.
- The cooler will be relinquished to the shipper, typically an overnight carrier.

- The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the samples will not be analyzed until directed to do so.
- The samples must be delivered to the laboratory within 48 hours of collection.

9.6 Sample Documentation

The field team leader will retain a copy of the COC, and, in addition, the field team leader will ensure that the following information about each sample is recorded in the field book:

- Sample identifier;
- Identification of sampled media (e.g., soil, sediment, groundwater);
- Sample location with respect to known reference point;
- Physical description of sample location;
- Field measurements, (e.g., pH, temperature, conductivity, and water levels);
- Date and time of collection;
- Sample collection method;
- Volume of groundwater purged before sampling;
- Number of sample containers;
- Analytical parameters;
- Preservatives used; and
- Shipping information:
  - Dates and method of sample shipments;
  - COC Record numbers;
  - Federal Express Air Bill numbers; and
  - Sample recipient (e.g., laboratory name).

Figures

AECOM

Figure 4-1

Boring/Well ID:________________

Page _______ of ________

Project Name:	Drilling Company:	Surface Comp:
Project Number:	Drilling Method:	Grout (bgs):
Date Pre-Cleared:	Rig Type:	Filter Pack (bgs):
Date Started Drilling:	Casing ID:	Riser (bgs):
Date Finished Drilling:	Water Level While Drilling (bgs):	Well Screen (bgs):
Logged By:	Total Depth of Boring (bgs):	Sump (bgs):

(Note: bgs = below ground surface)

Depth Range	Blow per 6 Inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:________________________________

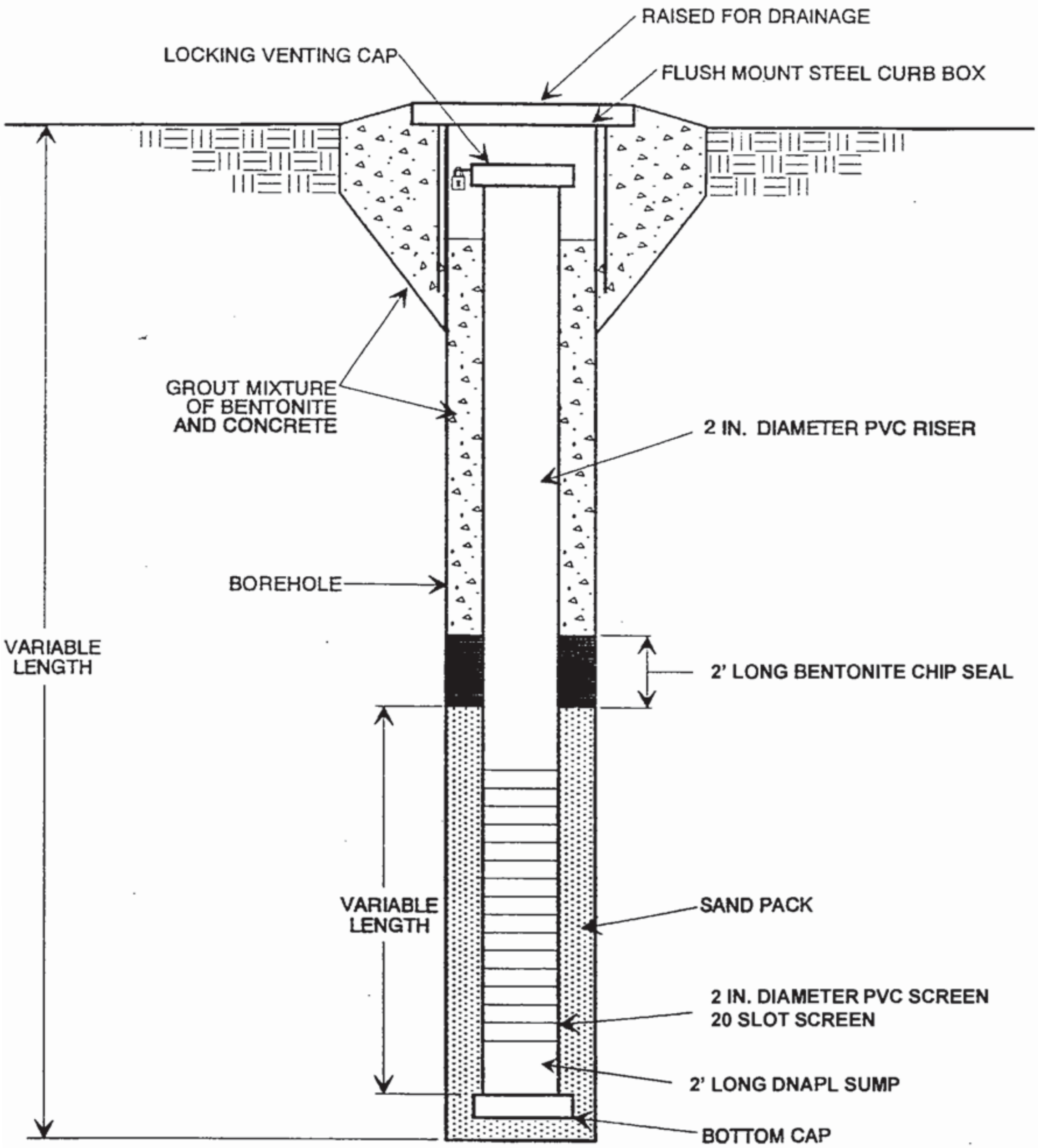
Lithology:

1.)	5.)
2.)	6.)
3.)	7.)
4.)	8.)

Comments:

Figure 4-2

TYPICAL MONITORING WELL CROSS SECTION



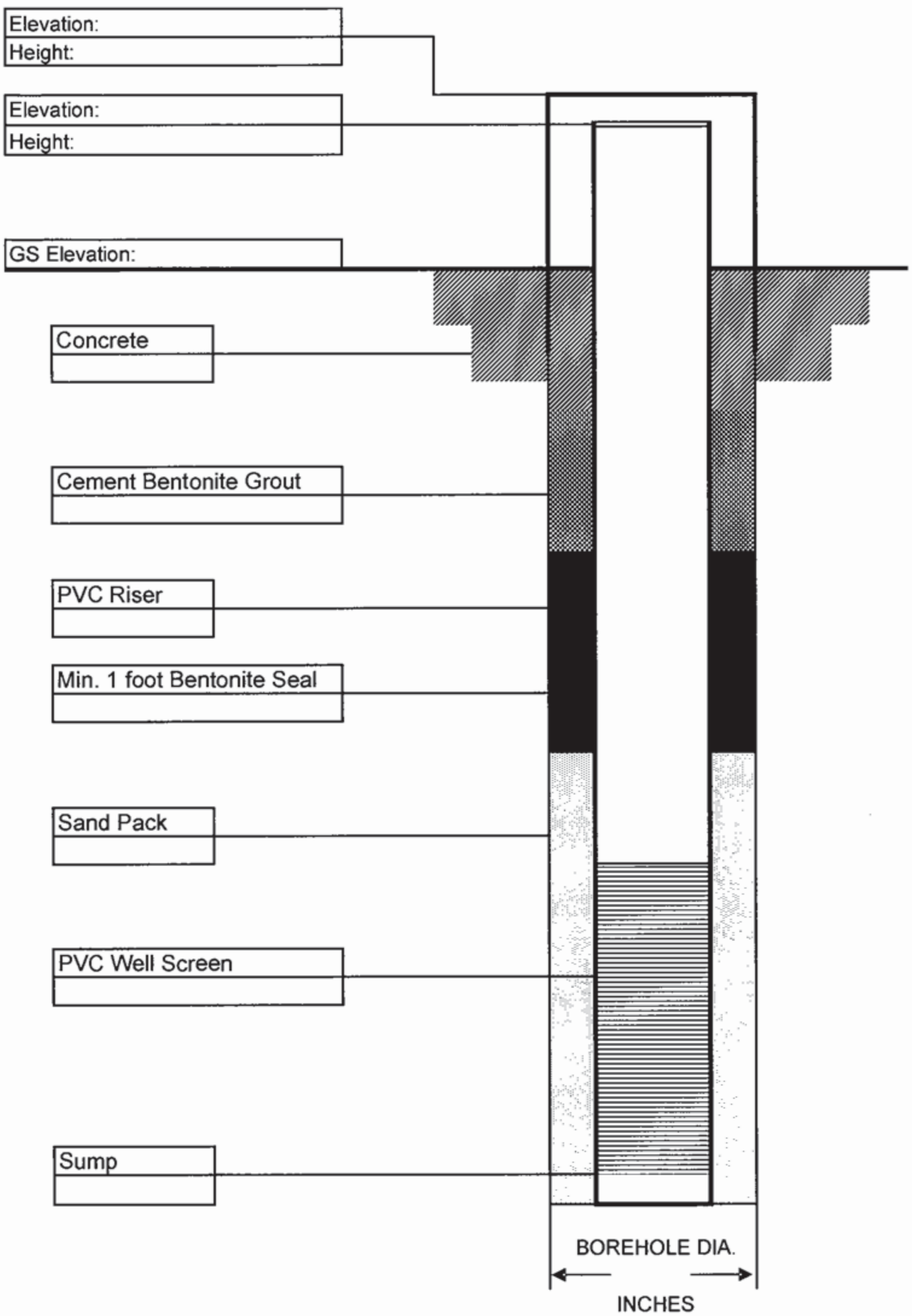
NOT TO SCALE

AECOM

Figure 4-3

WELL CONSTRUCTION LOG

WELL NO.:	FACILITY/SITE NAME:
PROJ. NO.:	CLIENT:
INSPECTOR:	DRILLING CONTACTOR:
DATE START:	DATE END:
LOCATION:	DRILLING METHOD:



PROTECTIVE CASING

Material:
Diameter:
Depth BGS:
Water Tight Seal:
Flushmount:
Weep hole:

GUARD POSTS

Material:
No. & Size:

SURFACE PAD

Composition:
Size:

RISER PIPE

Material:
Schedule:
Joint Type:
O-ring:
Diameter:

GROUT

Amt cement:
Amt bentonite:
Amt water:
Tremied:
Interval:

SEAL

Material:
Type:
Amount Used:
Interval:

FILTER PACK

Material:
Brand Name:
Amount Used:
Grain Size Dist.:
Interval:
Tremied:

SCREEN

Material:
Diameter:
Slot Size & Type:
Interval BGS:

SUMP

Interval BGS:
Bottom Cap:

BACKFILL PLUG

Material:
Setup/Hydration Time:

Figure 5-1

LOW-STRESS GROUND WATER SAMPLING FORM

Project Number: ______________________
Project Name: ______________________
Date: ______________________
Weather: ______________________

Well ID: ______________________
Sample ID: ______________________
Permit Number: ______________________
Well Condition: ______________________

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): ______________
Inner Casing Diameter (inch): ______________
Inner Casing Material: ______________
Purge/Sample Method: ______________
Pump Intake Setting* (feet): ______________
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: ______________
After Cap Removal: ______________

Depth to Product* (feet): ______________
Initial Depth to Water* (feet): ______________
Product Thickness (feet): ______________
Depth to Top of Screen* (feet): ______________
Total Depth* (feet): ______________
Water Column (feet): ______________
Casing Volume (gal): ______________
DTW After Pump Installed: ______________

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	pH (SI Units)	Conductivity (μohms/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mv)	Depth to Water (ft)	Comments

Start Purge Date/Time: ______________
End Purge Date/Time: ______________
Total Volume Purged (gal): ______________
Depth to Water After Purge* (feet): ______________

Pre-Sample Depth to Water* (feet): ______________
Start Sample Date/Time: ______________
End Sample Date/Time: ______________
Sampler Names: ______________
____

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

____
____
____

AECOM

Figure 5-1

LOW-STRESS GROUND WATER SAMPLING FORM

Sampling Sequence:

Analysis	Method	Container	Number of Bottles	Preservative	Comments
Volatile Organics					
Base/neutrals					
TPH					
Total Metals					
Dissolved Metals					
Cyanide					
Sulfate and Chloride					
Nitrate and Ammonia					
Preserved Inorganics					
Non-Preserved Inorg					
Bacteria					

Complete those analyses that apply.

Stabilization Ranges
Dissolved Oxygen: +/- 10%
Turbidity: +/- 10%
Specific Conductance: +/- 3%
Temperature: +/-3 %
pH: +/- 0.1 unit
Redox Potential: +/- 10mv

* = Measured from top of inner casing
DTW - Depth to Water
Thermo Environmental Instruments Model 580s OVM w/ 10.2 ev bulb
Water Levels Measured with an Electronic Water Level Meter
Field parameter meter calibration results are recorded in the field book.

AECOM

Figure 5-2

Well ID:

HYDRAULIC CONDUCTIVITY TEST LOG

Client: ______ Date: ______ Time: Start ______ am/pm
Project No: ______ Finish ______ am/pm
Site Location: ______
Weather Conds: ______ Tester (s): ______

1. WELL INFORMATION

a. Ref. Point Elev. ______
b. Static Depth to GW ______
c. Time of GW reading ______
d. Static GW Elev.(Ho) ______ (a-b)
e. Total Well Depth ______
f. Gravel Pack Diameter ______
g. Water Column Height ______ (e-b)
h. Casing Diameter ______
i. Screen Length ______
j. Geology of Screened Interval ______

2. SLUG INFORMATION (see back for volume calculation)

a. Slug Length ______
b. Slug Diameter ______

3. DATA COLLECTION

a. Method of Data Collection: Manual ______ (see back) Electronic ______

b.Transducer Information
Make ______
Model ______
Serial Number ______
Offset ______
Linearity ______
Scale ______
Coefficient ______
Diameter/Length ______

c. Data Logging Information
Make ______
Model ______
Serial Number ______
Mode ______ (linear or logarithmic)
Ref. Point (designation) ______ (TOC, Ground Surface, actual el
Ref. Point value (if elev.) ______
Positive numbers indicate increase or decrease in water level (circle one)

4. HYDRAULIC TEST INFORMATION

Start Time	Test Type (rising, falling)	Electronic File Name	Comments	End Time

5. MANUAL WATER LEVEL READINGS (as needed for control)

Time	Location	Depth to Water	Time	Location	Depth to Water

Signature ______ Date ______

Q:\mw97\sops\7720\hydraulicconductivitytestlog.xls, page 1

Figure 5-2

6. EXPECTED WATER LEVEL DISPLACEMENT CALCULATION (optional)

a. Diameter of Slug (in) __________
b. Length of Slug (ft) __________
c. Volume/Linear ft of Slug (gal/ft from chart) __________
d. Volume of Slug (gal) __________ (b*c)
e. Diameter of Well (in) __________
f. Volume/Linear ft of Well (gal/ft from chart) __________
g. Expected Change in Water Level __________ (d/f)

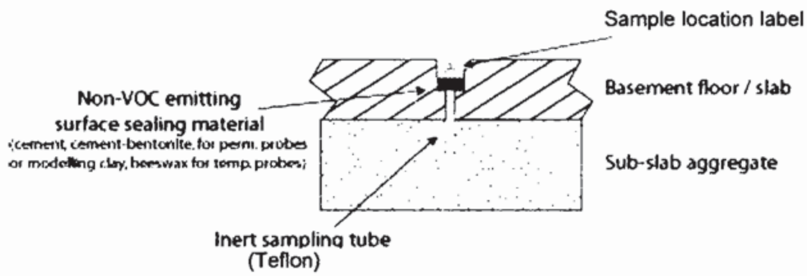
Volume / Linear Ft. of Pipe		
Diam. (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178

Note: Water column height (1-g from front page) should be greater than transducer length plus length of slug, unless well geometry prohibits.

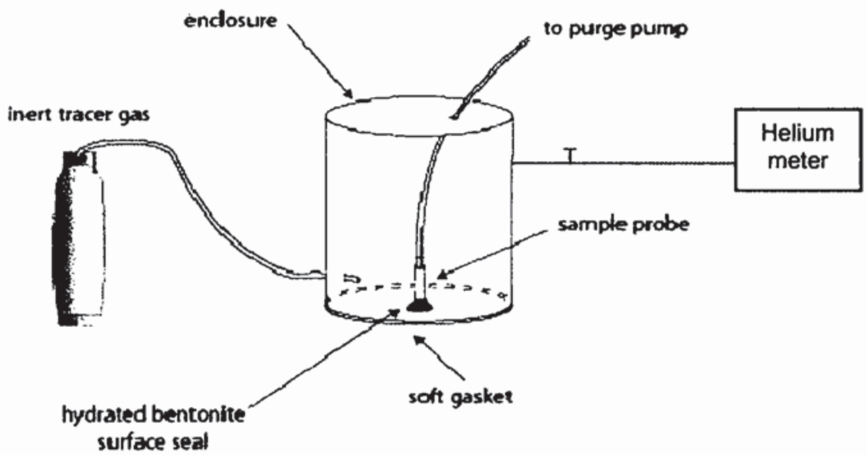
7. MANUAL WATER LEVEL MEASUREMENTS

Time (HH:MM)	Elapsed Time (min)	Depth to Water from TOC (ft)	Head, h (TOC - water depth)	h/Ho	Comments
	0			1	

q:\mw97\sops\7720\hydraulicconductivitytestlog.xls, page 2



TYPICAL SUB-SLAB SAMPLING PROBE SET UP



TYPICAL HELIUM TRACER TEST SET UP

AECOM		**TYPICAL HELIUM TRACER AND SUB-SLAB**
DATE. 9/5/06	DRWN. MLR	FIGURE 6-1

Soil Gas Sampling Log Sheet
Sample ID_______________

Client:___________________
Project Name:_____________
Project Number:___________
Date:______________
Sampler:__________________

Location:____
Canister Number:_______________
Core Diameter:______________ Core Material:_________________
Core Length:________________
Magnehelic Measurement: (Positive number indicates higher pressure in Core)________
Depth of Hand Auguring:_____________
Soil Type:____
Method of Probe Advancement:______________________________
Depth of Probe Advancement:________ Length Probe is Retracted:_________

Time of Purging	PID Reading	Time of Purging	PID Reading
__________	__________	____________	__________
__________	__________	____________	__________
__________	__________	____________	__________
__________	__________	____________	__________
__________	__________	____________	__________

Starting Time:______________ Starting Pressure:_________
Finish Time:________________ Final Pressure:___________

Room Dimensions: Length:______ Width:_____ Height:_____

Comments:

Indoor Air/Ambient Air Sample
Sample ID_________________

Location:____
Sample ID:_________________
Canister Number:___________
Starting Time:______________ Starting Pressure:_________
Finish Time:________________ Final Pressure:___________

Comments:

General Weather Conditions:____
Chemical Inventory:

FIGURE 6-3

FIELD SAMPLING DATA SHEET
(One Sample Per Data Sheet)

GENERAL:

PROJECT: ______________________ DATE(S) SAMPLED: ______________________

SITE: ______________________

LOCATION: ______________________ OPERATOR: ______________________

PID INSTRUMENT MODEL NO.: ______________________ CALIBRATED BY: ______________________
CGI INSTRUMENT MODEL NO.: ______________________ CALIBRATED BY: ______________________

TIME	CGI READING (%)	PID READING (ppm)	DRAGER TUBE (ppm)	LOCATION
1)				
2)				
3)				
4)				
5)				
6)				
7)				
8)				
9)				
10)				

CANISTER #	LOCATION	TIME

DATE/TIME	AMBIENT TEMPERATURE°	BAROMETRIC PRESSURE mm Hg	RELATIVE HUMIDITY %	COMMENTS

Data from meteorological station*

Figure 6-4

OSR-3

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH ASSESSMENT
BUREAU OF TOXIC SUBSTANCE ASSESSMENT

INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY

This form must be completed for each residence involved in indoor air testing.

Preparer's Name ______________________ Date Prepared ____________

Preparer's Affiliation ______________________ Phone No. ____________

1. **OCCUPANT**

Name: ______________________

Address: ______________________

County: ______________________

Home Phone No. ____________ Office Phone No ____________

2. **OWNER OR LANDLORD:**
(If different than occupant)

Name: ______________________

Address: ______________________

____

Phone No. ______________________

A. <u>Building Construction Characteristics</u>

Type (circle appropriate responses): Single Family Multiple Dwelling Commercial Public School

Ranch	2-Family
Raised Ranch	Duplex
Split Level	Apartment House ____________ Units
Colonial	Number of floors ____________
Mobile Home	Other specify ______________________

Residence Age ____________ General Description of Building Construction Materials ______________________

Is the building insulated? Yes / No How air tight is the building? ______________________

____

____

OSR-3 (continued)

B. Basement construction characteristics (circle all that apply):

1. Full basement, crawlspace, slab on grade, other ___________
2. Basement floor: concrete, dirt, other ________
3. Concrete floor: unsealed, painted, covered, with _________
4. Foundation walls: poured concrete, block, laid up stone, other ___________
5. The basement is: wet, damp, dry___ Sump present? y / n ______ Water in sump? y / n ______
6. The basement is: finished, unfinished ______________
7. Identify potential soil vapor entry points (e.g., cracks, utility ports, etc.)
   ____
8. Describe how air tight the basement is ____

   ____

C. HVAC (circle all that apply):

1. The type of heating system(s) used in this residence is/are:

Hot Air Circulation	Heat Pump
Hot Water Radiation	Unvented Kerosene Heater
Steam Radiation	Wood stove
Electric Baseboard	Other (specify)_________________________________

2. The type(s) of fuel(s) used is/are: Natural Gas, Fuel Oil, Electric, Wood, Coal Solar

   Other (specify)________________________________
3. Is the heating system's power plant located in the basement or another area? _________________
4. Is there air-conditioning? Yes / No Central Air or Window Units?

   Specify the location ______________________________
5. Are there air distribution ducts present? Yes / No
6. Describe the supply and cold air return duct work in the basement including whether there is a cold air return, the tightness of duct joints
   ____

   ____

OSR-3 (continued)

D. Potential Indoor Sources of Pollution

1. Has the house ever had a fire? Yes / No
2. Is there an attached garage? Yes / No
3. Is a vehicle normally parked in the garage? Yes / No
4. Is there a kerosene heater present? Yes / No
5. Is there a workshop, hobby or craft area in the residence? Yes / No
6. An inventory of all products used or stored in the home should be performed. Any products that contain volatile organic compounds or chemicals similar to the target compounds should be listed. The attached product inventory form should be used for this purpose.
7. Is there a kitchen exhaust fan? Yes / No Where is it vented? ____________________
8. Has the house ever been fumigated? If yes describe date, type and location of treatment.

   ____

E. Water and Sewage (Circle the appropriate response)

Source of Water

Public Water Drilled Well Driven Well Dug Well Other (Specify)______________

Water Well Specifications:

Well Diameter ______________________ Grouted or Ungrouted _________________

Well Depth ________________________ Type of Storage Tank __________________

Depth to Bedrock ___________________ Size of Storage Tank __________________

Feet of Casing ______________________ Describe type(s) of Treatment ___________

____

Water Quality:

Taste and/or odor problems? y / n If so, describe ____

How long has the taste and/or odor been present? ____

Sewage Disposal: Public Sewer Septic Tank Leach Field Other (Specify) _____________________

Distance from well to septic system___________Type of septic tank additive ____________________

OSR-3 (continued)

F. <u>Plan View</u>

Draw a plan view sketch for each floor of the residence and if applicable, indicate air sampling locations, possible indoor air pollution sources and PID meter readings.

OSR-3 (continued)

G. <u>Potential Outdoor Sources of Pollution</u>

Draw a sketch of the area surrounding the residence being sampled. If applicable, provide information on the spill location (if known), potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system if applicable, and a qualifying statement to help locate the site on a topographical map.

Figure 6-4

Household Products Inventory

Occupant / residence ______________________________

Investigator: ______________________ Date: ______________

Product description (dispenser, size, manufacturer …)	**VOC Ingredients**

FIGURE 9-1

Chain of Custody Record

№ 0476

AECOM

Project Name:	Project Number:
Send Report To:	Sampler (Print Name):
Address:	Sampler (Print Name):
	Shipment Method:
	Airbill Number:
Phone:	Laboratory Receiving:
Fax:	

Analysis Requested

Page _____ of _____

Purchase Order #: ____________

Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers												Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level	Turnaround	Sample Receipt	
		Total # Containers Received?	
Level I ☐	Routine ☐	COC Seals Present?	
Level II ☐	24 Hour ☐	COC Seals Intact?	
Level III ☐	1 Week ☐	Received Containers Intact?	
Other ☐	Other _____	Temperature?	

White: Lab Copy   Yellow: PM Copy   Pink: Field Copy   Gold: PM/QA/QC Copy

Attachment A

February 2014

Standard Operating Procedures

(AECOM and National Grid)

AECOM Standard Operating Procedures

Contents

1.0 Field Log Books

All field activities will be carefully documented in field log books. Entries will be of sufficient detail that a complete daily record of significant events, observations, and measurements is obtained. The field log book will provide a legal record of the activities conducted at the project site. Accordingly:

- Field books will be assigned a unique identification number.
- Field books will be bound with consecutively numbered pages.
- Field books will be controlled by the Field Team Leader while field work is in progress.
- Entries will be written with waterproof ink.
- Entries will be signed and dated at the conclusion of each day of field work.
- Erroneous entries made while field work is in progress will be corrected by the person that made the entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing the correction.
- Corrections made after departing the field will be made by the person who made the original entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing and dating the time of the correction.
- At a minimum, daily field book entries will include the following information:
    - Location of field activity;
    - Date and time of entry;
    - Names and titles of field team members;
    - Names and titles of any site visitors and site contacts;
    - Weather information, for example: temperature, cloud coverage, wind speed and direction;
    - Purpose of field activity;
    - A detailed description of field work conducted;
    - Sample media (soil, sediment, groundwater, *etc*.);
    - Sample collection method;
    - Number and volume of sample(s) taken;

- o Description of sampling point(s);
- o Volume of groundwater removed before sampling;
- o Preservatives used;
- o Analytical parameters;
- o Date and time of collection;
- o Sample identification number(s);
- o Sample distribution (*e.g.* laboratory);
- o Field observations;
- o Any field measurements made, such as pH, temperature, conductivity, water level, *etc.*;
- o References for all maps and photographs of the sampling site(s); and
- o Information pertaining to sample documentation such as:
  - Bottle lot numbers
  - Dates and method of sample shipment
  - Chain-of-Custody (COC) Record numbers
  - Federal Express Air Bill Number

2.0 Field Equipment Decontamination and Management of Investigation Derived Waste

2.1 Decontamination Area

A temporary decontamination area lined with polyethylene sheeting will be constructed on-site for decontaminating the drilling equipment. Water collected from the decontamination cleaning activities will be collected in 55-gallon drums and managed as IDW.

2.2 Equipment Decontamination

The following procedures will be used to decontaminate equipment used during the field activities:

- All drilling equipment including the drilling rig, augers, bits, rods, tools, split-spoon samplers, and tremie pipe will be cleaned with a high-pressure steam cleaning or hot water pressure washing unit, as appropriate, before beginning work.
- Tools, drill rods, and augers will be placed on sawhorses or polyethylene plastic sheets following steam cleaning or pressure washing. Direct contact with the ground will be avoided.
- All augers, rods, and tools will be decontaminated between each drilling location according to the above procedures.
- The back of the drill rig and all tools, augers, and rods will be decontaminated at the completion of the work and prior to leaving the project site.

2.2.1 Sampling Equipment Decontamination

Suggested Materials:

- Potable water
- Phosphate-free detergent (*e.g.* Alconox™)
- Distilled water
- Aluminum foil
- Plastic/polyethylene sheeting
- Plastic buckets and brushes
- Personal protective equipment in accordance with the HASP

Procedures:

- Prior to sampling, all non-dedicated sampling equipment (bowls, spoons, interface probes, *etc.*) will be either steam cleaned or washed with potable water and a phosphate-free detergent (such as Alconox^{TM}). Decontamination may take place at the sampling location as long as all liquids are contained in pails, buckets, *etc.*

- The sampling equipment will then be rinsed with potable water followed by a deionized water rinse.

- Between rinses, equipment will be placed on polyethylene sheets or aluminum foil if necessary. At no time will washed equipment be placed directly on the ground.

- Equipment will be wrapped in polyethylene plastic or aluminum foil for storage or transportation from the designated decontamination area to the sampling location.

2.3 Management of Investigation Derived Wastes

2.3.1 Decontamination Fluids

Steam-cleaning and decontamination fluids will be collected in 55-gallon drums. The drums will be labeled as investigation derived wastewater subsequently characterized and disposed.

2.3.2 Drill Cuttings

Drill cuttings will be contained in 55-gallon drums. The drums will be labeled as investigation derived soils and subsequently characterized and properly disposed.

2.3.3 Development and Purge Water

All development and purge water will be contained in 55-gallon drums. The drums will be labeled as investigation derived wastewater and subsequently characterized and properly disposed.

2.3.4 Personal Protective Equipment

All personal protective equipment (PPE) will be placed in 55-gallon drums for proper disposal.

2.3.5 Dedicated Sampling Equipment

All dedicated groundwater sampling equipment, if used, will be placed in 55-gallon drums for proper disposal.

3.0 Drilling and Soil Sampling Procedures

3.1 Introduction

Drilling activities during the field work might consist of:

- Soil borings
- Monitoring well installations
- DNAPL collection well installations

These procedures are described in the following section.

3.2 Soil Borings and Subsurface Soil Sampling

The following methods will be used for conducting soil borings.

3.2.1 Suggested Equipment

- Field book
- Project plans
- Personal protective equipment in accordance with the HASP
- Metal detector
- Stakes and flagging
- One pint containers for lithology samples
- Tape measure
- Decontamination supplies
- Water level indicator
- Photoionization detector (PID) with a 10.2 or 10.6 eV lamp
- Camera
- Clear tape, duct tape
- Aluminum foil

- Laboratory sample bottles
- Coolers and ice
- Shipping supplies

3.3 Drilling and Geologic Logging Method

- Soil borings will be advanced using rotosonic, hollow stem auger, or direct push drilling methods. The rotosonic method is preferred.
- Soil samples will be collected continuously to the bottom of the borings using 5 to 10-foot long 4-inch diameter sonic sample bags, 4-foot long, 2-inch diameter macro core samplers or 2-foot long, 2-inch diameter split spoon samplers.
- Soil samples retrieved from the borehole will be visually described for:
    - Percent recovery
    - Soil type
    - Color
    - Moisture content
    - Texture
    - Grain size and shape
    - Consistency
    - Visible and olfactory evidence of staining and/or contamination
    - Any other observations

The descriptions will be in accordance with the Unified Soil Classification System (USCS), American Society for Testing and Materials (ASTM) guidelines, or the modified Burmeister system.

- Soil samples will be immediately screened for the evolution of organic vapors with a PID.
- A representative portion of the sample will be placed in a plastic “zip lock” bag or an eight-ounce sample jar filled approximately half full. The container will be labeled with the boring number and interval sampled. Aluminum foil will be placed on the top of the jar and the cap will be screwed on tightly.
- After a minimum of 10 minutes, the lid will be unscrewed and the tip of the PID will be inserted through the aluminum foil across the cap or into the bag to measure the headspace for organic vapors.

- Remaining soil will be disposed of in accordance with methods specified in the procedure for the management of IDW.
- All borings will be completed as monitoring wells, backfilled with cuttings if soil is not impacted, or sealed with bentonite or cement/bentonite grout following completion.
- All drilling equipment will be decontaminated between each boring in accordance with methods specified in the procedure for field equipment decontamination.
- The designated field geologist will log borehole geology and headspace measurements in the field book and the drilling record along with any other observations (for example, odors, NAPL, soil staining, *etc*.)

3.3.1 Soil Sampling

- Samples for VOC analysis will be collected directly from the sonic liners or split-spoons, placed into appropriate containers, and compacted to minimize headspace and pore space. The remaining sample volume will be placed into a stainless steel bowl or plastic bag, homogenized, and placed in appropriate containers for the other analyses.
- The sample containers will be labeled, placed in a laboratory-supplied cooler, and packed on ice (to maintain a temperature of 4ºC). The coolers will be shipped overnight to the laboratory for analysis.
- Chain-of-custody procedures will be followed as outlined in the QAPP.
- The sampling equipment will be decontaminated between samples in accordance with procedures described in the procedure for field equipment decontamination.
- Excess soil remaining after sampling will be contained in accordance with methods specified in the procedure for the management of IDW.
- The sample locations, descriptions, and depths will be recorded in the field book.

3.4 Monitoring Well Installation and Development

The following methods will be used for drilling, installing, and developing the monitoring wells.

3.4.1 Suggested Equipment

- Field book
- Project plans
- Personal protective equipment in accordance with the HASP
- Metal detector
- Stakes and flagging

- One pint containers for lithology samples
- Tape measure
- Decontamination supplies
- Water level indicator
- Photoionization detector (PID) with a 10.2 or 10.6 eV lamp
- Camera
- Clear tape, duct tape
- Aluminum foil
- Laboratory sample bottles
- Coolers and ice
- Shipping supplies
- Polyethylene disposable bailers (development)
- Polypropylene rope (development)
- Waterra pump or other purge pump (development)
- Stainless steel or glass beakers (development)
- Turbidity meter (development)
- Temperature, conductivity, pH meter (development)

3.4.2 Monitoring Well Installation

The monitoring wells will be installed in accordance to the following specifications:

- The monitoring well borings will be advanced with 6-inch diameter sonic casing pipe or 4.25-inch inner diameter (ID) hollow stem augers.
- Wells will be constructed with 2-inch ID, threaded, flush-joint PVC casings and screens.
- Screens will be 10 feet long with 0.01-inch or 0.02-inch slot openings with a 2-foot sump at the base. Alternatives may be used at the discretion of the field geologist and approval of National Grid and NYSDEC based on field conditions.
- The annulus around the screens will be backfilled with silica sand having appropriate size (*e.g.* Morie No. 1) to a minimum height of two feet above the top of the screen. Auger flights will be withdrawn as sand is poured in a manner that will minimize hole collapse and bridging.

- A bentonite pellet seal or slurry seal with a minimum thickness of one foot will be placed above the sand pack. The bentonite seal (pellets) will be allowed to hydrate before placement of grout above the seal.

- The remainder of the annular space will be filled with a cement-bentonite grout to the ground surface. The grout will be pumped through a tremie pipe from the bottom up. The grout will be allowed to set for a minimum of 24 hours before wells are developed.

- Each monitoring well will have a locking expandable gas-tight cap and will be contained in a flush-mount vault.

- The concrete seal or pad will be sloped to channel water away from the well, and be deep enough to remain stable during freezing and thawing of the ground.

- The top of the PVC well casing will be marked and surveyed to 0.01 foot, and the elevation will be determined relative to a fixed benchmark or datum.

- The measuring point on all wells will be on the innermost PVC casing.

- Monitoring well construction details will be recorded in the field book and on a construction log.

3.4.3 Monitoring Well Development

- After a minimum of 24 hours after completion, the monitoring wells will be developed by surging and pumping. Pumping methods may include using a centrifugal or peristaltic pump and dedicated polyethylene tubing, using a Waterra positive displacement pump and dedicated polyethylene tubing, or other methods at the discretion of the field geologist.

- Water levels will be measured in each well to the nearest 0.01 foot prior to development.

- The wells will be developed until the water in the well is reasonably free of visible sediment (50 NTU if possible or until pH, temperature, and specific conductivity stabilize). A portable nephelometer will be used to take this measurement.

- Development water will be contained in accordance with methods specified in the procedure for the management of IDW.

Following development, wells will be allowed to recover for at least 14 days before groundwater is purged and sampled. All monitoring well development will be overseen by a field geologist and recorded in the field book.

4.0 Groundwater Sampling Procedures

4.1 Introduction

Groundwater sampling will be conducted on Site and off-Site monitoring well locations. Procedures for obtaining samples of groundwater are described in this section.

4.2 Groundwater Sampling

4.2.1 Suggested Equipment

- Field book
- Project plans
- Personal protective equipment in accordance with the HASP
- Water level indicator
- Disposable polyethylene bailers or low flow sampling pump
- Polypropylene rope
- Temperature, conductivity, pH meters
- Turbidity meter
- Dissolved oxygen meter
- 250-mL glass beaker
- Flow through cell (if low flow sampling pump is used)
- Decontamination supplies
- Waterra pump or other purge pump
- Plastic tubing
- Plastic sheeting
- Photovac PID
- Clear tape, duct tape
- Coolers and ice

- Laboratory sample bottles
- Federal Express labels

4.2.2 Groundwater Sampling Method

4.2.2.1 Purging

- The number and frequency of groundwater samples to be collected and the associated analytical parameters are summarized in Section 3 of the SMP.
- Prior to sampling, the static water level and thickness of any free product will be measured to the nearest 0.01 foot from the surveyed well elevation mark on the top of the PVC casing with a decontaminated oil/water interface probe. NAPL thickness will be determined using a clear bailer or a weighted string. The measurement will be recorded in the field book.
- The probe will be decontaminated according to procedures outlined in the procedures for field equipment decontamination.
- The well will be purged by removing groundwater until field parameters stabilize to within 10% of previous reading; up to 3 well volumes are removed or 1 hour of purging is performed. Purging will be conducted using a low-stress sampling technique such as the USEPA Region 1 Low-Stress sampling guidance.
- If a well goes dry before the required volumes are removed, it will be allowed to recover, purged a second time until dry or the required parameters are met, and sampled when it recovers sufficiently, in accordance with low flow sampling protocol.
- Purge water will be managed and disposed of in accordance with procedures described in the management of IDW.

4.2.2.2 Sampling

- Samples will be collected using dedicated ¼-inch polyethylene tubing and micro purging techniques consistent with low flow sampling protocol.
- Prior to filling the sample bottles, one 250-mL beaker will be filled with water. The temperature, pH, conductivity, oxidation reduction potential, dissolved oxygen, and turbidity will be measured with a pre-calibrated probe and recorded in the field book. If low flow sampling methods are used, these parameters (except turbidity) will be measured within a flow through cell.
- The sample containers will be labeled, placed in a laboratory-supplied cooler and packed on ice (to maintain a temperature of 4ºC). The cooler will be shipped overnight or delivered to the laboratory for analysis.
- Chain-of-custody procedures will be followed as outlined in the QAPP.

Well sampling data will be recorded on groundwater sampling record forms.

5.0 Field Instruments and Calibration

All field analytical equipment will be calibrated immediately prior to each day's use and more frequently if required. The calibration procedures will conform to manufacturer's standard instructions. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. All instrument calibrations will be documented in the project field book and in an instrument calibration log. Records of all instrument calibration will be maintained by the Field Team Leader and will be subject to audit by the Quality Assurance Officer (QAO). Copies of all of the instrument manuals will be maintained on-site by the Field Team Leader. All changes to instrumentation will be noted in the field log book.

The following field instruments will be used during the investigation:

- PID
- pH probe
- Mini-RAM dust meter
- Dissolved oxygen probe
- Specific Conductivity probe
- Temperature probe
- Turbidity meter

Probes used to measure pH, dissolved oxygen, specific conductivity, and temperature are all housed in a single instrument and parameters are measured in a sealed flow through cell.

5.1 Portable Photoionization Analyzer

- The photoionization analyzer will be a Thermo 580B (or equivalent), equipped with a minimum 10.2 or 10.6 eV lamp. The PID is capable of ionizing and detecting compounds with an ionization potential of less than 10.6 eV. This accounts for up to 73% of the volatile organic compounds on the Target Compound List.
- Calibration must be performed at the beginning and end of each day of use with a standard calibration gas having an approximate concentration of 100 parts per million of isobutylene. If the unit experiences abnormal perturbation or erratic readings, additional calibration will be required.
- All calibration data must be recorded in field notebooks and on calibration log sheets to be maintained on-site.
- A battery check must be completed at the beginning and end of each working day.

- All changes to the PID will be noted in the field notes (such as bulb or filter cleaning or replacement).

5.2 pH

- Calibration of the pH meter must be performed at the start of each day of use, and after very high or low readings as required by this plan, according to manufacturer’s instructions.

- National Institute of Standards and Technology (NIST) – traceable standard buffer solutions which bracket the expected pH range will be used. The standards will be pH of 4.0, 7.0, and 10.0 standard units.

- The use of the pH calibration must be used to set the meter to display the value of the standard being checked.

- The calibration data must be recorded on calibration sheets and maintained on-site.

5.3 Dissolved Oxygen

Calibration of the dissolved oxygen meter must be performed at the start of each day of use, after very high or low readings (approaching or outside of the theoretical dissolved oxygen range at a given temperature), and after bubbles or spurious readings are observed.

Calibrate the meter to a prepared standard or other method in accordance with manufacturer’s instructions and note the scale and units on the meter.

5.4 Specific Conductivity and Temperature

- Calibration checks using the conductivity standard must be performed at the start of each day of use, after five to ten readings or after very high or low readings as required by this plan, according to manufacturer’s instructions.

- The portable conductivity meter must be calibrated using a reference solution of 200 ohms/cm on a daily basis. Readings must be within five percent to be acceptable.

- The thermometer of the meter must be calibrated against the field thermometer on a weekly basis.

5.5 Turbidity Meter

The turbidity meter must be checked at the start of each day of use and at the end of the day according to manufacturer’s instructions.

6.0 Sample Documentation

6.1 Chain of Custody

- A Chain-of-Custody (COC) record will accompany the sample containers during selection and preparation at the laboratory, during shipment to the field, and during return shipment to the laboratory.
- The COC will identify each sample container and the analytical parameters for each, and will list the field personnel that collected the samples, the project name and number, the name of the analytical laboratory that will receive the samples, and the method of sample shipment.
- If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample shipment.
- The COC will be completed by field personnel as samples are collected and packed for shipment.
- Erroneous markings will be crossed-out with a single line and initialed by the author.
- The REMARKS space will be used to indicate if the sample is a matrix spike, matrix spike duplicate, or matrix duplicate.
- Trip and field blanks will be listed on separate rows.
- After the samples have been collected and sample information has been listed on the COC form, the method of shipment, the shipping cooler identification number(s), and the shipper air bill number will be entered on the COC.
- Finally, a member of the sampling team will write his/her signature, the date, and time on the first RELINQUISHED BY space. Duplicate copies of each COC must be completed.
- One copy of the COC will be retained by sampling personnel. The other copy and the original will be sealed in a plastic bag and taped inside the lid of the shipping cooler.
- Sample shipments will be refrigerated at 4ºC, typically by packing with ice, to preserve the samples during shipment.
- After the shipping cooler is closed, custody seals provided by the laboratory will be affixed to the latch and across the front and back of the cooler lid, and signed by the person relinquishing the samples to the shipper.
- The seal will be covered with clear tape, and the cooler lid will be secured by wrapping with packing tape.
- The cooler will be relinquished by the shipper, typically an overnight carrier.

- The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the samples will not be analyzed.
- The samples must be delivered to the laboratory within 48 hours of collection.

6.2 Sample Documentation

The field team leader will retain a copy of the COC, and, in addition, the field team leader will ensure that the following information about each sample is recorded in the field book:

- Sample identifier
- Identification of sampled media (*e.g.* soil, sediment, groundwater)
- Sample location with respect to a known reference point
- Physical description of sample location
- Field measurements (*e.g.* pH, temperature, conductivity, and water levels)
- Date and time of collection
- Sample collection method
- Volume of groundwater purged before sampling
- Number of sample containers
- Analytical parameters
- Preservatives used
- Shipping information:
  - Dates and method of sample shipment
  - Chain-of-Custody Record numbers
  - Federal Express Air Bill numbers

Sample recipient (*e.g.* laboratory name)

National Grid Standard Operating Procedures

Field Descriptions of Samples for Former Manufactured Gas Plant (MGP) Sites

Soil Sample Descriptions

It is important that descriptive qualifiers are consistently used to characterize degree and nature of contaminant impacts and visual-manual soil classification. The following presents some examples of descriptive qualifiers.

Soil Logging

- All soils are to be logged using the **Unified Soil Classification** (ASTM D 2488 field descriptions)
- **PID or FID** used to screen all soil samples (Jar Headspace method) – maximum readings should be recorded and included on the logs. PID/FID to be calibrated daily at a minimum
- **Moisture terms** are: Dry, Moist, and Wet
- **Color terms** - use geotechnical color charts - colors may be combined: e.g. red-brown. Color terms should be used to describe the "natural color" of the sample as opposed to staining caused by contamination (see below)
- **Log of each sample interval** should be prepared as follows:
  - **[Coarse Grained Example]** NARROWLY GRADED SAND (SP); mostly fine sand; <5% fines; red-brown, moist, environmental/depositional/geologic descriptions.
  - **[Fine Grained Example]** SANDY SILT (ML); heterogeneous till structure, nonplastic, ~30% fine to coarse, subangular sand; ~10% subangular fine gravel, max. size ~ 10 mm; brown; environmental/depositional/geologic descriptions.
- **Representativeness** – Soil logs should include particular notes if the field representative believes that there is a possibility the soil sample being described is not representative of the interval sampled.
- **Intervals for Description** – if using a 2' (split spoon) or 4' (Macro-core) long sampler – the field description should not necessarily be for the entire sample interval. It is important to look for, identify, and describe small-scale units and changes within each sample interval.

Description Of Contaminants

<u>Visible Contamination Descriptors</u>

- **Sheen** - iridescent petroleum-like sheen. Not to be used to describe a "bacterial sheen" which can be distinguished by its tendency to break up on the water surface at angles whereas petroleum sheen will be continuous and will not break up. A field test for sheen is to put a soil sample in a jar of water and shake the sample (jar shake test) , then observe the presence/absence of sheen on the surface of the water in the jar.
- **Stained** - used w/ color (i.e. black or brown stained) to indicate that the soil matrix is stained a color other than the natural (unimpacted) color of the soil.
- **Coated** - soil grains are coated with tar/free product – there is not sufficient free-phase material present to saturate the pore spaces.

- **Blebs** - observed discrete sphericals of tar/free product - but for the most part the soil matrix was not visibly contaminated or saturated. Typically this is residual product.
- **Saturated** - the entirety of the pore space for a sample is saturated with the tar/free product. Care should be taken to ensure that you're not observing water saturating the pore spaces if you use this term. Depending on viscosity, tar/free-phase saturated materials may freely drain from a soil sample.
- **Oil**. Used to characterize free and/or residual product that exhibits a distinct fuel oil or diesel fuel like odor; distinctly different from MGP-related odors/impacts.
- **Tar**. Used to describe free and/or residual product that exhibits a distinct "coal tar" type odor (e.g. naphthalene-like odor). Colors of product can be brown, black, reddish-brown, or gold.
- **Solid Tar**. Used to describe product that is solid or semi-solid phase. The magnitude of the observed solid tar should be described (e.g. discrete granules or a solid layer).
- **Purifier Material**. Purifier material is commonly brown/rust or blue/green wood chips or granular material. It is typically associated with a distinctive sulfur-like odor. Other colors may be present.

Olfactory Descriptors

Use terms such as " tar-like odor" or "naphthalene-like odor" or "fuel oil-like odor" that provide a qualitative description (opinion) as to the possible source of the odor.

Use modifiers such as strong, moderate, faint to indicate intensity of the observed odor.

DNAPL/LNAPL

A jar shake test should be performed to identify and determine whether observed tar/free-phase product is either denser or lighter than water. In addition, MGP residues can include both light and dense phases - this test can help determine if both light and dense phase materials are present at a particular location.

Viscosity of Free-Phase Product

If free-phase product/tar is present a qualitative description of viscosity should be made. Descriptors such as:

- Highly viscous (e.g. taffy-like)
- Viscous (e.g. No. 6 fuel oil or bunker crude like)
- Low viscosity (e.g. No. 2 fuel oil like)

Groundwater Sampling Observations

Any observations of sheen, blebs, free-phase product/tar, staining or coating of the sampling equipment, odor, etc. that made during sampling of groundwater are to be included in the groundwater sample collection log.

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

Executive Summary

This document presents standard operating procedures (SOPs) for conducting soil vapor intrusion evaluations at National Grid's manufactured gas plant (MGP) sites in New York State. These procedures have been developed on behalf of National Grid in cooperation with the New York State Departments of Health (NYSDOH) and Environmental Conservation (NYSDEC).

These SOPs are based on a current understanding of soil vapor intrusion, existing site-specific conditions at National Grid's MGP sites in New York State, and the current regulatory climate in the state. They have been developed in consideration of NYSDOH's Draft *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH, 2006~~5~~), NYSDEC and NYSDOH input, ~~standards~~ guidance documents issued by the United States Environmental Protection Agency (USEPA), O'Brien & Gere's and Haley & Aldrich's indoor air and soil vapor intrusion evaluation experience and expertise, National Grid's experience in New York State and New England, and consultation with other New York utility companies. As such, this set of SOPs may be updated or modified as the understanding of vapor intrusion continues to evolve, and as guidance documents and regulations are revised and updated. Further, these SOPs may be modified based on site-specific conditions.

Although the regulatory community generally considers soil vapor intrusion of non-chlorinated constituents ~~a~~ "… less of a ~~ower~~ priority in the evaluation of past sites …" (NYSDEC 2006), National Grid is working with the NYSDOH and NYSDEC to identify MGP sites where evaluation of the potential vapor intrusion pathway is warranted. For these sites, a soil vapor intrusion evaluation should be conducted during the Remedial Investigation (RI) phase so it can be adequately addressed in the Feasibility Study (FS) and integrated in the selection of a comprehensive site remedy.

SOP Objectives

While the NYSDOH guidance document (2006~~5~~) identified above provides general guidance for evaluating soil vapor intrusion for a wide range of sites, this set of SOPs complements that guidance document by focusing on specific procedures for evaluating soil vapor intrusion at MGP sites. Specifically, the primary objectives of these SOPs are to:

1. Establish consistent protocols for collecting and analyzing samples and evaluating data at National Grid's MGP sites in New York State; and

2. Establish uniform work plan and reporting elements for each applicable MGP site, thus streamlining work plan and report development and review.

Overview of Soil Vapor Intrusion Evaluations

The goal of a soil vapor intrusion evaluation is to assess whether there are complete exposure pathways of soil vapor to indoor air. A complete exposure pathway exists if vapors from MGP-related constituents are migrating through various pathways into nearby buildings at concentrations that may result in an unacceptable human health risk. If a complete exposure pathway does not exist, then further assessment of soil vapor intrusion is not required, unless there is a relevant change in site conditions, or as noted above, the understanding of soil vapor intrusion evolves and guidance documents and regulations are revised and updated. Because soil vapor intrusion requires a complete pathway to exist between the source of the vapors and the receptor, a phased approach can be applied to establish if a complete pathway exists. This phased approach to soil vapor intrusion evaluations, as it applies to National Grid's MGP sites in New York State, includes:

Phase 1 – Documentation Review

Phase 2 – Soil Vapor Sampling

Phase 3 – Sub-Slab Sampling

Phase 4 – Indoor Air Sampling

Please note that not all of these phases may need to be conducted. Depending upon available site-specific data, any one of these phases may be bypassed. For instance, if Phase 1 reveals a high potential for impacted buildings, Phase 2 may be bypassed and the evaluation may proceed directly from Phase 1 to Phase 3 or 4. In addition, Phases 3 and 4 may be conducted simultaneously if site conditions dictate.

The remainder of this document describes the various procedures to review site documentation, conduct sampling, and evaluate sampling data, organized into the four phases outlined above. To facilitate the steps required for each phase, process flow diagrams for all four phases are provided (Figures 1 through 4).

1. Phase 1. Documentation Review

1.1. Objective

The first phase of the soil vapor intrusion evaluation for an MGP site involves reviewing available site documentation, and supplementing that data as necessary, to identify potential vapor receptors with respect to MGP-impacted soil and groundwater and to identify preferential pathways by which vapors would migrate to those receptors.

The steps of Phase 1 include:

Step 1. Data Compilation and Review

Step 2. Data Evaluation

Step 3. Data Reporting

Figure 1 illustrates a process flow diagram for Phase 1. If, during the Phase 1 documentation review, the data suggest that potential receptors are sufficiently close to potential MGP-impacted soil or groundwater, then the evaluation should proceed to Phase 2. This section discusses the Phase 1 steps in more detail and provides guidance on whether to proceed to Phase 2. Please note that the following steps may be modified based on site-specific conditions.

1.2. Step 1. Data Compilation and Review

Step 1 involves compiling and reviewing site-specific data to identify potential vapor receptors, MGP-impacted soil or groundwater, and preferential vapor pathways, as defined in the following subsections. Documentation to be compiled and reviewed includes data collected during the Site Characterization (SC) and/or RI phase, as well as other data/documents generated for the site. For some MGP sites, additional data may be needed to complete this first step, and a site visit may be necessary to collect more data.

1.2.1. Identify Potential Vapor Receptors

During the review of site-specific data, potential vapor receptors must be identified and located. Potential receptors are occupied or unoccupied buildings (which are anticipated to be reoccupied in the near future) to which soil vapors could migrate; however, potential receptors do not include:

- Buildings that are occupied infrequently and are not intended for long-term occupancy (such as storage garages and other storage buildings);
- Active and inactive non-residential buildings where large quantities of petroleum products are~~/were~~ used and/or stored (such as gas stations, auto repair shops, and vehicle staging buildings); and

- Unoccupied buildings owned by National Grid.

Vacant properties are not considered as potential vapor receptors. If no potential vapor receptors are found during this step, then there is no need to continue with the evaluation.

1.2.2. Identify Impacted Groundwater and Soil

During this first step, MGP-impacted groundwater and soil must also be identified. After compiling the necessary site-specific data, that information should be reviewed to determine:

- Depth to groundwater;
- Direction of groundwater flow;
- Location, depth, extent, and concentration of potential MGP-related constituents in unsaturated soil and groundwater;
- Location, depth, and extent of NAPL; and
- Presence of an overlying water bearing zone that does not have MGP impacts and provides an effective barrier to vapor migration.

1.2.3. Identify Preferential Vapor Pathways

During the review of site-specific documentation, preferential vapor pathways (if any) must be identified. A variety of site features can act as preferential pathways for vapor migration, including:

- Common anthropogenic features such as buried utilities and foundations that are backfilled with gravel or other porous fill. Because soil vapor can migrate horizontally and travel further in these features than in the surrounding native soil, vapors may enter buildings that are in contact with these features.
- Natural, buried drainage channels, which can also act as preferential vapor pathways and must be noted if present or suspected.

Most likely, these features would have been identified during previous investigation activities. Only preferential vapor pathways that overlay or intersect impacted groundwater or soil and abut or lay below the foundation of potential receptors, should be considered in the evaluation. However, features that are in saturated soils (*e.g.*, below the water table) do not act as preferential vapor pathways, and should not be evaluated further unless they are found to be transmitting impacted groundwater.

1.3. Step 2. Data Evaluation

The second step of Phase 1 involves evaluating the site-specific data to determine if one or both of the following conditions exist:

Condition 1. MGP-related impacts exist above screening levels in groundwater or detectable levels in unsaturated soil located within 100 feet[1] of a potential receptor.

Condition 2. A potential preferential vapor pathway exists between potential receptors and areas with MGP-related soil or groundwater impacts.

To assess the distance to a receptor (Condition 1), the horizontal distance from the nearest detectable concentration of MGP-impacted groundwater or soil must be determined. In the case of a non-impacted water table or saturated soil layers overlying impacted groundwater or soil, the upper water table serves as a vapor barrier; therefore, these areas should not be considered in this evaluation. It should be noted, that other barriers may also exist and inhibit vapor migration, such as subsurface structures, low-permeable soils, surface water bodies, and other features. These features and their influence on vapor migration need to be evaluated on a site-specific basis.

If one or both of the above conditions exist, then the following screening check~~s~~ must be conducted:

- Compare the impacted groundwater concentrations with the screening levels presented in Table 1. If the concentrations are equal to or greater than the screening levels, then the evaluation should proceed to Phase 2. If the concentrations are less than the screening levels, then further evaluation is not warranted at this time.[1] However, if site conditions change (e.g., soil and/or groundwater impacts increase in concentration or there is a change in property use), then this step must be revisited to confirm if Condition 1 and/or Condition 2 apply and additional investigation is necessary.

~~? Confirm the location of the impacted soil in relation to potential receptors if the site has soil impacts but no groundwater impacts. If the impacted soil lies directly below any receptor, then the evaluation must proceed to Phase 2. If the impacted soil does not lie below any receptors, then further evaluation is not warranted at this time.~~

1.4. Step 3. Data Reporting

Upon completion of Steps 1 and 2, a Phase 1 Summary Report must be prepared to document the site conditions and conclusions from this phase. The report should include pertinent MGP-related data/data trends (e.g., from ~~the most~~ recent rounds of groundwater sampling) or summarize the data/data trends and reference a publicly available document(s) which includes the data. The Phase I Summary Report should also include a site map that shows the following:

- Locations of potential vapor receptors;
- Description of the existing land use (commercial, industrial, residential) and type of commercial or industrial activities at potential vapor receptors;
- Locations of explorations and environmental sampling, such as groundwater monitoring wells, soil boring, and test pits;
- Areas of impacted groundwater and soil;

[1] Guidance from the USEPA recommends that buildings within 100 feet of known soil or groundwater contaminants be evaluated for potential vapor intrusion (USEPA, 2002).

- Soil type;
- Locations of preferential vapor pathways and/or vapor barriers; and
- Distances between impacted groundwater and soil to receptors.

If no further evaluation is warranted, then the Phase 1 Summary Report must be submitted to NYSDEC and NYSDOH stating that no further evaluation is warranted at this time, and include the basis and supporting documentation for this recommendation. If further evaluation is warranted, then the documentation assembled for this report must be included in the Phase 2 ~~Summary Report~~Work Plan (refer to Section 2).

2. Phase 2. Soil Vapor Sampling

2.1. Objective

Phase 2 involves collecting samples of the soil vapor to assess if vapors exist near potential receptors (which are identified in Phase 1), and at concentrations that would warrant further evaluation. The steps of this phase consist of:

Step 1. Work Plan Development

Step 2. Sampling and Analysis

Step 3. Data Evaluation

Step 4. Data Reporting

Figure 2 illustrates a process flow diagram for Phase 2, and the remainder of this section discusses these steps in more detail. Please note that the following steps may be modified based on site-specific conditions.

2.2. Step 1. Work Plan Development

Step 1 consists of developing a Sampling and Analysis Work Plan that will include:

- Sampling locations (which should be depicted on a site map included with the work plan), quantities, and rationale ;
- Sampling depths and rationale;
- Sampling and analysis methods*;
- Target analytes and reporting limits*;
- Quality assurance/quality control (QA/QC) program*;
- Data evaluation criteria*; and
- Data reporting.

* Details for these items do not need to be included in the work plan. Instead, refer to the details in this SOP.

Any deviations from these items listed above must be called out and briefly explained in the work plan. The work plan must be submitted to the NYSDEC and NYSDOH for review and approval. The work plan items are discussed below along with the remaining steps of Phase 2.

2.3. Step 2. Sampling and Analysis

This step involves implementing the Sampling and Analysis Work Plan that was developed during Step 1. Specifically, this section discusses the rationale for selecting site-specific sampling locations, quantities, and depths, and provides some details on the sampling and analytical methods, target analytes and reporting limits, and QA/QC procedures.

2.3.1. Determine Sample Locations, Quantities, and Rationale

Step 2 includes collecting soil vapor samples to assess the presence (if any) and magnitude of MGP-related constituents in soil vapor at the potential vapor receptors identified during Phase 1. This sampling effort could include the following:

- Sampling Near Buildings – Soil vapor samples would be collected near buildings (potential receptors) identified in Step 1 to assess if MGP-related constituents are present in soil vapor near the building. If this effort involves more than one building, sampling should start at a point nearest the contaminant source and work outward until soil vapor concentrations no longer warrant additional sampling.

Sampling locations should be as close as practical to the building without being in the backfill material surrounding the building's foundation. The number of samples to be collected depends on the anticipated degree of variability of soil vapor concentrations surrounding the building. For instance, buildings that are above or close to a relatively high vapor source may have variable soil vapor concentrations surrounding the building, higher nearer the source and lower farther from the source. In this instance, additional sampling may be required to obtain data that are representative. Such sampling may include collection of samples along one or more sides of the building to assess soil vapor and concentration gradients. Alternatively, buildings that are at some distance from a vapor source or are located above groundwater containing similar concentrations may have equivalent soil vapor concentrations along their foundations. In this second instance, less sampling would be required, such as the collection of one or more samples along the building side nearest the vapor source.

- Sub-Slab Representation – Some surface features may act as vapor caps, by capping the soil vapor and preventing or reducing its release rate to atmosphere. Vapor concentrations tend to equilibrate under these caps and spread out horizontally until they reach the edge of the cap where they release to the atmosphere. Soil vapor sample results can represent sub-slab concentrations when:

    - Soil vapor samples are collected under surface features that are contiguous with the building's foundation;
    - The surface feature is in good condition, without major cracks or openings;
    - The foundation is slab-on-grade;
    - Impacted soil is not located directly under the foundation; and
    - Impacted groundwater concentrations under the foundation are relatively uniform.

When these conditions are met, soil vapor sampling locations should be selected near the building's foundation, which may also include a sample collected on one or more sides of the building to assess whether soil vapor surrounding the building is consistent. These surface features should be shown on the site map presented in the Sampling and Analysis Work Plan, and the condition of the surfaces (e.g., broken pavement or concrete slab without cracks) should be noted.

- Ambient Air Sampling — In conjunction with the soil vapor sampling near buildings, at least one ambient air sample should be collected at breathing zone height above ground and immediately upwind of each building. If there are suspected outdoor sources in close proximity to the building, then additional ambient samples should be collected upwind and downwind of the local sources. The purpose of the ambient air sample collected along with soil vapor samples is to assess the site-specific background. This data may be used in data evaluation or planning for future potential sampling events (Steps 3 and 4).

2.3.2. Determine Sample Depths

Soil vapor samples should be collected from depths that are equivalent to the depth of the building's foundation slab, if possible. This guideline assumes that the sampling objective is to assess the potential soil vapor concentrations beneath an adjacent building. However, the sampling depth may be modified if the sampling objective is different. Although site-specific information may vary, in the case of slab-on-grade foundations, this depth would most likely be approximately 4 feet below grade. For crawl spaces and basements, samples depths would typically be 5 and 8 feet, respectively.

Other considerations for determining the appropriate soil vapor sample depth include the following:

- Sample depths of 3 feet or more below grade may help minimize potential entrainment of ambient air from the surface into the sample. However, ~~a~~A tracer gas should be used during sampling at any depth to assess whether entrainment of ambient air is not occurring (see Section 2.3.3).

- Selection of target sample depths should also consider the presence of any confining or saturated units in the subsurface. Because soil vapor sampling is not recommended in soils that have become saturated from heavy rain, sampling events should be postponed after a heavy rainfall until the soil has time to drain. Selected soil vapor sample depths should not target the capillary fringe. For the purposes of this document, collection of samples from less than 1 foot above the water table is not recommended.

2.3.3. Perform Sampling and Analysis

Detailed soil vapor and ambient air sampling procedures are provided in Appendices A and B, respectively. These procedures can be referenced in the Sampling and Analysis Work Plan. Important sampling and analysis considerations include the following:

- Sampling durations can range from 1 to 8 hours, depending on the practicality of site access.

- Purging and s~~S~~ampling rates must not exceed 0.2 liter per minute.

- Soil vapor samples must be analyzed using USEPA Compendium Method TO-15.

Care should be taken when installing soil vapor probes with direct push or Geoprobe-type drill rigs. The sand used as filter pack or tubing used by some of these contractors is suspected to contaminate the installation with iso-octane and other trimethylpentane isomers. The filter pack material should be glass beads or clean sand that has been confirmed to be free of volatile organic compounds through a laboratory analysis. It is important that the tubing is food grade.

2.3.4. Confirm Target Analytes and Reporting Limits

Target analytes are provided in Table 2, including analytes for which Method TO-15 has been validated and additional analytes that the laboratory must report for both soil vapor and ambient air samples. These additional analytes may assist with identifying MGP-related vapors and are identified in the NYSDOH's guidance document (2006~~5~~) as indicator compounds for MGP sites. These additional analytes may be analyzed as tentatively identified compounds (TICs), which assumes semi-quantitation (using the calibration curve of an analyte with similar detector response).

Table 2 also provides reporting limits for the Method TO-15 list of parameters. The actual reporting limits of field samples may be higher due to sample dilution by the laboratory necessary to properly quantify compounds with elevated concentrations (above the instrument's calibration range) and other factors. In some cases, the elevated compounds will not be related to MGP materials. An accurate quantitation of these compounds is not as important as obtaining appropriate reporting limits for potential MGP-related constituents, if possible. Therefore, the laboratory should be instructed to contact National Grid if sample dilution is warranted and not ~~prior~~ to dilute~~ing~~ samples unless approved by National Grid~~to obtain further guidance~~.

A smaller target list may be appropriate if previous sampling was conducted using the list in Table 2. Once previous sample results establish a site-specific list of analytes (often referred to as Compounds of Concern (COCs)), National Grid may request the laboratory to report results of just the COCs for subsequent sampling.

A larger list of target analytes may be appropriate in some instances where there is a probable subsurface contamination from petroleum-based sources other than MGP residuals. The larger list will assist in a forensic analysis that compares the sampling results to typical chemical fingerprints of various other petroleum sources (gasoline, diesel, etc). If a forensic analysis is warranted, a sample from of a known MGP residual soil vapor may also need to be collected. If other petroleum-based sources are suspected in the vicinity of the proposed sampling, assistance should be sought to evaluate and setup such analyses, as this document does not provide all the details on forensic analyses needed for complete guidance.

2.3.5. Monitor QA/QC Program

As summarized in Table 3, QA/QC samples may include one blind duplicate soil vapor sample for every 10 field samples. Other details of the QA/QC program include the following:

- The relative percent difference (RPD) between the duplicate sample and the co-located field sample must be less than 30% for results that are greater than five times the reporting limit. If this RPD criterion is exceeded, the results may lack adequate precision and may need to be qualified accordingly. If duplicate pair results are less than five times the reporting limit, RPD calculations are not applicable.

- Trip or equipment blanks are not necessary.

- Prior to use, sample canisters must be pre-certified by the laboratory as clean. Batch certification (one canister analyzed per 10) is adequate for soil vapor and ambient air sampling.

- Canisters must be sampled within 15 days of receipt from the laboratory. Canisters exceeding this time limit should be returned to the laboratory unused.

- Sampled canisters must be analyzed within 30 days of sample collection. Samples analyzed after this date shall have its results flagged during the validation process as "estimated."

- Analytical QA/QC, results, and documentation must meet the requirements of NYSDEC Category B deliverables. The analytical data must be reviewed and a Data Usability Summary Report (DUSR) must be generated.

2.4. Step 3. Data Evaluation

Step 3 involves evaluating the data collected during the sampling and analysis program, and includes the following specific tasks:

- Assess whether the constituents detected in the vapors (if any) are MGP-related;

- Compare the sample results to screening criteria of indoor air background and health risk levels; and

- Determine follow-on actions (e.g., continue the investigation, terminate the investigation, or collect more soil vapor data).

Each of these tasks is discussed in more detail below.

2.4.1. Assess Whether Vapor Constituents are MGP-Related

Vapor constituents that may result from MGP materials are also common to household and consumer products. As such, results for vapor constituents which may be related to MGP materials should be assessed.

Potential MGP-related constituents include the following:

- Certain volatile aromatic hydrocarbons such as benzene, toluene, ethylbenzene, and xylene (BTEX).

- Certain semivolatile organic compounds (SVOCs) such as naphthalenes, polycyclic aromatic hydrocarbons (PAHs), thiopenes, and some phenolic compounds.

- Additional volatile constituents associated with MGP sites where the carbureted water gas (CWG) process was employed may also include certain C10 through C19 compounds such as alkyl benzenes and normal alkanes.

The presence of the constituents listed above does not necessarily indicate that the vapors are MGP-related. For example, BTEX compounds are common constituents of gasoline. Table 5 lists some of the types of commonly found non-MGP-related sources and their vapor constituents that are similar to MGP-related constituents.

An analysis must be conducted to evaluate the soil vapor data set and determine the source(s) of the soil vapor impacts. The analysis will evaluate the soil vapor data with respect to:

- Potential MGP and non-MGP vapor constituents (Tables 4 and 5);
- Existing groundwater and soil data; and
- Historic and existing activities at and adjacent to the site.

The conclusions of the analysis will be included in the Phase 2 Summary Report (see Section 2.5).

2.4.2. Compare Sample Results to Screening Criteria

Soil vapor results must be compared to screening criteria which assume that the resulting indoor air concentrations are equal or less than the one-tenth of the soil vapor concentrations. Indoor air concentrations attributable to vapor intrusion are lower, by orders of magnitude, than soil vapor concentrations due to the attenuation caused by the slab and due to the dilution of the compound into a large volume of indoor air. USEPA guidance recommends an attenuation factor[2] of 0.1 be used to conservatively screen shallow soil vapor concentrations (USEPA, 2002). Actual attenuation factors have been found to be as low as 10^{-5}. National Grid has elected to conservatively use the 0.1 attenuation factor to screen soil vapor data.

Soil vapor sample results should be divided by 10 and the resultants compared to two types of criteria: 1) background concentrations; and 2) health risk concentrations. Background concentrations are those indoor air concentrations that already exist or are likely to exist without the influence of vapor intrusion. Two sources of background concentrations will be used: 1) site-specific ambient air; and 2) typical indoor air concentrations published by NYSDOH. The highest concentration for a given compound from these two sources of background concentrations will be used. In urban settings, ambient air concentrations may be higher than typical indoor concentrations. Table 6 presents the typical indoor air concentrations for MGP-related constituents.

USEPA's guidance recommends target indoor air concentrations for some MGP-related constituents (USEPA, 2002). The guidance provides three levels of health risk for potential carcinogenic compounds representing 10^{-4}, 10^{-5}, and 10^{-6} cancer risks. The guidance does not recommend which levels to use for various exposure settings. However, USEPA often uses the 10^{-5} risk level when evaluating health risk under the environmental indicators program for residential exposures. National Grid has elected to also use the 10^{-5} risk level for residential exposures and the 10^{-4} risk level for non-residential exposures. Furthermore, for those non-residential properties where petroleum-related constituents are routinely stored or used, alternate exposure numbers may be appropriate (e.g., Occupational Safety and Health Administration [OSHA] permissible exposure limits [PELs]). Table 6 provides the USEPA health risk levels for potential MGP-related constituents.

[2] Attenuation factor = indoor air concentration / soil vapor concentration

2.4.3. Determine Follow-On Actions

After sample results are compared to appropriate screening levels, follow-on actions must be determined. Three data evaluation scenarios and associated actions include:

Scenario 1: All MGP-related constituents in soil vapor are less than 10 times the highest criteria.
Next Action: No further investigation is warranted at this time.

Scenario 2: At least one MGP-related constituent in soil vapor is greater than 10 times the highest criteria. Soil vapor does not represent sub-slab vapor.
Next Action: Proceed to Phase 3 and conduct soil vapor sampling of adjacent buildings, if any.

Scenario 3: At least one MGP-related constituent in soil vapor is greater than 10 times the highest criteria. Soil vapor does represent sub-slab vapor.
Next Action: Proceed to Phase 4 or directly to mitigation. Conduct soil vapor sampling of adjacent buildings, if any.

2.5. Step 4. Data Reporting

The final step of Phase 2 involves transmitting data to the State Agencies (which include NYSDEC and NYSDOH) and preparing a Phase 2 Summary Report.

Within 48 hours after receiving data from the laboratory and before data are validated, analytical reports ~~data tables~~ and a figure showing sampling locations must be prepared and transmitted to the State Agencies. Any data summaries should be clearly labeled as preliminary. Receipt of data from the laboratory means the initial receipt of data and not the complete data package that is used for data validation. After validation is complete, any ~~additional~~ changes to the data must be submitted to the Agencies.

After data validation, a ~~complete~~ Phase 2 Summary Report must be submitted to the State Agencies and include the following:

- Phase 1 summary (see Section 1.4);
- Tabulated s~~S~~ummary of validated results of detected compounds;
- Analytical reports showing results of all detected and non-detected compounds;
- Site plan showing sampling locations, impacted groundwater and soil locations, potential vapor receptors, preferential vapor pathways, surface features, and hydraulic vapor barriers;
- Overview of sampling and analysis activities;
- Results of data evaluation; and
- Recommendations for follow-on actions, if appropriate.

The Phase 2 Summary Report will include an evaluation sufficient to conclude that either no further evaluation is warranted at this time or that the evaluation should proceed to Phase 3 or 4.

Article 27, Title 24 of the NYS Environmental Conservation Law (N Y ECL 27-2403(1)) requires any responsible party to provide vapor intrusion test results to the owner of the property that was tested within 30 days of data validation. The date of the finalized DUSR (validated data), discussed in Section 2.3.5, will commence the 30-day period. Results should be submitted in a letter to the property owner from National Grid that presents a table of results showing only detected compounds, an attachment of the laboratory report showing results of all analyzed compounds, and a figure showing locations from where samples were taken. The letter should also provide an interpretation of the results with respect to any follow-on actions based on input from the State Agencies. In order to accommodate input from the State Agencies, the draft letter should be submitted to the State for review at the beginning of or just prior to the start of the 30-day reporting period.

3. Phase 3. Sub-Slab Sampling

3.1. Objective

Phase 3 involves sub-slab sampling in buildings to assess if vapor from MGP-impacted groundwater and/or soil is present under the slab at such a magnitude that it could potentially intrude into the indoor air. The steps of this phase include:

Step 1. Building Survey and Chemical Inventory

Step 2. Work Plan Development

Step 3. Sampling and Analysis

Step 4. Data Evaluation

Step 5. Data Reporting

Figure 3 illustrates a process flow diagram for Phase 3. Each of the steps listed above is discussed in more detail below. Please note that the following steps may be modified based on site-specific conditions.

3.2. Step 1. Building Survey and Chemical Inventory

For Phase 3 of the evaluation, the first step is to conduct a building survey and chemical inventory to compile the following information:

- Ownership, contact information and address;
- Tenant name(s) and contact information;
- Type of foundation (basement, crawlspace or slab-on-grade);
- Condition of the slab;
- Sub-slab sample location(s);
- Indoor air pressure differential (i.e., negative or positive with respect to outdoor air pressure); and
- Indoor air sources that may contain the same compounds as MGP-related volatile constituents.

The NYSDOH Indoor Air Quality Questionnaire and Building Inventory Field Form (Appendix C) must be completed while conducting the building survey and chemical inventory. The purpose of the chemical inventory at this step is to assess potential indoor air sources in the event that indoor air sampling (Step 4) is required. When selecting the sampling locations, Dig Safely New York will be called and any sub-slab utilities must be identified and, if possible, reviewed with the property owner to avoid potential damage/injury when drilling.

3.3. Step 2. Work Plan Development

The second step is to develop a Sampling and Analysis Work Plan that will include:

- Building survey and chemical inventory findings;
- Building foundation type (i.e., full basement, crawlspaces, slab-on grade);
- Building interior foundations (due to additions, different foundation elevations, etc.)
- Sampling locations and quantities;
- Sampling and analysis methods*;
- Target analytes and reporting limits*;
- QA/QC*;
- Data evaluation criteria*; and
- Data reporting.

* Do not discuss these items in detail in the work plan. Instead, refer to the details in this SOP.

Any deviations from these items listed above must be called out and briefly explained in the work plan. The remaining work plan items are discussed below. The Sampling and Analysis Work Plan should be submitted to NYSDEC and NYSDOH for review and approval prior to implementation.

3.4. Step 3. Sampling and Analysis

This step involves sampling and analysis to implement the work plan that was developed during Step 2. Specifically, this section discusses the rationale for selecting sampling locations, quantities, and depths, and provides some details on the sampling and analytical methods, target analytes and reporting limits, and QA/QC procedures.

3.4.1. Determine Sample Locations and Quantities

Sub-slab samples must be collected directly beneath the floor of the lowest level of the building. These samples should be collected near the center of the slab and away from slab openings (sumps, drains) and major cracks.

For residential buildings, one sample is usually sufficient. However, if the building is large or contains multiple additions and/or multiple foundation depths, more than one sample should be collected. If a building is directly above a known source area, multiple sub-slab locations should be sampled to evaluate the soil vapor concentration gradient.

Ambient air sampling is not necessary unless ambient air concentrations are expected to have changed since the soil vapor sampling. As stated in Section 2.3.1, the purpose of the ambient air sampling is to establish site-specific background.

3.4.2. Perform Sampling and Analysis

Detailed sub-slab sampling procedures are provided in Appendix D. These procedures do not need to be reiterated in the Sampling and Analysis Work Plan. Important sampling and analysis considerations include the following:

- Sampling durations can range from 1 to 24 hours, depending on the practicality of site access.
- Sampling rate should not exceed 0.2 liter per minute.
- Soil vapor samples must be analyzed using USEPA Compendium Method TO-15.

3.4.3. Confirm Target Analytes and Reporting Limits

The same target analytes and reporting limits discussed above in Section 2.3.4 for soil vapor sampling should be used for sub-slab sampling. However, a smaller target list may be appropriate if previous sampling was conducted using the list in Table 2. Once previous sample results establish a site-specific list of analytes (often referred to as Compounds of Concern (COCs)), National Grid may request the laboratory to report results of just the COCs for subsequent sampling.

In addition, forensic analyses also discussed in Section 2.3.4 may be an option for sub-slab sampling.

3.4.4. Monitor QA/QC Program

The same QA/QC components discussed above in Section 2.3.5 for soil vapor sampling should be used for sub-slab sampling.

3.5. Step 4. Data Evaluation

Step 4 of this phase includes the following data evaluation tasks:

- Assess whether the constituents detected in the vapors (if any) are MGP-related;
- Compare the sample results to screening criteria of indoor air background and health risk levels; and
- Determine follow-on actions (e.g., continue the investigation, terminate the investigation, or collect additional sub-slab data).

Refer to Section 2.4 for a discussion of MGP-related vapor constituents and screening criteria. After sample results are compared to appropriate screening levels, follow-on actions must be determined. Two data evaluation scenarios and associated actions include:

Scenario 1: All MGP constituents in sub-slab vapor are less than 10 times the highest criteria.
Next Action: No further investigation is warranted at this time.

Scenario 2: At least one MGP constituent in sub-slab vapor is greater than 10 times the highest criteria.
Next Action: Proceed to Phase 4 or directly to mitigation.

3.6. Step 5. Data Reporting

The final step of Phase 3 involves transmitting the sub-slab sampling data to the State Agencies and preparing a Phase 3 Summary Report. Within 48 hours after receiving data from the laboratory and before data are validated, ~~data tables~~analytical reports and a figure showing sampling~~potential receptor~~ locations must be prepared and transmitted to the State Agencies. Any data summaries should be clearly labeled as preliminary. Receipt of data from the laboratory means the initial receipt of data and not the complete data package that is used for data validation. After validation is complete, any ~~additional~~ changes to the data must be submitted to the Agencies.

Following data validation, a ~~complete~~ Phase 3 Summary Report must be submitted to the State Agencies and include:

- Tabulated summary of validated results of detected compounds;
- Analytical reports showing results of all detected and non-detected compounds;

~~? Summary of validated results;~~

- Site plan showing sampling locations, impacted groundwater and soil locations, potential vapor receptors, preferential vapor pathways, surface features, and hydraulic vapor barriers;
- Overview of sampling and analysis activities;
- Results of data evaluation; and
- Recommendations for follow-on actions, if appropriate.

As described in Section 2.5, the results of samples collected from property not owned by National Grid must be provided to the property owner within 30 days of data validation. See Section 2.5 for more detail.

4. Phase 4. Indoor Air Sampling

4.1. Objective

Phase 4 involves indoor air sampling in buildings identified in Phases 2 and/or 3 to assess if sub-slab vapor is intruding into the indoor space at such a magnitude that it has the potential to cause a health risk. The steps of this phase include:

Step 1. Building Survey and Chemical Inventory

Step 2. Work Plan Development

Step 3. Sampling and Analysis

Step 4. Data Evaluation

Step 5. Data Reporting

Figure 4 illustrates a process flow diagram for Phase 4. Each of these steps is discussed in more detail below. Please note that the following steps may be modified based on site-specific conditions.

4.2. Step 1. Building Survey and Chemical Inventory

If not already completed as part of Phase 3, a site visit to survey the building and inventory indoor chemicals must be conducted (or reconducted as appropriate). The same procedures discussed above in Section 3.2 must be followed. However, some additional tasks for the indoor air sampling program include the following:

- Complete a more detailed chemical survey. Potential sources of VOCs must be identified and photographed. Labels of indoor products should be reviewed for VOC contents; any findings must be recorded on the NYSDOH Indoor Air Quality Questionnaire and Building Inventory Field Form (Appendix C).

- Establish whether the building has a positive or negative pressure with respect to outdoors. Smoke pens may be used to help with this assessment. This may be done immediately before and immediately after indoor air sampling, but not during sampling.

4.3. Step 2. Work Plan Development

The second step is to develop a Sampling and Analysis Work Plan that will include:

- Building survey and chemical inventory findings;
- Sampling locations and quantities;
- Sampling and analysis methods*;

- Target analytes and reporting limits*;
- QA/QC*;
- Data evaluation criteria*; and
- Data reporting.

* Details for these items do not need to be included in the work plan. Instead, refer to the details in this SOP.

Any deviations from these items listed above must be called out and briefly explained in the work plan. The remaining work plan items are discussed in more detail below. The Work Plan should be submitted to NYSDEC and NYSDOH for review and approval prior to implementation.

4.4. Step 3. Sampling and Analysis

Step 3 involves implementing the work described in the Sampling and Analysis Work Plan. Specifically, this section discusses the rationale for selecting sampling locations and quantities, and provides some details on the sampling and analytical methods, target analytes and reporting limits, and QA/QC procedures.

4.4.1. Determine Sample Locations and Quantities

Indoor air samples should be collected from the lowest level of the building. In a large building or buildings with multiple tenants or rooms on the lowest level, more than one sample may be required. Other considerations when collecting indoor air samples include the following:

- Indoor air samples must be collected within the breathing zone, which is approximately 3 to 5 feet above the floor.
- Ambient air sampling must be conducted at the same time and for the same duration as indoor air sampling.
- At least one ambient air sample must be collected at breathing zone height above ground and immediately upwind of the building(s), if possible. For buildings with HVAC intakes, sampling in proximity to the intakes should be considered.
- If suspected outdoor sources are closely located to the building(s), then additional ambient samples must be collected upwind and downwind of those sources.
- One ~~If more than 3 months have lapsed between~~ sub-slab sampl~~ing~~e (Phase 3) should be collected concurrently and co-located with each ~~and~~ indoor air sampl~~ing, then an additional sub-slab sample may be collected~~e.
- Sampling must be conducted under conditions when vapors could potentially migrate and/or accumulate within the indoor air, which is typically when all doors and windows are closed and when the HVAC system is operating. If the property is a business, the sampling should

be conducted during a time of limited activity to avoid door openings to the outdoors, if possible.

4.4.2. Perform Sampling and Analysis

Detailed indoor air sampling procedures are provided in Appendix E, and ambient air sampling procedures are provided in Appendix B. These procedures do not need to be reiterated in the Sampling and Analysis Work Plan. Important sampling and analysis considerations include the following:

- Sampling durations can range from 4 to 24 hours, depending on the practicality of site access and the exposure scenario being evaluated (8 hour sample duration for commercial and industrial settings and 24 hours for residential settings).

- Sampling rate must not exceed 0.2 liter per minute.

- Soil vapor samples must be analyzed using USEPA Compendium Method TO-15.

In addition, building occupants should be instructed that within 24 hours of the sampling and during the sampling to avoid, to the extent possible the activities provided in Appendix F.

4.4.3. Confirm Target Analytes and Reporting Limits

The same target analytes and reporting limits discussed above in Section 2.3.4 for soil vapor sampling should be used for indoor air sampling.~~Air samples must be analyzed using USEPA Compendium Method TO-15 with instrumentation tuned to low levels, which allows for lower reporting limits as those discussed for soil vapor and sub-slab sample analysis. Table 7 provides a list of TO-15 low level analytes, which is a subset of the analyte list for the standard TO-15 analysis (Table 2). The laboratory must also include additional compounds identified in Table 7.~~ However, at this point previous sampling has been conducted that established a site-specific list of analytes (COCs), National Grid may request the laboratory to report results of just the COCs for subsequent sampling.

4.4.4. Monitor QA/QC Program

The same QA/QC components discussed above for sub-slab sampling in Section 3.3.4 should be used for indoor air sampling, except that canisters must be individually certified clean and not batch certified.

4.5. Step 4. Data Evaluation

Step 4 of this phase consists of the following data evaluation tasks:

- Evaluate whether the indoor air sample results are not attributable to vapor intrusion, indoor air sources or ambient air sources;

- Compare the indoor air sample results to criteria of ambient air background and health risk levels; and

- Determine follow-on actions (e.g., discontinue the investigation, additional assessment, or implement mitigation measures).

Each of these tasks is discussed in more detail below.

4.5.1. Assess Whether Vapor Constituents are MGP-Related

The primary goal of the assessment is to determine which detected indoor air analytes, if any, are solely or partially attributable to indoor air sources. As such, results for vapor constituents which may be related to MGP materials should be assessed.

- Compare the indoor air results with data from the sub-slab sampling. The ratio of indoor air to sub-slab vapor must be calculated for all analytes detected in both sample types.

- Compare the indoor air results with information obtained from the chemical inventory to verify the assumptions made from the first comparison.

4.5.2. Compare Sample Results to Screening Criteria

After completing the forensic analysis summarized above, the next task is to compare any indoor air results that are suspected to be partially or solely attributable to vapor intrusion with ambient air data and USEPA target indoor air concentrations. These indoor air screening criteria are presented in Table 6.

4.5.3. Determine Follow-On Actions

After sample results are compared to appropriate screening levels, follow-on actions must be determined. Two data evaluation scenarios and associated actions include:

Scenario 1: No MGP-related constituents in indoor air are attributable to vapor intrusion or all are less than the respective ambient air concentration or background or health risk criteria (whichever is higher).
Next Action: No further investigation is warranted.

Scenario 2: At least one MGP-related constituent in indoor air attributable to vapor intrusion is greater than the respective ambient air concentration, background, and health risk criteria.
Next Action: Resampling or mitigation is warranted.

4.6. Step 5. Data Reporting

The final step of Phase 4 involves transmitting the sub-slab, indoor air, and ambient air sampling data to the State Agencies and preparing a Phase 4 Summary Report. Within 48 hours after receiving data from the laboratory and before data are validated, ~~data tables~~analytical reports and a figure showing ~~potential receptor~~sampling locations must be prepared and submitted to the State Agencies. Any data summaries should be clearly labeled as preliminary. Receipt of data from the laboratory means the initial receipt of data and not the complete data package that is used for data validation. After validation is complete, any ~~additional~~ changes to the data must be submitted to the Agencies.

Following data validation, a ~~complete~~ Phase 4 Summary Report will be prepared and submitted to the State Agencies and will include:

- Tabulated summary of validated results of detected compounds;
- Analytical reports showing results of all detected and non-detected compounds;

~~? Summary of validated results;~~

- Site plan showing sampling locations, impacted groundwater and soil locations, potential vapor receptors, preferential vapor pathways, surface features, and hydraulic vapor barriers;
- Overview of sampling and analysis activities;
- Results of data evaluation; and
- Recommendations for follow-on actions.

As described in Section 2.5, the results of samples collected from property not owned by National Grid must be provided to the property owner within 30 days of data validation. See Section 2.5 for more detail.

References

NYSDEC. 2006. *DER-13 / Strategy for Evaluating Soil Vapor Intrusion at Remedial Sites in New York.* DEC Program Policy. (October 18, 2006)

NYSDOH. 20065. *Guidance for Evaluating Soil Vapor Intrusion in the State of New York.* ~~Public Comment Draft~~ (October~~February~~).

USEPA. 2002. *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils.* Office of Solid Waste and Emergency Response (November).

Table 1
Groundwater Screening Levels

Standard Operating Procedures for Soil Vapor Intrusion Evaluations at National Grid MGP Sites in New York State

MGP-Related Constituent	USEPA OSWER Target Groundwater Concentrations (ug/L) [a, b] Residential	Non-Residential	NYS Class GA Groundwater Standard[c]
Benzene	14	140	1
Ethylbenzene	700	700	5
Toluene	1500	1500	5
m,p-Xylenes	22000	22000	5
o-Xylene	33000	33000	5
Naphthalene	150	150	5
1,2,4-Trimethylbenzene	24	24	5

Notes:

a. USEPA. 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. Office of Solid Waste and Emergency Response (November). R=10^{-5} used for residential. R=10^{-4} used for non-residential.

b. ug/L = micrograms per liter

c. NYS, Div. Of Water Technical Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limittations, June 1998.

Table 2
TO-15 Target Analtyes and Reporting Limits

Standard Operating Procedures for Soil Vapor Intrusion Evaluations
at National Grid MGP Sites in New York State

Compound	CAS Number	Reporting Limit (ppbv)	Reporting Limit (ug/m^3)
Acetone (2-propanone)	67-64-1	5.0	12
Benzene	71-43-2	0.20	0.64
Bromodichloromethane	75-27-4	0.20	1.3
Bromoethene	593-60-2	0.20	0.87
Bromoform	75-25-2	0.20	2.1
Bromomethane (Methyl bromide)	74-83-9	0.20	0.78
1,3-Butadiene	106-99-0	0.20	0.49
2-Butanone (Methyl ethyl ketone)	78-93-3	0.50	1.5
Carbon disulfide	75-15-0	0.50	1.6
Carbon tetrachloride	56-23-5	0.20	1.3
Chlorobenzene	108-90-7	0.20	0.92
Chloroethane	75-00-3	0.20	0.53
Chloroform	67-66-3	0.20	0.98
Chloromethane (Methyl chloride)	74-87-3	0.20	0.41
3-Chloropropene (allyl chloride)	107-05-1	0.20	0.63
2-Chlorotoluene (o-Chlorotoluene)	95-49-8	0.20	1.04
Cyclohexane	110-82-7	0.20	0.69
Dibromochloromethane	124-48-1	0.20	2.0
1,2-Dibromoethane	106-93-4	0.20	1.5
1,2-Dichlorobenzene	95-50-1	0.20	1.2
1,3-Dichlorobenzene	541-73-1	0.20	1.2
1,4-Dichlorobenzene	106-46-7	0.20	1.2
Dichlorodifluoromethane (Freon 12)	75-71-8	0.20	0.99
1,1-Dichloroethane	75-34-3	0.20	0.81
1,2-Dichloroethane	107-06-2	0.20	0.81
1,1-Dichloroethene	75-35-4	0.20	0.79
1,2-Dichloroethene (cis)	156-59-2	0.20	0.79
1,2-Dichloroethene (trans)	156-60-5	0.20	0.79
1,2-Dichloropropane	78-87-5	0.20	0.92
cis-1,3-Dichloropropene	10061-01-5	0.20	0.91
trans-1,3-Dichloropropene	10061-02-6	0.20	0.91
1,2-Dichlorotetrafluoroethane (Freon 114)	76-14-2	0.20	1.4
1,4-Dioxane	123-91-1	5.0	18
Ethylbenzene	100-41-4	0.20	0.87
4-Ethyltoluene (p-Ethyltoluene)	622-96-8	0.20	0.98
n-Heptane	142-82-5	0.20	0.83
Hexachlorobutadiene	87-68-3	0.20	2.1
n-Hexane	110-54-3	0.20	0.70
Isopropyl Alcohol	67-63-0	5.0	12.5
Methylene chloride	75-09-2	0.50	1.7
Methyl Butyl Ketone	591-78-6	0.50	2.05
4-Methyl-2-pentanone (MIBK)	108-10-1	0.50	2.05
MTBE (Methyl tert-butyl ether)	1634-04-4	0.50	1.8
Styrene	100-42-5	0.20	0.85
Tertiary butyl alcohol (TBA)	75-65-0	5.0	15
1,1,2,2-Tetrachloroethane	79-34-5	0.20	1.4
Tetrachloroethene (PCE)	127-18-4	0.20	1.4
Toluene	108-88-3	0.20	0.75
1,2,4-Trichlorobenzene	120-82-1	0.50	3.7
1,1,1-Trichloroethane	71-55-6	0.20	1.1
1,1,2-Trichloroethane	79-00-5	0.20	1.1
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	76-13-1	0.20	1.5
Trichloroethene (TCE)	79-01-6	0.20	1.07
Trichlorofluoromethane (Freon 11)	75-69-4	0.20	1.1
1,2,4-Trimethylbenzene	95-63-6	0.20	0.98
1,3,5-Trimethylbenzene	108-67-8	0.20	0.98
2,2,4-Trimethylpentane	540-84-1	0.20	1.08
Vinyl chloride	75-01-4	0.20	0.51
Xylenes (m&p)	1330-20-7	0.20	0.87
Xylenes (o)	95-47-6	0.20	0.87
Additional Compounds to be Requested			
1,2,3-Trimethylbenzene	80-62-6	0.20	0.98
Naphthalene	91-20-3	0.50	2.9
1-Methylnaphthalene	90-12-0	TBD	TBD
2-Methylnaphthalene	91-57-6	TBD	TBD
Tetramethylbenzene	25619-60-7	TBD	TBD
Indene	95-13-6	TBD	TBD
Indane	496-11-7	TBD	TBD
Thiophene	110-02-1	TBD	TBD

Notes:

a. Actual reporting limits of field samples may be higher due to sample dilution by the laboratory to quantify compounds at elevated concentrations.(see note b)

b. The laboratory must notify National Grid prior to sample dilution.

c. ppbv = part per billion by volume

d. ug/m3 = microgram per cubic meter

e. TBD = to be determined

Table 4
Potential MGP-Related Volatile Constituents

Standard Operating Procedures for Soil Vapor Intrusion Evaluations at National Grid MGP Sites in New York State

Benzene
Ethylbenzene
Toluene
Xylenes
Naphthalene
Indene
Indane
1,2,4-Trimethylbenzene [a]
Tetramethylbenzenes [a]
n-Nonane [a]
n-Decane [a]
n-Undecane [a]
n-Dodecane [a]

Note:
a. Volatile constituents associated with petroleum used at MGP sites that employed the carbureted water gas process.

Table 6

Data Evaluation Criteria

Standard Operating Procedures for Soil Vapor Intrusion Evaluations at National Grid MGP Sites in New York State

MGP-Related Constituent	Typical Indoor Air Concentrations (ug/m^3) [a] Residential	Typical Indoor Air Concentrations (ug/m^3) [a] Non-Residential	USEPA OSWER Target Indoor Air Concentrations (ug/m^3) [b] Residential	USEPA OSWER Target Indoor Air Concentrations (ug/m^3) [b] Non-Residential
Benzene	13	9.4	3.1	31
Ethylbenzene	6.4	5.7	22	220
Toluene	57	43	400	400
m,p-Xylenes	11	22.2	7000	7000
o-Xylene	7.1	7.9	7000	7000
Naphthalene	NA [c]	5.1	3	3
Indene	NA	NA	NA	NA
Indane	NA	NA	NA	NA
1,2,4-Trimethylbenzene	9.8	9.5	6	6
n-Nonane	7.9	7.8	NA	NA
n-Decane	15	17.5	NA	NA
n-Undecane	12	22.6	NA	NA
n-Dodecane	9.2	15.9	NA	NA

Notes:

a. NYSDOH. 2005. " Guidance for Evaluating Soil Vapor Intrusion in the State of New York". Public Comment Draft (October 2006). As recommended by NYSDOH, typical indoor air concentrations in residential settings are the upper fence values from the NYSDOH 2003 Fuel Oil Study data. Typical concentrations in non-residential settings are the 90th percentile values from the USEPA BASE data. ug/m^3 = microgram per cubic meter.

b. USEPA. 2002. "Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils". Office of Solid Waste and Emergency Response (November). $R=10^{-5}$ used for residential. $R=10^{-4}$ used for non-residential.

c. NA = not available

APPENDIX A

SOIL VAPOR SAMPLE COLLECTION PROCEDURES

(NYSDEC and NYSDOH Approved, March 15, 2007)

[Updated by National Grid and resubmitted September 18, 2007]

This set of procedures outlines the general steps to collect soil vapor samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sample locations, sample depths, and sampling duration.

Soil Vapor Probe Installation

Permanent and temporary soil vapor probes will be installed using the procedure outlined below:

- Record weather information (temperature, barometric pressure, rainfall, wind speed, and wind direction). Record substantial changes to these conditions that may occur during the course of the probe installation. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Install soil vapor probes using a direct-push drill rig (e.g., GeoProbe® or similar) or manually using a slide hammer. Probes will consist of stainless-steel drive points with stainless steel screens attached to food-grade (inert) Teflon® or polyethylene tubing through which the soil vapor sample will be drawn. Recommended tubing is ¼-inch O.D. flouropolymer tubing that can be found at AMS, Inc. (Item 215.00).

- Attach the drive points to a drive rod (stainless-steel tube) and drive the rod to the target depth, as define in the site-specific work plan.

- Withdraw the drive rods from the hole, leaving the drive point and tubing.

- Place filter pack material, such as glass beads or clean silica sand, in the annular space surrounding the tubing directly above the sample point to a height of approximately 1 to 2 foot. The depth of the filter pack material should always be adequate to prevent the bentonite slurry above from going over the drive point and sample inlet screen. Recommended ground glass blast media can be found at W.W. Grainger, Inc. (Item 6ZC15).

- Place bentonite slurry in the annulus above the filter pack material to provide a seal in the borehole. Ideally, place the bentonite annular seal at least 3 feet thick, although adjustments to this thickness may be required based on site-specific conditions. The entire borehole must be filled to the ground surface with either entirely bentonite or with natural fill between two bentonite seals (one above the filter pack material and one at the ground surface). Permanent installations must have a surface seal made of cement or cement/bentonite grout.

- For permanent installations, install flush-mounted protective covers to protect the probe and the tubing.

- Cut the end of the tubing to allow proper closure of the flush-mounted protective cover, but with a sufficient length of tubing exposed at the surface to facilitate connection of sampling equipment.

- Close or cap the sample tubing following installation and following collection of each sample.

Collection of Soil Vapor Samples

Collecting soil vapor samples will be accomplished by using the following procedure:

- Record weather information (i.e., temperature, barometric pressure, rainfall, wind speed, and wind direction) at the beginning of the sampling event. Also, record substantial changes to these conditions that may have occurred over the past 24 to 48 hours and that do occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Sampling personnel must avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.).

- Identify sampling locations on a plot plan that also identifies buildings, other landmarks, and potential sources of VOC contamination to both the surface and outdoor air. Record the depth of the probe screen below grade.

- If necessary, connect additional tubing to the tubing extending from the soil vapor probe to allow for connection to sample collection equipment.

- Calculate the volume of air in the probe, tubing (volume = $\pi r^2 h$), including any additional tubing added in the step above and the annular space between the probe and the native material if sand or glass beads were used.

- Connect a vacuum pump or gas-tight syringe (~60 cubic centimeters [cc]) to the sample tubing. At a flow rate of no more than 0.2 liter per minute (lpm), purge air from the tubing until one to three of the above-calculated air volumes are removed.

- During purging, evaluate the potential for ambient air to be introduced in the soil vapor sample through the annulus of the soil vapor probe or tubing connections using a tracer gas such as helium. The procedures for the tracer gas evaluation are described below. Note that the bentonite used in the probe installation should have sufficient time to seal before the samples are collected. The tracer gas evaluation will verify if the seal is sufficient.

- Use an evacuated Summa® passivated (or equivalent) stainless-steel canister to collect the soil vapor sample. The canister will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate or duration of sample collection, as identified in the project-specific work plan. The sampling flow rate should always be less than 0.2 lpm. The canisters will be batch certified as clean by the laboratory.

- Remove the protective brass plug from the canister. Connect the pre-calibrated flow controller to the canister.

- Record the identification numbers for the canister and flow controller. Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of-custody form for each sample.

- Connect the tubing from the soil vapor probe to the flow controller.

- Completely open the valve on the canister. Record the time that the valve was opened (beginning of sampling) and the canister pressure on the vacuum gauge.

- Photograph the canister and the area surrounding the canister.

- Monitor the vacuum pressure in the canister routinely during sampling.

- Stop sample collection when the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample will be rejected and collected again in a new canister.

- Record the final vacuum pressure and close the canister valve. Record the date and time that sample collection was stopped.

- Remove the flow controller from the canister and replace the protective brass plug.

- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.

- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.

- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.

- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. The field crew will retain a copy of the chain-of-custody for the project file.

- Deliver or ship the samples to the laboratory within one business day of sample collection and via overnight delivery (when shipping).

- Provided that no additional sampling is expected to be conducted, either pull out (if practical) or abandon in place the sampling probe. When abandoning, cut the tubing back as far down as practical and cover to surface with native soil.

Tracer Gas Evaluation

The tracer gas evaluation provides a means to evaluate the integrity of the soil vapor probe seal and assess the potential for introduction of ambient air into the soil vapor sample. A tracer gas evaluation should be conducted on all soil vapor probes. After the initial round of sampling and with the approval of the regulating agency, the use of tracer gas may be reduced to a minimum of 10 percent for permanent and semi-permanent probes if the initial round results showed installations with competent seals.

The following tracer gas evaluation procedure uses in-field tracer gas measurements and tracer gases (e.g., helium) that can be measured by portable detectors.

- Retain the tracer gas around the sample probe by filling an air-tight chamber (such as a plastic bucket) positioned over the sample location.

- Make sure the chamber is suitably sealed to the ground surface.

- Introduce the tracer gas into the chamber. The chamber will have tubing at the top of the chamber to introduce the tracer gas into the chamber and a valved fitting at the bottom to let the ambient air out while introducing tracer gas. A tracer gas detector will be attached to the valve fitting at the bottom of the chamber to verify the presence of the tracer gas. Close the valve after the chamber has been enriched with tracer gas at concentrations >50%.

- The chamber will have a gas-tight fitting or sealable penetration to allow the soil vapor sample probe tubing to pass through and exit the chamber.

- After the chamber has been filled with tracer gas, attach the sample probe tubing to a pump that will be pre-calibrated to extract soil vapor at a rate of no more than 0.2 lpm. Purge the tubing using the pump. Calculate the volume of air in the tubing and probe and purge one to three tubing/probe volumes prior measuring the tracer gas concentration.

- Use the tracer gas detector to measure the tracer gas concentration in the pump exhaust.

- Record the tracer gas concentrations in the chamber and in the soil vapor sample.

If the evaluation indicates a high concentration of tracer gas in the sample (>10% of the concentration of the tracer gas in the chamber), then the surface seal is not sufficient and requires improvement via repair or replacement prior to commencement of the sample collection. A non-detectable level of tracer gas is preferred; however, if the evaluation indicates a low potential for introduction of ambient air into the sample (<10% of the concentration of the tracer gas in the chamber), then proceed with the soil vapor sampling. While lower concentrations of tracer gas are acceptable, the impact of the detectable leak on sample results should be evaluated in the sampling report.

APPENDIX B
AMBIENT AIR SAMPLE COLLECTION PROCEDURES
(NYSDEC and NYSDOH Approved, March 15, 2007)

This set of procedures outlines the general steps to collect ambient air samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sample locations and sampling duration.

The following procedures will be followed for the collection of ambient air samples:

- Sampling personnel must avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.).

- Select a location upwind of the building or other area that is being evaluated. If possible, select a location upwind or near the HVAC air intake for the building being sampled.

- Record weather information (i.e., temperature, barometric pressure, relative humidity, wind speed, and wind direction) at the beginning of the sampling event. Record substantial changes to these conditions that may occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Use an evacuated Summa® passivated (or equivalent) stainless-steel canister to collect the ambient air sample. The canister will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate or duration of sample collection, as defined in the site-specific work plan. The sampling flow rate should always be less than 0.2 lpm. The canisters will be individually certified as clean by the laboratory.

- Place the canister at the sampling location. If the sample should be collected from breathing height (e.g., 3 to 5 feet above ground), then mount the canister on a stable platform such that the sample inlet will be at the proper height.

- Remove the protective brass plug from canister. Connect the pre-calibrated flow controller to the canister.

- Record the identification numbers for the canister and flow controller. Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of custody form for each sample.

- Completely open the valve on the vacuum pressure in the canister. Record the time that the valve was opened (beginning of sampling) and the canister pressure on the vacuum gauge.

- Photograph the canister and the area surrounding the canister.

- Document on a field form an outdoor plot sketch that indicates the building being sampled, streets, sampling location, location of potential outdoor air sources, north direction and paved areas. Also record pertinent observations such as odors, readings from field instrumentation, and significant activities in the vicinity that result in air emissions.

- Monitor the vacuum pressure in the canister routinely during sampling, when practical (sometimes the canister will sample over a 24-hour period and routine monitoring is not practical). During monitoring, note the vacuum pressure on the gauge.

- Stop sample collection after the scheduled duration of sample collection but make sure that the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample will be rejected and collected again in a new canister.

- Record the final vacuum pressure and close the canister valves. Record the date and time that sample collection was stopped.

- Remove the flow controller from the canister and replace the protective brass plug.

- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.

- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.

- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.

- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. The field crew will retain a copy of the chain-of-custody for the project file.

- Deliver or ship the samples to the laboratory within one business day of sample collection and via overnight delivery (when shipping).

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name ____________________________________ Date/Time Prepared ______________

Preparer's Affiliation ________________________________ Phone No.______________________

Purpose of Investigation____

1. OCCUPANT:

Interviewed: Y / N

Last Name: _________________________ First Name: _________________________

Address: ____

County: _________________

Home Phone: ____________________ Office Phone: ____________________

Number of Occupants/persons at this location _______ Age of Occupants ______________________

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _________________________ First Name: _________________________

Address: ____

County: _________________

Home Phone: ____________________ Office Phone: ____________________

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: _________________

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_______________

If multiple units, how many? ________

If the property is commercial, type?

Business Type(s) _______________________________________

Does it include residences (i.e., multi-use)? Y / N If yes, how many? ______

Other characteristics:

Number of floors______ Building age______

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

____

____

____

Airflow near source

____

____

____

Outdoor air infiltration

____

____

____

Infiltration into air ducts

____

____

____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other ________
c. Basement floor:	concrete	dirt	stone	other ________
d. Basement floor:	uncovered	covered	covered with _______________	
e. Concrete floor:	unsealed	sealed	sealed with ________________	
f. Foundation walls:	poured	block	stone	other ________
g. Foundation walls:	unsealed	sealed	sealed with ________________	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: ________(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

____

____

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other ___________

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: ____________________________

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other___________
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

____

____

____

____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	____
1st Floor	____
2nd Floor	____
3rd Floor	____
4th Floor	____

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA Please specify____________________

d. Has the building ever had a fire? Y / N When?__________________

e. Is a kerosene or unvented gas space heater present? Y / N Where? __________________

f. Is there a workshop or hobby/craft area? Y / N Where & Type? __________________

g. Is there smoking in the building? Y / N How frequently? _________________

h. Have cleaning products been used recently? Y / N When & Type? __________________

i. Have cosmetic products been used recently? Y / N When & Type? __________________

j. Has painting/staining been done in the last 6 months? Y / N Where & When? _______________

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _______________

l. Have air fresheners been used recently? Y / N When & Type? ________________

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?____________

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?____________

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?_________________

Are there odors in the building? Y / N
If yes, please describe: ____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? ____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: ____________
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply:	Public Water	Drilled Well	Driven Well	Dug Well	Other: _______
Sewage Disposal:	Public Sewer	Septic Tank	Leach Field	Dry Well	Other: _______

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____________________________________

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ______________________________________

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

APPENDIX D

SUB-SLAB VAPOR SAMPLE COLLECTION PROCEDURES

(NYSDEC and NYSDOH Approved, March 15, 2007)

This set of procedures outlines the general steps to collect sub-slab vapor samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sample locations, sample depths, and sampling duration.

Sub-Slab Vapor Probe Installation

Temporary sampling probes will be installed using the following procedures:

- Sampling personnel must avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.).

- If appropriate, record weather information (temperature, barometric pressure, rainfall, wind speed, and wind direction) at the beginning of the sampling event. Record substantial changes to these conditions that may have occurred over the past 24 to 48 hours and that do occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Identify sampling location(s) on a floor plan that also identifies any slab breeches (e.g., utility penetrations, sumps, drains, and cracks) and locations of HVAC equipment.

- Insert a section of food-grade (inert) Teflon® or other appropriate tubing through a 3/8-inch (approx.) hole drilled through the slab. If necessary, advance the drill bit 2 to 3 inches into the sub-slab material to create an open cavity.

- Install the tubing inlet to the specified sampling depth below the slab, not to exceed 2 inches.

- Seal the annular space between the hole and tubing using 100% beeswax or another inert, non-shrinking sealing compound such as permagum®.

Sub-Slab Vapor Sample Collection

Sub-slab vapor samples will be collected by following the steps outlined below.

- Purge the tubing using a vacuum pump or gas-tight syringe (~60 cc). Calculate the volume of air (volume = $\pi r^2 h$) in the tubing and purge one to three tubing volumes prior to sample collection at a rate no greater than 0.2 liter per minute (lpm).

- Use an evacuated Summa® passivated (or equivalent) canister to collect the sub-slab vapor sample. The canister will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate or duration of sample collection, as defined in the site-specific work plan. The sampling flow rate should always be less than 0.2 lpm. The canisters will be batch certified as clean by the laboratory.

- Remove the protective brass plug from canister. Connect the pre-calibrated flow controller to the canister.

- Record the identification numbers for the canister and flow controller. Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of-custody form for each sample.

- Connect the tubing from the sub-slab vapor sampling probe to the flow controller.

- Completely open the valve on the canister. Record the time that the valve is opened (beginning of sampling) and the canister pressure on the vacuum gauge.

- Photograph the canister and the area surrounding the canister.

- Monitor the vacuum pressure in the canister routinely during sampling, when practical (sometimes the canister will sample over a 24-hour period and routine monitoring is not practical).

- Complete the NYSDOH building survey and chemical survey form.

- Stop sample collection after the scheduled duration of sample collected, but when the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample will be rejected and collected again in a new canister.

- Record the final vacuum pressure and close the canister valve. Record the date and time that sample collection was stopped.

- Remove the flow controller from the canister and replace the protective brass plug.

- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.

- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.

- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.

- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. The field crew will retain a copy of the chain-of-custody for the project file.

- Deliver or ship the samples to the laboratory within one business day of sample collection and via overnight delivery (when shipping).

- For temporary probes, remove the probe and seal the slab hole with cement. Repair flooring, if any.

APPENDIX E
INDOOR AIR SAMPLE COLLECTION PROCEDURES
(NYSDEC and NYSDOH Approved, March 15, 2007)

This set of procedures outlines the general steps to collect indoor air samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sampling locations and other indoor air requirements (inventory, etc.).

Indoor air samples will be collected by following the steps outlined below:

- Sampling personnel must avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.).

- Record weather information (temperature, barometric pressure, relative humidity, wind speed, and wind direction) and indoor temperature and humidity at the beginning of the sampling event. Record substantial changes to these conditions that may have occurred over the past 24 to 48 hours and that do occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Identify sampling location(s) on a floor plan that also identifies locations of HVAC equipment, chemical storage areas, garages, doorways, stairways, sumps, drains, utility perforations, north direction, and separate footing sections

- Use an evacuated Summa® passivated (or equivalent) stainless-steel canister to collect the outdoor air sample. The canister will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate or duration of sample collection, as defined in the site-specific work plan. The sampling flow rate should always be less than 0.2 lpm. The canisters will be individually certified as clean by the laboratory.

- Place the canister at the sampling location. The sample should be collected from breathing height (e.g., 3 to 5 feet above ground). Either mount the canister on a stable platform or attach a length of inert tubing to the flow controller inlet and support it such that the sample inlet will be at the proper height.

- Remove the protective brass plug from canister. Connect the pre-calibrated flow controller to the canister.

- Record the identification numbers for the canister and flow controller. Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of custody form for each sample.

- Completely open the valve on the vacuum pressure in the canister. Record the time that the valve was opened (beginning of sampling) and the canister pressure on the vacuum gauge.

- Photograph the canister and the area surrounding the canister.

- Monitor the vacuum pressure in the canister routinely during sampling, when practical (sometimes the canister will sample over a 24-hour period and routine monitoring is not practical). During monitoring, note the vacuum pressure on the gauge.

- Complete the NYSDOH building survey and chemical survey form.

- Stop sample collection after the scheduled duration of sample collection, but make sure that the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample will be rejected and collected again in a new canister.

- Record the final vacuum pressure and close the canister valves. Record the date and time that sample collection was stopped.

- Remove the flow controller from the canister and replace the protective brass plug.

- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.

- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.

- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.

- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. The field crew will retain a copy of the chain-of-custody for the project file.

- Deliver or ship the samples to the laboratory within one business day of sample collection and via overnight delivery (when shipping).

Appendix F

Building Owner/Occupant Instructions Prior to Vapor Intrusion Sampling

Some household products and activities can emit chemicals into the indoor air that could interfere with the evaluation of the sampling results. Therefore, it is strongly urged that building occupants refrain from the following activities at least 48 hours before sampling is conducted and during sampling:

- opening windows, fireplace openings or vents;
- keeping doors open for long periods of time;
- operating ventilation fans or air conditioning;
- use of scented candles, air fresheners or odor eliminators;
- smoking;
- use of wood stoves, fireplaces or auxiliary heating equipment, such as a kerosene heater;
- use of paints or varnishes;
- use of cleaning products such as household cleaners, floor cleaners, bathroom cleaners, furniture polish, etc.
- use of cosmetics, including hair spray, nail polish removers and perfume, etc.;
- use of solvents, such as paint thinners, glues, automobile degreasing chemicals, WD-40, etc.;
- use of pesticides (e.g. RAID), herbicides and fungicides;
- use of building repair or maintenance products, such as caulk and roofing tar;
- lawn mowing, paving with asphalt, or snow blowing;
- storing gasoline, oil or petroleum-based or other solvents within the building or attached garage (except for fuel oil tanks); and
- operating or storing automobiles or other gasoline-powered equipment or vehicles in an attached garage.

It should also be noted that any containers of paint, varnish, cleaning products, or solvents stored inside the building should be securely sealed.

nationalgrid

Ambient Air (Canister) Sample Collection Field Form

Project # ______________________ Consultant ______________________

Project Name ______________________ Collector ______________________

Sample ID ______________________

Vacuum gauge "zero" ("Hg) ______________________

Start Date/Time ______________________ Start Pressure ("Hg) ______________________

End Date/Time ______________________ End Pressure ("Hg) ______________________

Canister ID ______________________ End pressure > "zero"? ______________________

Flow controller ID ______________________ Sampling duration (intended) ______________________

Tubing type used __________ Length of tubing __________ cm Tubing volume __________ cc

Volume purged __________ cc @ __________ min 1 to 3 volumes purged @ < 200cc/min? __________

Weather Conditions at Start of Sampling:

Air temperature (^{o}F) __________ Rainfall __________ Wind direction __________

Barometric pressure __________ Relative humidity __________ Wind speed (mph) __________

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

____

____

Site Plan showing sample location, building(s) being sampled, building HVAC inlet, outdoor air sources, wind direction

Comments: ______________________

nationalgrid

Indoor Air (Canister) Sample Collection Field Form

Project # ____________________ Consultant ____________________

Project Name ____________________ Collector ____________________

Sample ID ____________________

Vacuum gauge "zero" ("Hg) ____________

Start Date/Time ____________________ Start Pressure ("Hg) ____________

End Date/Time ____________________ End Pressure ("Hg) ____________

Canister ID ____________________ End pressure > "zero"? ____________

Flow controller ID ____________________ Sampling duration (intended) ____________

Associated ambient air sample ID ____________ Associated sub-slab vapor sample ID ____________

Tubing type used ________ Length of tubing ________ cm Tubing volume ________ cc

Volume purged ________ cc @ ________ min 1 to 3 volumes purged @ < 200cc/min? ________

Weather Conditions at Start of Sampling:

Air temperature (^{o}F) ________ Rainfall ________ Wind direction ________

Barometric pressure ________ Relative humidity ________ Wind speed (mph) ________

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

____

____

Indoor air temp (^{o}F) ____________________ Indoor relative humidity (%) ____________

Building Survey and Chemical Inventory Form Completed? ________ Photograph IDs ____________

Floor Plan showing sample location, HVAC equipment, indoor air sources, preferential pathways

Comments: ____

____

____

____

____

Sub-slab Vapor (Canister) Sample Collection Field Form

Project # ____________________ Consultant ____________________

Project Name ____________________ Collector ____________________

Sample ID ____________________

Vacuum gauge "zero" ("Hg) ____________

Start Date/Time ____________________ Start Pressure ("Hg) ____________

End Date/Time ____________________ End Pressure ("Hg) ____________

Canister ID ____________________ End pressure > "zero"? ____________

Flow controller ID ____________________ Sampling duration (intended) ____________

Associated indoor air sample ID ____________ Associated ambient air sample ID ____________

Tubing type used ________ Length of tubing ________ cm Tubing volume ________ cc

Volume purged ________ cc @ ________ min 1 to 3 volumes purged @ < 200cc/min? ________

Weather Conditions at Start of Sampling:

Air temperature (^{o}F) ________ Rainfall ____________ Wind direction ________

Barometric pressure ________ Wind speed (mph) ________

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

____

____

Indoor air temp (^{o}F) ____________ Indoor relative humidity (%) ____________

Building Survey and Chemical Inventory Form Completed? ________ Photograph IDs ____________

Floor Plan showing sample location, HVAC equipment, indoor air sources, preferential pathways

Comments: ____

____

____

____

____

nationalgrid

Soil Vapor (Canister) Sample Collection Field Form

Project # ____________________ Consultant ____________________

Project Name ____________________ Collector ____________________

Sample ID ____________________

Vacuum gauge "zero" ("Hg) __________

Start Date/Time ____________________ Start Pressure ("Hg) __________

End Date/Time ____________________ End Pressure ("Hg) __________

Canister ID ____________________ End pressure > "zero"? __________

Flow controller ID ____________________ Sampling duration (intended) __________

Associated ambient air sample ID __________ Depth of sample point below grade __________

Tubing type used __________ Length of tubing __________ cm Tubing volume __________ cc

Volume purged __________ cc @ __________ min 1 to 3 volumes purged @ < 200cc/min? __________

Chamber tracer gas conc. __________ Tracer gas conc. during purging __________

Weather Conditions during Probe Installation:

Air temperature (^oF) __________ Rainfall __________ Wind direction __________

Barometric pressure __________ Wind speed (mph) __________

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

____

____

Weather Conditions at Start of Sampling:

Air temperature (^oF) __________ Rainfall __________ Wind direction __________

Barometric pressure __________ Wind speed (mph) __________

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

____

____

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways

Comments: ____________________

____

____

____

2.4.3 Sampling Interval and Flow Controller Setting

When you request canisters and flow controllers from Air Toxics Ltd., you will be asked for the sampling interval, and the flow controllers will be pre-set prior to shipment according to the table below. The flow controller is set to collect 5 L of sample over the sample interval. Final canister vacuum is targeted at 5 in. Hg. The flow rate is set at standard atmospheric conditions (approximately sea level). If the air sample is a process (pressurized or under vacuum) or is collected at elevation, the canisters will fill faster or slower depending on the sampling conditions. If you specify the pressure of the source at project set-up, we can set the flow controller accordingly. See Section 4 for a discussion of collecting a sample at elevation. The 24-hr flow controllers should not be used for process or source samples.

Table 2.4.3 Flow Rates for Selected Sampling Intervals (mL/min)

Sampling Interval (hrs)	0.5	1	2	4	8	12	24
6 L Canister	167	83.3	41.7	20.8	11.5	7.6	3.5
1 L Canister	26.6	13.3	6.7	-	-	-	-

Note: Target fill volumes for 6 L and 1 L canisters are 5,000 mL and 800 mL, respectively.

$$\text{Flow Rate(mL/min)} = \frac{\text{Target Fill Volume (mL)}}{\text{Sampling Interval (min)}}$$

2.4.4 Final Canister Vacuum and Flow Controller Performance

Ideally the final vacuum of a 6 L canister should be 5 in. Hg or greater. As long as the differential pressure is greater than 4 in. Hg ambient pressure, then the flow through the device will remain approximately constant as the canister fills. If there is insufficient differential pressure, the flow through the controller will decrease as the canister pressure approaches ambient. Because of the normal fluctuations in the flow rate (due to changes in ambient temperature, pressure, and diaphragm instabilities) during sampling, the final vacuum will range between 2 and 10 in. Hg.

Compliance Assessment Site Investigation and Remediation

nationalgrid

General Information

Observation Date		**Time**	AM / PM
Primary Task of Crew	(e.g., Installing wire, fusing gas line, etc.)	**Additional info on Crew Task**	
Observed Department		**Who did you observe?**	○ **Employees** ○ **Contractor**
		# of People Observed:	

Observers	**Observed Employees or Contractor Company Name**

Location of Observation

Site Name					
Address		**City**		**State**	
Location Type	○ Company Site ○ Non-Company Site		(e.g., Office, Right of Way, etc.)		

Observation Items

Communication & Risk Assessment	***Additonal information required under Observation Details**				
1. Crew members demonstrate clear understanding of job hazards and conditions	○ Poor*	○ Needs Improvement*	○ Fair	○ Good	○ Very Good
2. Demonstrates clear understanding of the controls necessary to minimize the risks associated wtih the hazards at the job site (demarcation, position of equipment, shoring, atmospheric monitoring, proper ventilation, etc)	○ Poor*	○ Needs Improvement*	○ Fair	○ Good	○ Very Good
3. Understands "What's the worst thing that could happen on the job?"	○ Poor*	○ Needs Improvement*	○ Fair	○ Good	○ Very Good
4. Daily safety meeting has been documented and performed with crew	○ Safe	○ Unsafe*			
5. Safety risk assessment was developed before work began	○ Safe	○ Unsafe*			
6. Job Brief identifies the most significant hazards and controls to mitigate risk. (ie: proximity of energized lines, grounding, shoring, low hanging pipes, etc.)	○ Poor*	○ Needs Improvement*	○ Fair	○ Good	○ Very Good
Personal Protection	***Additonal information required under Observation Details**				
7. Maintains PPE in good condition	○ Poor*	○ Needs Improvement*	○ Fair	○ Good	○ Very Good
8. Wears all required PPE correctly	○ Safe	○ Unsafe*			
Work Area Safety	***Additonal information required under Observation Details**				
9. Slippery or untidy areas are cleaned up quickly	○ Safe	○ Unsafe*			
10. Actively Managing Work Area - Good Housekeeping, maintains walking and work surfaces, clear areas of egress and good lighting for task	○ Poor*	○ Needs Improvement*	○ Fair	○ Good	○ Very Good
11. Maintains adequate barriers and signs to protect others from the work area	○ Poor*	○ Needs Improvement*	○ Fair	○ Good	○ Very Good
12. Properly handles and stores hazardous chemicals and materials	○ Safe	○ Unsafe*			
13. Work area air monitoring has been performed and documented	○ Safe	○ Unsafe*			
Vehicles / Mobile Equipment	***Additonal information required under Observation Details**				
14. Follows safe vehicle backing procedures	○ Safe	○ Unsafe*			
15. Loads are secured properly	○ Poor*	○ Needs Improvement*	○ Fair	○ Good	○ Very Good
16. Properly positioned vehicle at the work site	○ Poor*	○ Needs Improvement*	○ Fair	○ Good	○ Very Good

Vehicles / Mobile Equipment					*Additonal information required under Observation Details*
17. Required distances are maintained from energized lines and equipment	Safe	Unsafe*			

Work Methods and Procedures					*Additonal information required under Observation Details*
18. Crews understand the applicable sections of the HASP	Poor*	Needs Improvement*	Fair	Good	Very Good
19. Environmental permits/plans are on site and conditions followed	Poor*	Needs Improvement*	Fair	Good	Very Good
20. Exclusion zone is properly delineated	Safe	Unsafe*			
21. Follows proper procedures for confined space / enclosed space	Safe	Unsafe*			
22. Follows the proper regulatory and corporate safety procedures for trenching, excavation, backfilling, compaction and restoration work	Poor*	Needs Improvement*	Fair	Good	Very Good
23. OSHA certificates and medical monitoring documents are on site	Safe	Unsafe*			
24. Proper decon procedures are followed	Safe	Unsafe*			
25. The HASP is on site	Safe	Unsafe*			
26. Visitor sign in sheet is on site	Safe	Unsafe*			
27. Works within applicable minimum approach distances	Safe	Unsafe*			

Work Place Environment					*Additonal information required under Observation Details*
28. Fire Extinguishers - Placement and Inspection Date	Safe	Unsafe*			
29. First Aid equipment is available and fully stocked	Safe	Unsafe*			
30. Adequate spill clean up equipment is on site	Poor*	Needs Improvement*	Fair	Good	Very Good
31. Lighting (Safety and Security) within building, garage, yard, parking area and at job site.	Poor*	Needs Improvement*	Fair	Good	Very Good
32. Work site is secure for unauthorized entry	Safe	Unsafe*			

Work Practices					*Additonal information required under Observation Details*
33. Not climbing or walking over materials, equipment or waste	Safe	Unsafe*			
34. Takes precautions when working in unique conditions - uneven surfaces, slopes, steps.	Poor*	Needs Improvement*	Fair	Good	Very Good
35. Follows safe practices when working in or near water	Poor*	Needs Improvement*	Fair	Good	Very Good
36. Maintains awareness of other activities in the work area (distance from moving equipment, work overhead, near excavations, confined areas etc)	Poor*	Needs Improvement*	Fair	Good	Very Good
37. Stockpiles are covered and secured at the end of each work day	Poor*	Needs Improvement*	Fair	Good	Very Good

Environmental					*Additonal information required under Observation Details*
38. Containers of waste appropriately marked	Safe	Unsafe*			
39. Ensures waste is properly managed	Poor*	Needs Improvement*	Fair	Good	Very Good
40. Follows procedures / methods to help protect the environment during work activities (use of absorbant materials, covers drains, proper location of equipment, hay bales to protect wetlands, good housekeeping etc.)	Poor*	Needs Improvement*	Fair	Good	Very Good
41. Knows procedures for responding to spills or other releases	Poor*	Needs Improvement*	Fair	Good	Very Good
42. Perimiter air monitoring is performed and documented	Poor*	Needs Improvement*	Fair	Good	Very Good
43. Water quality monitoring is performed and documented	Poor*	Needs Improvement*	Fair	Good	Very Good

Observation Details

Observation Details for Observation #:

List Applicable Employees	Primary Cause (See List)	Immediate Action Taken (See List)

Comments

Observation Details for Observation #:

List Applicable Employees	Primary Cause (See List)	Immediate Action Taken (See List)

Comments

Observation Details for Observation #:

List Applicable Employees	Primary Cause (See List)	Immediate Action Taken (See List)

Comments

Observation Details for Observation #:

List Applicable Employees	Primary Cause (See List)	Immediate Action Taken (See List)

Comments

Observation Details for Observation #:

List Applicable Employees	Primary Cause (See List)	Immediate Action Taken (See List)

Comments

Follow-up Items

Description	Assigned To	Due Date	Complete Date

Additional Comments

Appendix F

Quality Assurance and Quality Control Plan (Compact Disc Copy Only)

Prepared for:
National Grid
Hicksville, New York

Quality Assurance Project Plan (Appendix F of the Site Management Plan)

Former Sag Harbor MGP Site
Sag Harbor, New York
NYSDEC Site No.: 1-52-159
Order on Consent Index #: D1-0002-98-11

AECOM
February 2014
Document No.: 60137358

Contents

List of Tables

List of Figures

List of Acronyms

%R	Percent recovery
ASP	Analytical services program
ASTM	American Society for Testing Materials
CAMP	Community Air Monitoring Plan
CAR	Corrective Action Request
CLP	Contract laboratory program
COC	Chain of custody
CRDLs	Contract Required Detection Limits
CRQLs	Contract Required Quantitation Limits
DQOs	Data quality objectives
DUSR	Data Usability Summary Report
EDD	Electronic data deliverable
ELAP	Environmental Laboratory Accreditation Program
GC/MS	Gas Chromatography/Mass Spectroscopy
HASP	Health and safety plan
LIMS	Laboratory information management system
MDLs	Method detection limits
MGP	Manufactured gas plant
MS	Matrix spike
MSD	Matrix spike duplicate
NIST	National Institute of Standards and Technology
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PA	Preliminary assessment
PID	Photoionization detector
PQL	Practical quantitation limit
QA	Quality assurance
QAO	Quality assurance officer
QAPP	Quality Assurance Project Plan
QC	Quality control
RPD	Relative percent difference
SOPs	Standard operating procedures

SVOA	Semivolatile organic analysis
SVOCs	Semivolatile organic compounds
TCLP	Toxicity characteristics leaching procedure
USEPA	United States Environmental Protection Agency
VOA	Volatile organic analysis
VOCs	Volatile organic compounds

1.0 Introduction

This Quality Assurance Project Plan (QAPP) details the protocols and procedures that will be followed during ground intrusive and monitoring activities covered under the Sag Harbor Site Management Plan [(SMP); AECOM, February 2011] and conducted on the former Manufactured Gas Plant (MGP) site and surrounding off-site areas located within the Village of Sag Harbor in New York. The purpose of these protocols and procedures is to ensure that all project activities will be performed in a manner consistent with the data quality objectives (DQOs) established for the project and all data collected are precise, accurate, representative, comparable, and complete.

1.1 Project Description

This document is required as an element of the remedial program at the former Sag Harbor Manufactured Gas Plant (MGP) site under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by the New York State Department of Environmental Conservation (DEC). The former MGP site and surrounding off-site areas were remediated in accordance with Order on Consent Index D1-0002-98-11, Site Number 1-52-159 [NYSDEC, 2005], which was executed on October 5, 2005. The location in question is shown on Figure 1-1.

1.1.1 General

National Grid entered into an Order on Consent with the DEC to remediate a 0.8 acre property and surrounding off-site areas located in the Village of Sag Harbor, New York (the Village). This Order on Consent requires National Grid, to investigate and remediate contaminated media at the MGP site and surrounding off-site areas. For purposes of further discussion in this Site management Plan (SMP), the term "Site" will include the former Sag Harbor MGP site as well as an adjacent private property to the north (31 Long Island Avenue), portions of the adjacent private property to the south (11 Bridge Street), and the Village sidewalk and roads to the north and west. The term "off-Site areas" will include all or portions of adjacent private properties to the north, south, and west of the Site; and The United States Postal Service Post Office property and a small portion of the Village parking lot to the east consistent with the Record Of Decision [(ROD), DEC, 2006].

After completion of the remedial work described in the Remedial Design (RD) / Remedial Action (RA) Work Plan [AECOM, 2008], some contamination was left in the subsurface of the Site and off-Site areas, which is hereafter referred to as "remaining contamination." This QAPP was developed as an appendix (Appendix H) to the Site Management Plan (SMP) which was prepared to manage remaining contamination at the Site in perpetuity or until extinguishment of the Environmental Easement in accord with New York State Environmental Conservation Law (ECL) Article 71, Title 36.

This document was prepared by AECOM, on behalf of National Grid, in accord with the requirements in DEC DER-10 Technical Guidance for Site Investigation and Remediation [(DER-10); DEC, 2010] and the guidelines provided by DEC.

1.2 Scope of Work

The scope of work covered under this QAPP includes.

- Underground utility work
- Surface/shallow subsurface soil sampling and analysis
- Soil boring advancement, subsurface soil sampling and analysis
- Excavation of test pits, soil sampling and analysis
- Monitoring well installation and development
- Groundwater sampling and analysis
- Indoor air and ambient air sampling and analysis
- Investigation-derived waste management
- Community air monitoring
- Site survey
- Data validation evaluation, and reporting

1.3 Data Quality Objectives

DQOs are qualitative and quantitative statements to ensure that data of known and appropriate quality are obtained during any activities. Data will be used to achieve the overall objectives of the project. These objectives are to:

- Identify potential MGP contamination during any subsurface activity.
  - Data will identify MGP-related constituents in soil and groundwater.
  - Data will be collected using a systematic method to delineate the perimeter of MGP-related impacts.
  - Analytical methods will be of sufficient sensitivity that method detection limits (MDLs) and practical quantitation limits (PQLs) measure constituent concentrations at or below constituent NYSDEC guidance values.
- Perform an indoor air survey in accordance with New York State (NYS) Department of Health (DOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York. The DQOs for vapor intrusion data include the following items.
  - Data will identify MGP-related constituents in indoor air (if present).
  - Data will be collected using a systematic method to determine whether vapor intrusion of MGP-related impacts is occurring.
  - Analytical methods will be of sufficient sensitivity to meet a minimum PQL of at most one part per billion.

1.3.1 Data Quality Levels

There are five analytical levels of data quality which may be used to accomplish these objectives. They are typically designated as follows:

- Level I – Field screening or analysis using portable instruments, calibrated to non-compound specific standards
- Level II – Field analysis using portable instruments, calibrated to specific compounds

- Level III – Non-Contract Laboratory Program (CLP/ASP) laboratory methods
- Level IV – ASP-CLP Routine Analytical Services methods
- Level V – Non-standard analytical methods.

To meet the specific objectives of this project, Levels I and III data quality levels will be utilized.

1.3.1.1 Level I – Field Screening Methods

These tests, which are quantitative and/or semi-quantitative, are classified as field screening evaluations, even though they typically are not used for characterization purposes.

Soil and soil headspace screening will be conducted using a photoionization detector (PID) to determine the soil boring interval(s) that will be submitted for analytical laboratory analysis.

In addition, as part of the Health and Safety Plan (HASP) and the Community Air Monitoring Plan (CAMP), worker safety and ambient air quality may be monitored using one or more of a variety of field screening tests. Applicable equipment may include but not be limited to: a PID, Draeger tubes, and personal monitors to test for volatile organic vapors, or a combustible gas indicator to test for explosive potential. Worker health and safety requirements are specified in the HASP.

1.3.1.2 Level III – Non-Contract Laboratory Program (CLP/ASP) Laboratory Methods

Samples will be analyzed according to the required United States Environmental Protection Agency (USEPA) SW-846, ASTM, and USEPA Compendium air methods described in the most recent editions of the USEPA reference methods (see section 7.0). Data will be analyzed using Level III Non-Contract Laboratory Program (CLP/ASP) laboratory methods; however, the laboratory will provide Level IV data packages for all data including hazardous waste classification data. Laboratory data will be reported in the New York State Analytical Services Program (ASP) Category B deliverables format. This level of data quality will ensure the generation of legally and technically defensible data for project use. The laboratory performing the analysis of samples will be certified for the specific parameters pursuant to NYSDOH ELAP Certification program.

2.0 Project Organization

Any field activity will be completed for National Grid by an environmental contractor (the Contractor), who will arrange for analytical services and provide an onsite field representative to perform the oversight, soil logging, soil sampling, surveying, and groundwater sampling. The Contractor will also perform the data interpretation and reporting tasks.

Any field activity to be completed on behalf of the respective Property owner must require at least 15 day notification to National Grid and DEC.

Key contacts for this project are as follows:

National Grid Project Manager:

Name: Theodore Leissing
Address: 175 E Old Country Road, Hicksville, New York 11801
Telephone: (516) 545-2563
Fax: (516) 545-2582
Email: theodore.leissing@us.ngrid.com

NYSDEC Project Manager:

Name: Doug MacNeal
Address: New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau C
625 Broadway Albany, New York 12233-7014
Telephone: (518) 402-9662
Fax: (518) 402-9679
Email: dkmacnea@gw.dec.state.ny.us

3.0 Quality Assurance/Quality Control Objectives for Measurement of Data

3.1 Introduction

The quality assurance and quality control (QA/QC) objectives for all measurement data include precision, accuracy, representativeness, completeness, and comparability. These objectives are defined in following subsections. They are formulated to meet the requirements of the USEPA SW-846. The analytical methods and their Contract Required Quantitation Limits (CRQLs) and Contract Required Detection Limits (CRDLs) are provided in Section 7.

3.2 Precision

Precision is an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Specifically, it is a quantitative measurement of the variability of a group of measurements compared to their average value (USEPA, 1987). Precision is usually stated in terms of standard deviation, but other estimates such as the coefficient of variation (relative standard deviation), range (maximum value minus minimum value), relative range, and relative percent difference (RPD) are common.

For this project, field sampling precision will be determined by analyzing coded duplicate samples (labeled so that the laboratory does not recognize them as duplicates) for the same parameters, and then, during data validation (Section 8), calculating the RPD for field duplicate sample results.

Analytical precision will be determined by the laboratory by calculating the RPD for the results of the analysis of internal QC duplicates and matrix spike duplicates. The formula for calculating RPD is as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

where:

RPD = Relative Percent Difference

V1, V2 = The two values to be compared

|V1 - V2| = The absolute value of the difference between the two values

(V1 + V2)/2 = The average of the two values

For soil samples, the data quality objectives for analytical precision, calculated as the RPD between duplicate analyses, is presented in Table 3-1.

The same is presented for groundwater in Table 3-2 and air samples in Table 3-3.

Table 3-1 Quality Control Limits For Soil Samples

Analytical	Analytical Method [a]	Matrix Spike (MS) Compounds	Laboratory Accuracy and Precision: MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)	Surrogate Compounds	Surrogate Recovery (%)
VOCs [e]	8260B	1,1-Dichloroethane	77-139	20	50-150	Toluene-d8	63-124
		Trichloroethene	81-129	20	82-113	Bromofluorobenzene	50-133
		Benzene	83-135	20	81-118	1,2-Dichloroethane-d4	54-142
		Toluene	79-140	20	81-115		
		Chlorobenzene	80-141	20	83-114		
SVOCs [f]	8270C	Phenol	42-105	20	48-96	Nitrobenzene-d5	28-110
		2-Chlorophenol	52-107	20	54-92	2-Fluorobiphenyl	32-109
		1,4-Dichlorobenzene	40-101	20	57-86	Terphenyl-d14	30-150
		N-Nitroso-di-n-propylamine	63-97	20	49-99	Phenol-d5	29-104
		1,2,4-Trichlorobenzene	42-98	20	57-93	2-Fluorophenol	23-104
		4-Chloro-3-methylphenol	60-100	20	57-92	2,4,6-Tribromophenol	24-112
		Acenaphthene	65-100	20	52-97		
		4-Nitrophenol	45-95	20	24-120		
		2,4-Dinitrotoluene	56-104	20	61-101		
		Pentachlorophenol	33-111	20	32-102		
		Pyrene	49-120	20	53-103		
PCBs (as Aroclors)	8082	Aroclor-1016	55-128	20	67-121	TCMX	44-141
		Aroclor-1260	58-140	20	78-128	DCB	34-145

Analytical	Analytical Method [a]	Matrix Spike (MS) Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)		
Pesticides	8081A	4,4'-DDD	35-165	20	86-133	TCMX	30-158
		4,4'-DDE	50-144	20	80-130	DCB	30-161
		4,4'-DDT	23-170	20	72-141		
		Aldrin	57-145	20	84-133		
		alpha-BHC	37-154	20	81-136		
		beta-BHC	51-161	20	83-132		
		delta-BHC	43-159	20	77-131		
		gamma-BHC (Lindane)	48-159	20	83-135		
		alpha-Chlordane	44-156	20	88-132		
		gamma-Chlordane	61-147	20	87-135		
Pesticides (cont.)	8081A	Dieldrin	41-154	20	81-129		
		Endosulfan II	52-151	20	85-132		
		Endosulfan sulfate	32-162	20	76-135		
		Endrin	31-165	20	82-134		
		Endrin aldehyde	48-152	20	85-134		
		Endrin ketone	70-141	20	87-132		
		Heptachlor	41-155	20	85-132		
		Heptachlor epoxide	44-160	20	86-132		
		Methoxychlor	44-163	20	82-137		
		Toxaphene	50-150	20	50-150		

Analytical	Analytical Method [a]	Matrix Spike (MS) Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)		
Herbicides	8151A	2,4,5-TP (Silvex)	47-128	20	47-128	2,4-DCAA	50-130
		2,4,5-T	72-130	20	72-130		
		2,4-D	55-122	20	55-122		
		2,4-DB	75-125	20	75-125		
Inorganics [h]	6010B	Inorganic Analyte	75-125 [i]	20 [j]	80-120	NA	NA
	6020		75-125 [i]	20 [j]	80-120	NA	NA
	7471A		75-125 [i]	20 [j]	80-120	NA	NA
	ASTM D4282-02 (free cyanide)		75-125 [i]	20 [j]	90-110	NA	NA

Notes
(a) Analytical Methods: USEPA SW-846, 3rd edition, Revision 1, November 1990, any subsequent revisions shall supersede this information
(b) Matrix Spike/Matrix Spike Duplicate
(c) Relative Percent Difference
(d) Laboratory Control Sample
(e) Target Compound List Volatile Organic Compounds
(f) Target Compound List Semivolatile Organic Compounds
(g) Limits are advisory only
(h) Target Analyte List Inorganics (metals and cyanide)
(i) Matrix spike only
(j) Laboratory duplicate RPD
NA - Not Applicable

Table 3-2 Quality Control Limits for Water Samples

Analytical	Analytical Method [a]	Matrix Spike Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)		
VOCs [e]	8260B	1,1-Dichloroethane	55-139	20	55-139	Toluene-d8	83-117
		Trichloroethene	55-138	20	61-138	Bromofluorobenzene	74-123
		Benzene	85-121	20	66-125	1,2-Dichloroethane-d4	75-124
		Toluene	83-123	20	68-121		
		Chlorobenzene	85-119	20	70-122		
SVOCs [f]	8270C	Phenol	11-48	20	10-100	Nitrobenzene-d5	30-120
		2-Chlorophenol	35-99	20	41-91	2-Fluorobiphenyl	35-111
		1,4-Dichlorobenzene	49-88	20	53-91	Terphenyl-d14	26-135
		N-Nitroso-di-n-propylamine	55-127	20	54-116	Phenol-d5	30-77
		1,2,4-Trichlorobenzene	62-105	20	59-104	2-Fluorophenol	30-78
		4-Chloro-3-methylphenol	12-125	20	46-97	2,4,6-Tribromophenol	27-118
		Acenaphthene	68-99	20	63-101		
		4-Nitrophenol	10-89	20	10-78		
		2,4-Dinitrotoluene	61-99	20	67-106		
		Pentachlorophenol	39-107	20	33-100		
		Pyrene	72-112	20	64-108		
PCBs (as Aroclors)	8082	Aroclor-1016	30-150	20	65-126	TCMX	42-133
		Aroclor-1260	36-147	20	76-131	DCB	30-141
Pesticides	8081A	4,4'-DDD	55-177	20	86-134	TCMX	30-150
		4,4'-DDE	54-126	20	89-126	DCB	45-131

Analytical	Analytical Method [a]	Matrix Spike Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)		
Pesticides (continued)	8081A	4,4'-DDT	55-160	20	74-138		
		Aldrin	57-167	20	83-131		
		alpha-BHC	63-178	20	87-136		
		beta-BHC	50-150	20	88-131		
		delta-BHC	98-131	20	78-128		
		gamma-BHC (Lindane)	89-138	20	86-133		
		alpha-Chlordane	69-144	20	88-131		
		gamma-Chlordane	76-126	20	92-133		
Pesticides (cont.)	8081A	Dieldrin	72-136	20	81-132		
		Endosulfan I	84-127	20	91-132		
		Endosulfan II	79-138	20	90-129		
		Endosulfan sulfate	84-134	20	99-130		
		Endrin	75-143	20	87-130		
		Endrin aldehyde	62-160	20	95-133		
		Endrin ketone	87-135	20	90-130		
		Heptachlor	63-131	20	85-131		
		Heptachlor epoxide	82-125	20	89-132		
		Methoxychlor	76-161	20	88-139		
		Toxaphene	50-150	20	50-150		
Herbicides	8151A	2,4,5-TP (Silvex)	48-140	20	48-140	2,4-DCAA	45-140
		2,4,5-T	60-145	20	60-145		

Analytical	Analytical Method [(a)]	Matrix Spike Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [(b)] Recovery (%)	MS/MSD RPD [(c)] (%)	LCS [(d)] Recovery (%)		
Herbicides (continued)	8151A	2,4-D	60-138	20	60-138		
		2,4-DB	75-125	20	75-125		
Inorganics [(h)]	6010B	Inorganic Analyte	75-125 [(i)]	20 [(j)]	80-120	NA	NA
	6020		75-125 [(i)]	20 [(j)]	80-120	NA	NA
	7470A		75-125 [(i)]	20 [(j)]	80-120	NA	NA
	9012 (cyanide)		75-125 [(i)]	20 [(j)]	80-120	NA	NA

Notes

(a) Analytical Methods: USEPA SW-846, 3rd edition, Revision 1, November 1990, any subsequent revisions shall supersede this information
(b) MS/MSD = Matrix Spike/Matrix Spike Duplicate
(c) RPD = Relative Percent Difference
(d) LCS = Laboratory Control Sample
(e) Target Compound List Volatile Organic Compounds
(f) Target Compound List Semivolatile Organic Compounds
(g) Limits are advisory only
(h) Target Analyte List Inorganics (metals and cyanide)
(i) Matrix spike only
(j) Laboratory duplicate RPD
NA - Not Applicable

Table 3-3 Quality Control Limits for Air Samples

Analytical Parameter	Analytical Method [(a)]	Analyte Compounds	LCS [(d)] Recovery (%)	Duplicate RPD [(c), (e)] (%)	Laboratory Accuracy and Precision			
					MS/MSD [(b)] Recovery (%)	MS/MSD RPD [(c)] (%)	Surrogate Compounds	Surrogate Recovery (%)
VOCs	TO-15 Mod.	Acetone	60-140	25	NA	NA	Toluene-d8 Bromofluorobenzene 1,2-Dichloroethane-d4	70-130 70-130 70-130
		Bromodichloromethane	60-140	25				
		Butadiene, 1,3-	60-140	25				
		Carbon Disulfide	60-140	25				
		Chloro-1-Propene, -3 (Allyl Chloride)	60-140	25				
		Chlorodibromomethane	60-140	25				
		Cumene	60-140	25				
		Dichloroethylene, Trans-1,2-	60-140	25				
		Dioxane, 1,4-	60-140	25				
		Hexane	60-140	25				
		Methyl Ethyl Ketone	60-140	25				
		Methyl Isobutyl Ketone	60-140	25				
		Methyl Tert-Butyl Ether (MTBE)	60-140	25				
		Naphthalene	60-140	25				
		Propylbenzene, N-	60-140	25				
		Tribromomethane (Bromoform)	60-140	25				
		Cyclohexane	60-140	25				
		2-Hexanone	60-140	25				
		4-Ethyltoluene	60-140	25				
		Ethanol	60-140	25				

Analytical Parameter	Analytical Method (a)	Analyte Compounds	LCS (d) Recovery (%)	Duplicate RPD (c), (e) (%)	Laboratory Accuracy and Precision			
					MS/MSD (b) Recovery (%)	MS/MSD RPD (c) (%)	Surrogate Compounds	Surrogate Recovery (%)
		Heptane	60-140	25				
		2-Methylpentane	60-140	25				
		Isopentane	60-140	25				
		2,3-Dimethylpentane	60-140	25				
		2,2,4-Trimethylpentane	60-140	25				
		Indene	60-140	25				
		Indan	60-140	25				
		Thiopene	60-140	25				
		2-Propanol	60-140	25				
		Tetrahydrofuran	60-140	25				
VOCs	TO-15 Mod.	Benzene	70-130	25	NA	NA	Toluene-d8 Bromofluorobenzene 1,2-Dichloroethane-d4	70-130 70-130 70-130
		Bromomethane	70-130	25				
		Carbon Tetrachloride	70-130	25				
		Chlorobenzene	70-130	25				
		Chloroethane	70-130	25				
		Chloroform	70-130	25				
		Dibromoethane, 1,2- (Ethylene Dibromide)	70-130	25				
		Dichlorobenzene, 1,2-	70-130	25				
		Dichlorobenzene, 1,3-	70-130	25				
		Dichlorobenzene, 1,4-	70-130	25				

Analytical Parameter	Analytical Method [(a)]	Analyte Compounds	LCS [(d)] Recovery (%)	Duplicate RPD [(c), (e)] (%)	Laboratory Accuracy and Precision			
					MS/MSD [(b)] Recovery (%)	MS/MSD RPD [(c)] (%)	Surrogate Compounds	Surrogate Recovery (%)
		Dichlorodifluoromethane (Freon 12)	70-130	25				
		Dichloroethane, 1,1-	70-130	25				
		Dichloroethane, 1,2-	70-130	25				
		Dichloroethylene, 1,1-	70-130	25				
		Dichloroethylene, Cis-1,2-	70-130	25				
		Dichloromethane (Methylene Chloride)	70-130	25				
		Dichloropropane, 1,2-	70-130	25				
		Dichloropropene, Cis-1,3-	70-130	25				
		Dichloropropene, Trans-1,3-	70-130	25				
		1,2-Dichloro-1,1,2,2,-tetrafluoroethane	70-130	25				
		Ethyl Benzene	70-130	25				
		Fluorotrichloromethane (Freon 11)	70-130	25				
		Methyl Chloride	70-130	25				
		Styrene	70-130	25				
		Tetrachloroethane, 1,1,2,2-	70-130	25				
		Tetrachloroethylene (PCE)	70-130	25				
		Toluene	70-130	25				
		Trichloro-1,2,2-Trifluoroethane, 1,1,2-	70-130	25				
		Trichlorobenzene, 1,2,4-	70-130	25				

Analytical Parameter	Analytical Method [(a)]	Analyte Compounds	LCS [(d)] Recovery (%)	Duplicate RPD [(c), (e)] (%)	Laboratory Accuracy and Precision			
					MS/MSD [(b)] Recovery (%)	MS/MSD RPD [(c)] (%)	Surrogate Compounds	Surrogate Recovery (%)
VOCs	TO-15 Mod.	Trichloroethane, 1,1,1-	70-130	25	NA	NA	Toluene-d8	70-130
		Trichloroethane, 1,1,2-	70-130	25			Bromofluorobenzene	70-130
		Trimethylbenzene, 1,3,5-	70-130	25			1,2-Dichloroethane-d4	70-130
		Vinyl Chloride	70-130	25				
		m,p-xylene	70-130	25				
		o-xylene	70-130	25				
		Hexachlorobutadiene	70-130	25				
		alpha-chlorotoluene	70-130	25				
Fixed Gas	ASTM D1945 Mod.	Helium	75-125	30	NA	NA	NA	NA

Notes

(a) USEPA, 1999. Compendium Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared-Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). January 1999.

American Society of Testing Materials, 2003. D1945-03. Standard Test Method for Analysis of Natural Gas by Gas Chromatograph, 2003.

(b) Matrix Spike/Matrix Spike Duplicate

(c) Relative Percent Difference

(d) Laboratory Control Sample

(e) Laboratory duplicate RPD

NA - Not Applicable

3.3 Accuracy

Accuracy is a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern (Taylor, 1987), or the difference between a measured value and the true or accepted reference value. The accuracy of an analytical procedure is best determined by the analysis of a sample containing a known quantity of material, and is expressed as the percent of the known quantity which is recovered or measured. The recovery of a given analyte is dependent upon the sample matrix, method of analysis, and the specific compound or element being determined. The concentration of the analyte relative to the detection limit of the analytical method is also a major factor in determining the accuracy of the measurement. Concentrations of analytes which are close to the detection limits are less accurate because they are more affected by such factors as instrument "noise". Higher concentrations will not be as affected by instrument noise or other variables and thus will be more accurate.

Sampling accuracy may be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy is typically assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks. Additionally, initial and continuing calibrations must be established and be within method control limits. Instrument and method analytical accuracy can then be determined for any sample set.

Accuracy is normally measured as the percent recovery (%R) of a known amount of analyte, called a spike, added to a sample (matrix spike) or to a blank (blank spike). The %R is calculated as follows:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:

%R = Percent recovery
SSR = Spike sample result: concentration of analyte obtained by analyzing the sample with the spike added
SR = Sample result: the background value, i.e., the concentration of the analyte obtained by analyzing the sample
SA = Spiked analyte: concentration of the analyte spike added to the sample

The acceptance limits for accuracy for each parameter are presented in Tables 3-1, 3-2, and 3-3.

3.4 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter which is most concerned with the proper design of the sampling program (USEPA, 1987). Samples must be representative of the environmental media being sampled. Selection of sample locations and sampling procedures will incorporate consideration of obtaining the most representative sample possible.

Field and laboratory procedures will be performed in such a manner as to ensure, to the degree that is technically possible, that the data derived represents the in-place quality of the material sampled. Every effort will be made to ensure that chemical compounds will not be introduced into the sample via sample containers, handling, and analysis. Decontamination of sampling devices and digging equipment will be performed between samples. Analysis of field blanks, trip blanks, and method blanks will also be performed to monitor for potential sample contamination from field and laboratory procedures.

The assessment of representativeness also must consider the degree of heterogeneity in the material from which the samples are collected. Sampling heterogeneity will be evaluated during data validation through the analysis of coded field duplicate samples. The analytical laboratory will also follow acceptable procedures to assure the samples are adequately homogenized prior to taking aliquots for analysis, so the reported results are representative of the sample received.

Chain-of-custody procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling. Details of blank, duplicate and chain-of-custody procedures are presented in Sections 4 and 5.

3.5 Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid (USEPA, 1987). The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested. Completeness is defined as follows for all sample measurements:

$$\%C = \frac{V}{T} \times 100$$

where:

%C = Percent completeness
V = Number of measurements judged valid
T = Total number of measurements

3.6 Comparability

Comparability expresses the degree of confidence with which one data set can be compared to another (USEPA, 1987). The comparability of all data collected for this project will be ensured by:

- Using identified standard methods for both sampling and analysis phases of this project,
- Requiring traceability of all analytical standards and/or source materials to the USEPA or National Institute of Standards and Technology (NIST),
- Requiring that all calibrations be verified with an independently traceable standard from a source other than that used for calibration (if applicable),
- Using standard reporting units and reporting formats including the reporting of QC data,
- Performing a complete data validation on all of the analytical results, including the use of data qualifiers in all cases where appropriate,
- Requiring that all validation qualifiers be considered any time an analytical result is used for any purpose.

These steps will ensure all future users of either the data or the conclusions drawn from them will be able to judge the comparability of these data and conclusions.

4.0 Sampling Program

4.1 Introduction

The sampling program will provide data concerning the presence and the nature and extent of contamination of groundwater, soil, and air. This section presents sample collection procedures, sample container preparation procedures, sample preservation procedures, sample holding times, and field QC sample requirements.

4.2 Sample Collection

Soil, groundwater, and air samples will be collected at the Site and off-Site areas. The location and frequency of sampling and the methods selected for field procedures and laboratory analysis are described in detail in the SMP.

4.3 Sample Container Preparation and Sample Preservation

All sample containers will be new and will meet the specifications required by the USEPA. Copies of the sample container QC analyses will be provided by the laboratory for each container lot used for sample collection. The containers will be labeled and the appropriate preservatives will be added. The container requirements are shown in Tables 4-1, 4-2, and 4-3.

Samples shall be preserved according to the preservation techniques given in Tables 4-1 through 4-3. Preservatives will be added to the sample bottles by the laboratory prior to their shipment in sufficient quantities to ensure that proper sample pH is met. Following sample collection, the sample bottles should be placed on ice in the shipping cooler, cooled to 4 ± 2 ºC with ice, and delivered to the laboratory within 48 hours of collection. Chain-of-custody (COC) procedures are described in Section 5.

4.4 Sample Holding Times

The sample holding times for organic and inorganic parameters are given in Tables 4-1 through 4-3 and must be in accordance with the NYSDEC ASP requirements. Holding times for Toxicity Characteristic Leaching Procedure (TCLP) samples are given in Table 4-4. The NYSDEC ASP holding times must be strictly adhered to by the laboratory. Any holding time exceedances must be reported to National Grid.

4.5 Field Quality Control Samples

To assess field sampling and decontamination performance, two types of "blanks" will be collected and submitted to the laboratory for analyses. In addition, the precision of field sampling procedures will be assessed by collecting coded field duplicates and matrix spike/matrix spike duplicates (MS/MSD). The blanks will include the following.

- Trip Blanks – A trip blank will be prepared before the sample containers are sent by the laboratory. The trip blank will consist of a 40-ml VOA vial containing distilled, deionized water, which accompanies the water sample bottles into the field and back to the laboratory. A trip blank will be included with each shipment of water samples for volatiles analysis. The trip blank will be analyzed for volatile organic compounds to assess any contamination from sampling, transport, storage, and internal laboratory procedures.

- Rinseate Blanks – Rinseate blanks will be taken at a minimum frequency of one per 20 field samples per sample matrix. Rinseate blanks are used to determine the effectiveness of the decontamination procedures for sampling equipment. It is a sample of reagent water provided by the laboratory that has passed through a decontaminated bailer or other sampling apparatus. It is usually collected as a last step in the decontamination procedure, prior to taking an environmental sample. The rinseate blank may be analyzed for all or some of the parameters of interest.

The duplicates collected to assess field sampling/laboratory precision and sample homogeneity will consist of the following.

- Coded Field Duplicate – To determine the representativeness of the sampling methods, coded field duplicates will be collected. The samples are termed "coded" because they will be labeled in such a manner that the laboratory will not be able to determine that they are field duplicate samples. This will eliminate any possible bias that could arise. Field duplicates will be taken at a minimum frequency of one per 20 field samples per sample matrix.

- Matrix Spike/Matrix Spike Duplicate (MS/MSD) – MS/MSD samples (MS/MSD for organics; MS and laboratory duplicate for inorganics) will be collected at a frequency of one pair per 20 field samples. MS/MSD samples are used to assess the effect of the sample matrix on the recovery of target compounds or target analytes. The advisory acceptance limits for MS/MSD %R and RPDs are given in Tables 3-1 and 3-2.

Table 4-1 Soil and Waste Sample Containerization and Holding Times

Analysis	Bottle Type	Preservation [a]	Holding Time [b]
Volatile Organic Compounds (VOCs)	Wide-mouth glass w/ Teflon lined cap	Cool to 4ºC	10 days
Extractable Organic Compounds [c]	Wide-mouth glass w/ Teflon lined cap	Cool to 4ºC	10 days*
Metals	Wide-mouth plastic or glass	Cool to 4ºC	6 months, except mercury (26 days)
Cyanide	Wide-mouth plastic	Cool to 4ºC	10 days
TCLP Organic Compounds	Wide-mouth glass w/ Teflon lined cap	Cool to 4ºC	See Table 4-5
TCLP Metals	Wide-mouth plastic or glass	Cool to 4ºC	See Table 4-5
Total Petroleum Hydrocarbons (TPH)	DRO: Clear glass GRO: Clear glass	DRO: Cool to 4ºC GRO: Cool to 4ºC	DRO: 7 days to extraction/40 days to analysis GRO: 14 days
Corrosivity	Clear glass	None	Analyze ASAP
Ignitability	Clear glass	None	Analyze ASAP
Reactive Cyanide and Sulfide	Clear glass	None	Analyze ASAP
Total Organic Halogens	Amber glass	pH < 2 with H_2SO_4, Cool to 4ºC, Dark	28 days

Notes

(a) All samples to be preserved with ice during collection and transport
(b) Days from verified time of sample receipt (VTSR).
(c) Semivolatile organic compounds, PCBs, pesticides, herbicides.

* Sohxlet or sonication procedures for extraction and concentration of soil/waste samples for SVOCs must be completed within 5 days of VTSR. Sohxlet or sonication procedures for extraction and concentration of soil/sediment/waste samples for PCBs must be completed within 5 days of VTSR. Extracts of soil samples must be analyzed within 40 days of extraction.

Table 4-2 Water Sample Containerization and Holding Times

Analysis	Bottle Type	Preservation [(a)]	Holding Time [(b)]
Volatile Organic Compounds (VOCs)	(2) 40 mL glass vial with Teflon septum	Cool to 4ºC	10 days
Extractable Organic Compounds [(c)]	1000 mL glass w/ Teflon-lined cap	Cool to 4ºC	5 days*
Metals	1000 mL plastic bottle	Nitric Acid to pH < 2 Cool to 4ºC	6 months, except mercury (26 days)
Cyanide	500 mL plastic bottle	NaOH to pH > 12 Cool to 4ºC	10 days

Notes

(a) All samples to be preserved in ice during collection and transport.
(b) Days from validated time of sample receipt (VTSR)
(c) Semivolatile organic compounds, PCBs, pesticides, herbicides

* Continuous liquid-liquid extraction is the required extraction for water samples for SVOCs. Continuous liquid-liquid extraction and concentration of water samples for SVOC analysis must begin within 5 days and be completed within 7 days of VTSR. Extracts of water samples must be analyzed within 40 days of extraction.

Table 4-3 Soil Gas Sample Containerization and Holding Times

Analysis	Bottle Type	Preservation	Holding Time [b]
Volatile Organic Compounds (VOCs)	6 L Summa® canister [a]	NA	30 days
Fixed Gases (Helium)	6 L Summa® canister [a]	NA	30 days

Notes

(a) Stainless steel SUMMA® canisters must be certified clean by the laboratory using TO-15 § 8.4.1. The canisters will be delivered to the field with a pressure of 28-30” Hg. Canisters received with a vacuum pressure less than 25” Hg will not be used.

(b) Days from date of sample collection. The holding time for the TO-15 analysis is 30 days. The holding time for an evacuated canister is 30 days. After 30 days, unused canisters must be exchanged for recently cleaned canisters.

Table 4-4 TCLP [a] Sample Holding Times

Analytical Parameter	From: Sample Collection To: TCLP Extraction*	From: TCLP Extraction To: Preparative Extraction	From: Preparative Extraction To: Determinative Analysis
Volatiles	7 days	NA	7 days
Semivolatiles	5 days	7 days	40 days
PCBs (as Aroclors)	5 days	7 days	40 days
Mercury	5 days	NA	28 days
Metals (except Mercury)	180 days	NA	180 days

Notes:
NA - Not Applicable.
(a) Toxicity Characteristic Leaching Procedure.

*Times shown are from verified time of sample receipt (VSTR).

5.0 Sample Tracking and Custody

5.1 Introduction

This section presents sample custody procedures for both the field and laboratory. Implementation of proper custody procedures for samples collected in the field is the responsibility of field personnel. Both laboratory and field personnel involved in collection and transfer of samples will be trained as to the purpose and procedures for sample custody prior to implementation.

Evidence of sample traceability and integrity is provided by COC procedures. These procedures document the sample traceability from the selection and preparation of the sample containers by the laboratory, to sample collection, to sample shipment, to laboratory receipt and analysis. The sample custody flowchart is shown in Figure 5-1. A sample is considered to be in a person's custody if the sample is:

- In a person's possession,
- Maintained in view after possession is accepted and documented,
- Locked and tagged with Custody Seals so that no one can tamper with it after having been in physical custody,
- In a secured area which is restricted to authorized personnel.

5.2 Field Sample Custody

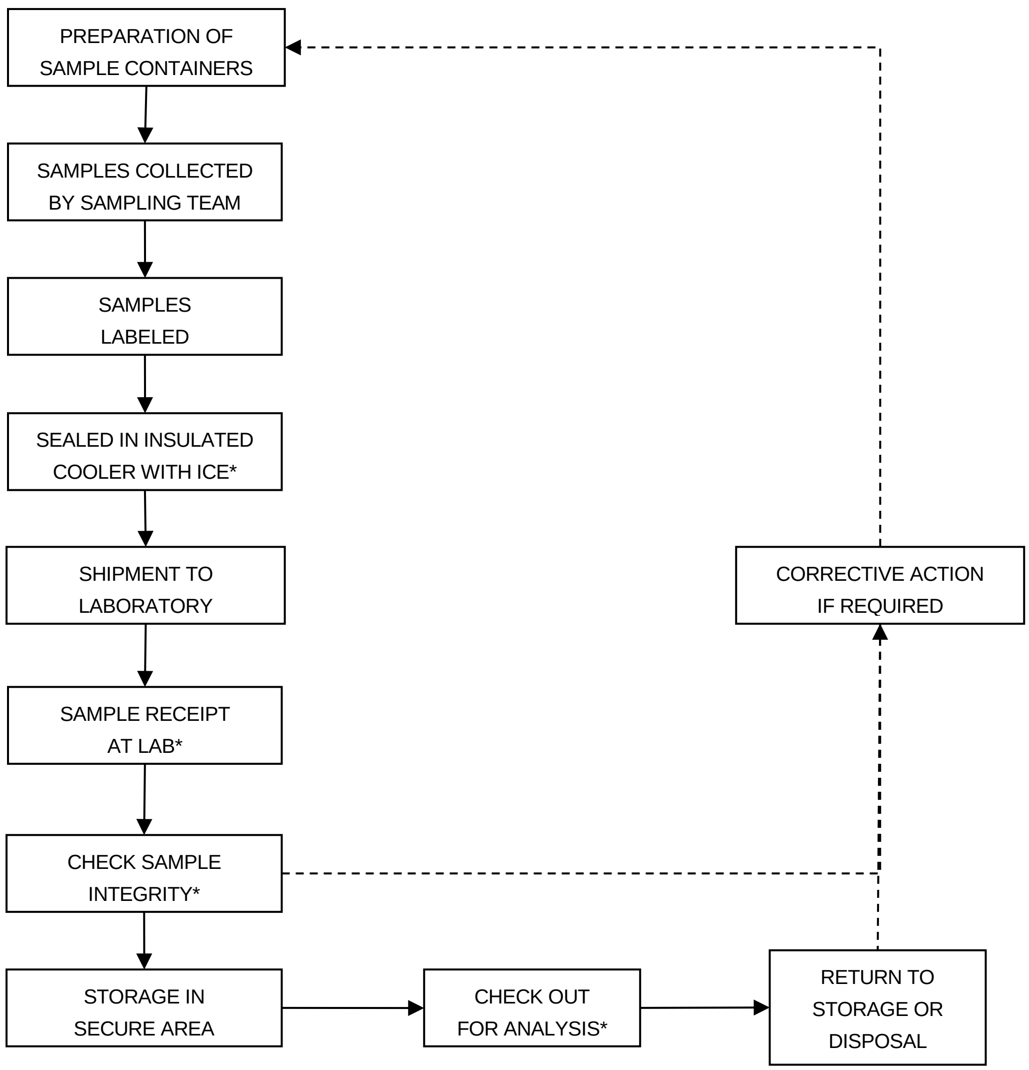
A COC record (Figure 5-2 or similar) accompanies the sample containers from selection and preparation at the laboratory, during shipment to the field for sample collection and preservation, and during the return to the laboratory. Triplicate copies of the COC must be completed for each sample set collected.

The COC lists the field personnel responsible for taking samples, the project name and number, the name of the analytical laboratory to which the samples are sent, and the method of sample shipment. The COC also lists a unique description of every sample bottle in the set. If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample.

The **REMARKS** space on the COC is used to indicate if the sample is a matrix spike, matrix spike duplicate, or any other sample information for the laboratory. Since they are not specific to any one sample point, trip and field blanks are indicated on separate rows. Once all bottles are properly accounted for on the form, a sampler will write his or her signature and the date and time on the first **RELINQUISHED BY** space. The sampler will also write the method of shipment, the shipping cooler identification number, and the shipper airbill number on the top of the COC. Errors in field records will be crossed out with a single line in ink and initialed by the author.

One copy of the COC is retained by sampling personnel and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler lid is closed, custody seals provided by the laboratory are affixed to the latch and across the back and front of the cooler lid, and the person relinquishing the samples signs their name across the seal. The seal is taped, and the cooler is wrapped tightly with clear packing tape. It is then relinquished by field personnel to personnel responsible for shipment, typically an overnight carrier. The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the sample(s) will not be analyzed.

Figure 5-1 Sample Custody Flowdown



*Requires Sign-Off On Chain-Of-Custody.

Figure 5-2 Chain-Of-Custody Record

CHAIN OF CUSTODY RECORD

Client Name			Purchase Order	Analyses Requested	Turnaround Time	Compliance Monitoring
Address		Phone/Fax #			Standard: ____ Other: ____	Yes: __
City	State	Zip	Report Attention:		Rush: 24 Hr ____ 48 Hr ____	No: __
Sampled by:			Signature:			Lab Use Only Sub-Sample

Date Sampled	Time Sampled	Sample Type *	Sample Identification	Preservative* See Key Below	Number of Containers									Remarks	pH <2	pH >12

Signature	Print Name	Company	Date	Time
Relinquished By:				
Received By:				
Relinquished By:				
Received By:				
Relinquished By:				
Received By Laboratory:				

Custody Seal Intact
Yes ____ No ____ None ____

Sample Temperature

Degrees C ________

Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The analytical results associated with this COC apply only to the samples as they are received by the laboratory. The liability of the laboratory is limited to the amount paid for the report.
Terms: Net thirty days on approved credit.

*** KEY:** Sample Type: 1=Drinking Water, 2=Surface Water, 3=Ground Water, 4=Waste Water, 5=Soil, 6=RCRA, 7=Other
Preservative: 1=NaOH, 2=NaOH + ZnOAC, 3=HNO3, 4=H2SO4, 5=Na2S2O3, 6=None, 7=Other

SEM COC Form Revised 02/01

5.3 Laboratory Sample Custody

The Project Manager or Field Team Leader will notify the laboratory of upcoming field sampling activities and the subsequent shipment of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped as well as the anticipated date of arrival.

The following laboratory sample custody procedures will be used:

- The laboratory will designate a sample custodian who will be responsible for maintaining custody of the samples and for maintaining all associated records documenting that custody.

- Upon receipt of the samples, the custodian will check cooler temperature, and check the original COC documents and compare them with the labeled contents of each sample container for correctness and traceability. The sample custodian will sign the COC record and record the date and time received.

- Care will be exercised to annotate any labeling or descriptive errors. In the event of documentation or sample integrity issues, the laboratory will immediately contact the Project Manager or Field Team Leader as part of the corrective action process. A qualitative assessment of each sample container will be performed to note any anomalies, such as broken or leaking bottles. This assessment will be recorded as part of the incoming COC procedure.

- The soil, water, and air samples will be stored in a secured area until analyses commence, at a temperature of approximately 4 ± 2 ˚C if required.

- A laboratory tracking record will accompany the sample or sample fraction through final analysis for control.

A copy of the tracking record will accompany the laboratory report and will become a permanent part of the project records.

6.0 Calibration Procedures

6.1 Field Instruments

All field analytical equipment will be calibrated immediately prior to each day's use. The calibration procedures will conform to manufacturer's standard instructions. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. Records of all instrument calibration will be maintained by the Field Team Leader. Copies of all the instrument manuals will be maintained onsite by the Field Team Leader.

Calibration procedures for instruments used for monitoring health and safety hazards (e.g., photoionization detector [PID] and explosimeter) are provided in the HASP. More frequent calibration may be needed depending on conditions encountered in the field.

6.2 Laboratory Instruments

The laboratory will follow all calibration procedures and schedules as specified in the sections of the USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods given in Section 7.

7.0 Analytical Procedures

7.1 Introduction

Soil, water, and waste samples will be analyzed according to the USEPA SW-846 "*Test Methods for Evaluating Solid Waste*," November 1986, 3rd edition and subsequent updates. Air and soil gas samples will be analyzed according to the USEPA Compendium Method TO-15, *Determination of VOCs in Air Collected in Specially Prepared-Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, January 1999 and helium (fixed gas) analyses will be performed using American Society for Testing Materials (ASTM), Method 1945 modified. The methods to be used for the laboratory analysis of water and soil samples are presented in Tables 7-1 and 7-2. The soil gas and ambient air samples will be analyzed by USEPA Method TO-15 as presented in Table 7-3. These methods were selected because they attain the quantitation limits and DQOs required by the project, which are compiled on Tables 7-1 through 7-3. All analytical analysis will be conducted at an ELAP certified laboratory as per Section 1.3.1.2.

Table 7-1 Project Quantitation Limits for Soil and Water

CAS No.	Analysis/Compound	Method	Quantitation Limits		State of New York Standards	
			Water (µg/L)	Soil (µg/kg)	Water [(a)] (µg/L)	Soil [(b)] (µg/kg)
Volatile Organics						
71-55-6	1,1,1-Trichloroethane	SW8260B	5	5	5	680
79-34-5	1,1,2,2-Tetrachloroethane	SW8260B	5	5	5	
79-00-5	1,1,2-Trichloroethane	SW8260B	5	5	1	
76-13-1	1,1,2-Trichlorotrifluoroethane	SW8260B	5	5	5	
75-34-3	1,1-Dichloroethane	SW8260B	5	5	5	270
75-35-4	1,1-Dichloroethene	SW8260B	5	5	5	330
120-82-1	1,2,4-Trichlorobenzene	SW8260B	5	5	5	3600
96-12-8	1,2-Dibromo-3-Chloropropane	SW8260B	5	5	0.04	
106-93-4	1,2-Dibromoethane	SW8260B	5	5	0.0006	
95-50-1	1,2-Dichlorobenzene	SW8260B	5	5	3	1100
107-06-2	1,2-Dichloroethane	SW8260B	5	5	0.6	20
78-87-5	1,2-Dichloropropane	SW8260B	5	5	1	
541-73-1	1,3-Dichlorobenzene	SW8260B	5	5	3	2400
106-46-7	1,4-Dichlorobenzene	SW8260B	5	5	3	1800
78-93-3	2-Butanone	SW8260B	25	25	50	300
591-78-6	2-Hexanone	SW8260B	25	25	50	
108-10-1	4-Methyl-2-Pentanone	SW8260B	25	25		1000
67-64-1	Acetone	SW8260B	25	25	50	50
71-43-2	Benzene	SW8260B	5	5	1	60
75-27-4	Bromodichloromethane	SW8260B	5	5	50	
75-25-2	Bromoform	SW8260B	5	5	50	
74-83-9	Bromomethane	SW8260B	5	5	5	
75-15-0	Carbon Disulfide	SW8260B	5	5		2700
56-23-5	Carbon Tetrachloride	SW8260B	5	5	5	760
108-90-7	Chlorobenzene	SW8260B	5	5	5	1100
75-00-3	Chloroethane	SW8260B	5	5	5	1900
67-66-3	Chloroform	SW8260B	5	5	7	370
74-87-3	Chloromethane	SW8260B	5	5	5	
156-59-2	cis-1,2-Dichloroethene	SW8260B	5	5	5	250
10061-01-5	cis-1,3-Dichloropropene	SW8260B	5	5	0.4	190
110-82-7	Cyclohexane	SW8260B	5	5		
124-48-1	Dibromochloromethane	SW8260B	5	5	50	
75-71-8	Dichlorodifluoromethane	SW8260B	5	5	5	
100-41-4	Ethyl Benzene	SW8260B	5	5	5	1000
98-82-8	Isopropylbenzene	SW8260B	5	5	5	
79-20-9	Methyl Acetate	SW8260B	5	5		
1634-04-4	Methyl tert-butyl Ether	SW8260B	5	5		930
108-87-2	Methylcyclohexane	SW8260B	5	5		
75-09-2	Methylene Chloride	SW8260B	5	5	5	50
100-42-5	Styrene	SW8260B	5	5	930	
10061-02-6	t-1,3-Dichloropropene	SW8260B	5	5	0.4	

CAS No.	Analysis/Compound	Method	Quantitation Limits		State of New York Standards	
			Water (µg/L)	Soil (µg/kg)	Water [(a)] (µg/L)	Soil [(b)] (µg/kg)
Volatile Organics (continued)						
127-18-4	Tetrachloroethene	SW8260B	5	5	5	1300
108-88-3	Toluene	SW8260B	5	5	5	700
156-60-5	trans-1,2-Dichloroethene	SW8260B	5	5	5	300
79-01-6	Trichloroethene	SW8260B	5	5	5	470
75-69-4	Trichlorofluoromethane	SW8260B	5	5	5	
75-01-4	Vinyl Chloride	SW8260B	5	5	2	20
136777-61-2	m/p-Xylenes	SW8260B	10	10	5	260
95-47-6	o-Xylene	SW8260B	5	5	5	
Semivolatile Organics						
92-52-4	1',1-Biphenyl	SW8270C	10	330	5	
108-60-1	2,2'-oxybis(1-Chloropropane)	SW8270C	10	330	5	
95-95-4	2,4,5-Trichlorophenol	SW8270C	10	330		100
88-06-2	2,4,6-Trichlorophenol	SW8270C	10	330		
120-83-2	2,4-Dichlorophenol	SW8270C	10	330		400
105-67-9	2,4-Dimethylphenol	SW8270C	10	330		
51-28-5	2,4-Dinitrophenol	SW8270C	10	330		200
121-14-2	2,4-Dinitrotoluene	SW8270C	10	330	5	
606-20-2	2,6-Dinitrotoluene	SW8270C	10	330	5	1000
91-58-7	2-Chloronaphthalene	SW8270C	10	330	10	
95-57-8	2-Chlorophenol	SW8270C	10	330		800
91-57-6	2-Methylnaphthalene	SW8270C	10	330		36400
95-48-7	2-Methylphenol	SW8270C	10	330		100
88-74-4	2-Nitroaniline	SW8270C	10	330	5	400
88-75-5	2-Nitrophenol	SW8270C	10	330		300
91-94-1	3,3'-Dichlorobenzidine	SW8270C	10	330	5	n/a
65794-96-9	3+4-Methylphenols	SW8270C	10	330		900
99-09-2	3-Nitroaniline	SW8270C	10	330	5	500
534-52-1	4,6-Dinitro-2-methylphenol	SW8270C	10	330		
101-55-3	4-Bromophenyl-phenyl ether	SW8270C	10	330		
59-50-7	4-Chloro-3-methylphenol	SW8270C	10	330		240
106-47-8	4-Chloroaniline	SW8270C	10	330	5	220
7005-72-3	4-Chlorophenyl-phenyl ether	SW8270C	10	330		
100-01-6	4-Nitroaniline	SW8270C	10	330	5	
100-02-7	4-Nitrophenol	SW8270C	10	330		100
83-32-9	Acenaphthene	SW8270C	10	330	20	20000
208-96-8	Acenaphthylene	SW8270C	10	330		100000
98-86-2	Acetophenone	SW8270C	10	330		
120-12-7	Anthracene	SW8270C	10	330	50	100000
1912-24-9	Atrazine	SW8270C	10	330	7.5	
56-55-3	Benzo(a)anthracene	SW8270C	10	330	0.002	1000
50-32-8	Benzo(a)pyrene	SW8270C	10	330	0.002	1000
205-99-2	Benzo(b)fluoranthene	SW8270C	10	330	0.002	1000
191-24-2	Benzo(g,h,i)perylene	SW8270C	10	330		100000

CAS No.	Analysis/Compound	Method	Quantitation Limits		State of New York Standards	
			Water (µg/L)	Soil (µg/kg)	Water [(a)] (µg/L)	Soil [(b)] (µg/kg)
Semivolatile Organics (continued)						
207-08-9	Benzo(k)fluoranthene	SW8270C	10	330	0.002	80
100-52-7	Benzaldehyde	SW8270C	10	330		
111-91-1	bis(2-Chloroethoxy)methane	SW8270C	10	330	5	
111-44-4	bis(2-Chloroethyl)ether	SW8270C	10	330	1	
117-81-7	bis(2-Ethylhexyl)phthalate	SW8270C	10	330	5	50000
85-68-7	Butylbenzylphthalate	SW8270C	10	330	50	50000
105-60-2	Caprolactam	SW8270C	10	330		
86-74-8	Carbazole	SW8270C	10	330		
218-01-9	Chrysene	SW8270C	10	330	0.002	1000
53-70-3	Dibenzo(a,h)anthracene	SW8270C	10	330		330
132-64-9	Dibenzofuran	SW8270C	10	330		7000
84-66-2	Diethylphthalate	SW8270C	10	330	50	7100
131-11-3	Dimethylphthalate	SW8270C	10	330	50	2000
84-74-2	Di-n-butylphthalate	SW8270C	10	330	50	8100
117-84-0	Di-n-octyl phthalate	SW8270C	10	330	50	50000
206-44-0	Fluoranthene	SW8270C	10	330	50	100000
86-73-7	Fluorene	SW8270C	10	330	50	30000
118-74-1	Hexachlorobenzene	SW8270C	10	330	0.04	410
87-68-3	Hexachlorobutadiene	SW8270C	10	330	0.5	
77-47-4	Hexachlorocyclopentadiene	SW8270C	10	330	5	
67-72-1	Hexachloroethane	SW8270C	10	330	5	
193-39-5	Indeno(1,2,3-cd)pyrene	SW8270C	10	330	0.002	1500
78-59-1	Isophorone	SW8270C	10	330	50	4400
91-20-3	Naphthalene	SW8270C	10	330	10	1200
98-95-3	Nitrobenzene	SW8270C	10	330	0.4	200
621-64-7	N-Nitroso-di-n-propylamine	SW8270C	10	330		
86-30-6	N-Nitrosodiphenylamine	SW8270C	10	330	50	
87-86-5	Pentachlorophenol	SW8270C	10	330		800
85-01-8	Phenanthrene	SW8270C	10	330	50	50000
108-95-2	Phenol	SW8270C	10	330		30
129-00-0	Pyrene	SW8270C	10	330	50	10000
Metals						
7429-90-5	Aluminum	6010B / 6020	50	5000	100	SB
7440-36-0	Antimony	6010B / 6020	25	2500	3	SB
7440-38-2	Arsenic	6010B / 6020	10	1000	50	7500
7440-39-3	Barium	6010B / 6020	50	5000	1000	350000
7440-41-7	Beryllium	6010B / 6020	3	300	3	160
7440-43-9	Cadmium	6010B / 6020	3	300	5	2500
7440-70-2	Calcium	6010B / 6020	1000	100000		SB
7440-47-3	Chromium	6010B / 6020	5	500	50	1000
7440-48-4	Cobalt	6010B / 6020	15	1500	5	30000
7440-50-8	Copper	6010B / 6020	10	1000	200	50000
7439-89-6	Iron	6010B / 6020	50	5000	300	2000000
7439-92-1	Lead	6010B / 6020	6	600	50	400 [(c)]

CAS No.	Analysis/Compound	Method	Quantitation Limits		State of New York Standards	
			Water (µg/L)	Soil (µg/kg)	Water [(a)] (µg/L)	Soil [(b)] (µg/kg)
Metals (Continued)						
7439-95-4	Magnesium	6010B / 6020	1000	100000	35000	SB
7439-96-5	Manganese	6010B / 6020	10	1000	300	1600000
7440-02-0	Nickel	6010B / 6020	20	2000	100	30000
7440-09-7	Potassium	6010B / 6020	1000	100000		SB
7782-49-2	Selenium	6010B / 6020	10	1000	10	3900
7440-22-4	Silver	6010B / 6020	5	500	50	2000
7440-23-5	Sodium	6010B / 6020	1000	100000	20000	SB
7440-28-0	Thallium	6010B / 6020	20	2000	0.5	SB
7440-62-2	Vanadium	6010B / 6020	20	2000	14	100000
7440-66-6	Zinc	6010B / 6020	20	2000	5000	109000
7439-97-6	Mercury	7471A	0.2	10	0.7	180
Inorganics						
n/a	Cyanide, Free	ASTM D4282-02 / 9013A		60		
n/a	Cyanide, Total	9012 / 9010A	10		200	27000
Pesticides						
72-54-8	4,4'-DDD	8081	0.05	1.7	0.3	3.3
72-55-9	4,4'-DDE	8081	0.05	1.7	0.2	3.3
50-29-3	4,4'-DDT	8081	0.2	1.7	0.2	3.3
309-00-2	Aldrin	8081	0.05	1.7	0.002	5
319-84-6	alpha-BHC	8081	0.05	1.7	0.01	20
319-85-7	beta-BHC	8081	0.2	1.7	0.04	36
319-86-8	delta-BHC	8081	0.05	1.7	0.04	40
58-89-9	gamma-BHC (Lindane)	8081	0.05	1.7	0.05	100
5103-71-9	alpha-Chlordane	8081	0.05	1.7		94
5566-34-7	gamma-Chlordane	8081	0.05	1.7		540
57-74-9	Chlordane	8081	0.5	17	0.05	540
60-57-1	Dieldrin	8081	0.05	1.7	0.004	5
959-98-8	Endosulfan I	8081	0.05	1.7		2400
33213-65-9	Endosulfan II	8081	0.05	1.7		2400
1031-07-8	Endosulfan sulfate	8081	0.05	1.7		2400
72-20-8	Endrin	8081	0.05	1.7	ND	14
7421-93-4	Endrin aldehyde	8081	0.05	1.7	5	
53494-70-5	Endrin ketone	8081	0.05	1.7	5	
76-44-8	Heptachlor	8081	0.05	1.7	0.04	42
1024-57-3	Heptachlor epoxide	8081	0.05	1.7	0.03	20
72-43-5	Methoxychlor	8081	0.05	1.7	35	900000
8001-35-2	Toxaphene	8081	0.5	17	0.06	
PCB's						
12674-11-2	Aroclor-1016	8082	0.5	17	0.09* Applies to the sum of the PCBs	1000 (total surface soil) 10000 (total subsurface
11104-28-2	Aroclor-1221	8082	0.5	17		
11141-16-5	Aroclor-1232	8082	0.5	17		
53469-21-9	Aroclor-1242	8082	0.5	17		

CAS No.	Analysis/Compound	Method	Quantitation Limits		State of New York Standards	
			Water (µg/L)	Soil (µg/kg)	Water [(a)] (µg/L)	Soil [(b)] (µg/kg) soil)
PCB's (Continued)						
12672-29-6	Aroclor-1248	8082	0.5	17		
11097-69-1	Aroclor-1254	8082	0.5	17		
11096-82-5	Aroclor-1260	8082	0.5	17		
37324-23-5	Aroclor-1262	8082	0.5	17		
11100-14-4	Aroclor-1268	8082	0.5	17		
Herbicides						
93-72-1	2,4,5-TP (Silvex)	8151	2	67	0.26	380
93-76-5	2,4,5-T	8151	2	67		1900
94-75-7	2,4-D	8151	2	67		500
94-82-6	2,4-DB	8151	2	67		

Notes:

N/A - Not Applicable

SB - soil background

ND - not detected

(a) - Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, NYSDEC, October 1993, reissued June 1998

(b) – Commissioners Policy -51/Soil Cleanup Guidance, NYSDEC, October 21, 2010

(c) - EPA Guidance on Residential Lead-Based Paint, Lead Contaminated Dust, and Lead Contaminated Soil, July 14, 1994

Table 7-2 Practical Quantitation Limits (PQLs) for TCLP

Compound	SW-846 Analysis	Water (µg/L)
TCLP Volatile Organic Compounds		
Benzene	1311 / 8260B	25
Carbon Tetrachloride	1311 / 8260B	25
Chloroform	1311 / 8260B	25
1,2-Dichloroethane	1311 / 8260B	25
1,1-Dichloroethene	1311 / 8260B	25
2-Butanone	1311 / 8260B	125
Tetrachloroethene	1311 / 8260B	25
Trichloroethene	1311 / 8260B	25
Vinyl Chloride	1311 / 8260B	25
TCLP Semivolatile Organic Compounds		
2-Methylphenol	1311 / 3510 / 8270B	10
3 & 4-Methylphenol	1311 / 3510 / 8270B	10
1,4-Dichlorobenzene	1311 / 3510 / 8270B	10
2,4-Dinitrotoluene	1311 / 3510 / 8270B	10
Hexachlorobutadiene	1311 / 3510 / 8270B	10
Hexachloroethane	1311 / 3510 / 8270B	10
Hexachlorobenzene	1311 / 3510 / 8270B	10
Nitrobenzene	1311 / 3510 / 8270B	10
Pentachlorophenol	1311 / 3510 / 8270B	10
Pyridine	1311 / 3510 / 8270B	10
2,4,5-Trichlorophenol	1311 / 3510 / 8270B	10
2,4,6-Trichlorophenol	1311 / 3510 / 8270B	10
TCLP Metals		
Arsenic	1311 / 3010 / 6010B	10
Barium	1311 / 3010 / 6010B	50
Cadmium	1311 / 3010 / 6010B	3
Chromium	1311 / 3010 / 6010B	5
Lead	1311 / 3010 / 6010B	6
Selenium	1311 / 3010 / 6010B	10

Compound	SW-846 Analysis	Water (µg/L)
TCLP Metals		
Silver	1311 / 3010 / 6010B	5
Mercury	7470A	0.2
TCLP Pesticides		
Chlordane	1311 / 8081A	0.5
Endrin	1311 / 8081A	0.05
Heptachlor (and its hydroxide)	1311 / 8081A	0.05
Lindane	1311 / 8081A	0.05
Methoxychlor	1311 / 8081A	0.05
Toxaphene	1311 / 8081A	0.5
TCLP Pesticides		
2,4-D	1311 / 8151A	2
2,4,5-TP Silvex	1311 / 8151A	2

Notes:
ND - Not Determined

Table 7-3 Project Quantitation Limits for Air

Analysis / Compound	Method	Quantitation Limits Soil Gas/Air (µg/M^3)
Fixed Gases		
Helium	ASTM D1945 mod.	16360 (0.01%)
Volatile Organics [1]		
Freon 12	TO-15 Mod.	0.81
Freon 114	TO-15 Mod.	1.14
Chloromethane	TO-15 Mod.	0.34
Vinyl Chloride	TO-15 Mod.	0.42
Bromomethane	TO-15 Mod.	0.63
Chloroethane	TO-15 Mod.	0.43
Freon 11	TO-15 Mod.	0.92
1,1-Dichloroethene	TO-15 Mod.	0.64
Freon 113	TO-15 Mod.	1.26
Methylene Chloride	TO-15 Mod.	0.56
1,1-Dichloroethane	TO-15 Mod.	0.66
cis-1,2-Dichloroethene	TO-15 Mod.	0.64
Chloroform	TO-15 Mod.	0.81
1,1,1-Trichloroethane	TO-15 Mod.	0.89
Carbon Tetrachloride	TO-15 Mod.	1.03
Benzene	TO-15 Mod.	0.52
1,2-Dichloroethane	TO-15 Mod.	0.66
Trichloroethene	TO-15 Mod.	0.89
1,2-Dichloropropane	TO-15 Mod.	0.76
cis-1,3-Dichloropropene	TO-15 Mod.	0.74
Toluene	TO-15 Mod.	0.61
trans-1,3-Dichloropropene	TO-15 Mod.	0.74
1,1,2-Trichloroethane	TO-15 Mod.	0.89
Tetrachloroethene	TO-15 Mod.	1.11
1,2-Dibromoethane (EDB)	TO-15 Mod.	1.26

Analysis / Compound	Method	Quantitation Limits Soil Gas/Air (µg/M^3)
Chlorobenzene	TO-15 Mod.	0.76
Ethyl Benzene	TO-15 Mod.	0.71
m,p-Xylene	TO-15 Mod.	0.71
o-Xylene	TO-15 Mod.	0.71
Styrene	TO-15 Mod.	0.69
1,1,2,2-Tetrachloroethane	TO-15 Mod.	1.13
1,3,5-Trimethylbenzene	TO-15 Mod.	0.81
1,2,4-Trimethylbenzene	TO-15 Mod.	0.81
1,3-Dichlorobenzene	TO-15 Mod.	0.98
1,4-Dichlorobenzene	TO-15 Mod.	0.98
alpha-Chlorotoluene	TO-15 Mod.	0.85
1,2-Dichlorobenzene	TO-15 Mod.	0.98
1,2,4-Trichlorobenzene	TO-15 Mod.	6.12
Hexachlorobutadiene	TO-15 Mod.	8.69
Propylene	TO-15 Mod.	1.4
1,3-Butadiene	TO-15 Mod.	1.77
Acetone	TO-15 Mod.	1.93
Carbon Disulfide	TO-15 Mod.	2.58
trans-1,2-Dichloroethene	TO-15 Mod.	3.22
2-Butanone (MEK)	TO-15 Mod.	2.42
Hexane	TO-15 Mod.	2.9
Tetrahydrofuran	TO-15 Mod.	2.42
Cyclohexane	TO-15 Mod.	2.74
1,4-Dioxane	TO-15 Mod.	2.9
Bromodichloromethane	TO-15 Mod.	5.47
4-Methyl-2-pentanone	TO-15 Mod.	3.38
2-Hexanone	TO-15 Mod.	3.38
Dibromochloromethane	TO-15 Mod.	6.92
Bromoform	TO-15 Mod.	8.37
4-Ethyltoluene	TO-15 Mod.	4.03

Analysis / Compound	Method	Quantitation Limits Soil Gas/Air ($\mu g/M^3$)
Ethanol	TO-15 Mod.	1.55
Methyl tert-butyl ether	TO-15 Mod.	2.9
Heptane	TO-15 Mod.	3.38
Naphthalene	TO-15 Mod.	4.35
2-Methylpentane	TO-15 Mod.	2.9
Isopentane	TO-15 Mod.	2.42
2,3-Dimethylpentane	TO-15 Mod.	3.38
2,2,4-Trimethylpentane	TO-15 Mod.	3.86
Indene	TO-15 Mod.	3.86
Indane	TO-15 Mod.	3.86
Thiophene	TO-15 Mod.	2.74
2-Propanol	TO-15 Mod.	1.93

Notes

(1) The final quantitation limit (QL) is adjusted to reflect the initial pressurization step, dilution required to bring target analyte levels into the calibration range, and/or minimize matrix interferences

Final QL = QL * DF, DF was assumed to be 1.61 for a 6-L Canister, with 5 in. Hg Final Canister Pressure.

8.0 Data Reduction, Assessment, and Reporting

8.1 Data Reduction

Data collected in the field will be reduced in accordance with SW-846 protocols and reviewed by the laboratory QA personnel. The criteria used to identify and quantify the analytes will be those specified for the applicable methods in the USEPA SW-846 and subsequent updates.

8.2 Data Quality Assessment

NYSDEC recommends two levels of data review. The basic review is a Data Usability Summary Report (DUSR). Current NYSDEC policy is to require this level of review for analytical data on most sites. Full data validation is called for at sites where the data will be used in litigation, or where problems are expected with data quality (such as where matrix interference is expected to be significant). The laboratory deliverables (i.e., NYSDEC ASP Category B) are the same in both cases, and a DUSR can be upgraded to full validation at a later time if necessary. For work on the Site and Off-Site areas a DUSR will be performed.

Based on the results of data assessment, the validated analytical results reported by the laboratory will be assigned one of the following USEPA-defined data usability qualifiers:

- U – Not detected at given value,
- UJ – Estimated not detected at given value,
- J – Estimated value,
- N – Presumptive evidence at the value given,
- R – Result not useable,
- No Flag – Result accepted without qualification.

Trained and experienced data assessors, who meet NYSDEC approval criteria, will perform the data review. Résumés of people who will perform the data validation and prepare the DUSR will be provided to NYSDEC for review and approval, upon request.

8.2.1 Data Usability Summary Report

Data will be evaluated and qualification applied in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*, USEPA-540-R-07-003, July 2007 and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540-R-04-004, October 2004, as they applied to the analytical methods employed. A DUSR will be generated in accordance with USEPA Region II guidelines.

The DUSR will include a review and an evaluation of all the analytical results. To ensure compliance with the analytical method protocols the following parameters will be reviewed:

- Chain-of-custody forms,

- Holding times,
- Initial and continuing calibrations,
- Blanks,
- Laboratory control standards and matrix spikes,
- Surrogate recoveries,
- Matrix interference checks,
- Field and laboratory duplicates,
- Sample data.

The DUSR will contain a description of the samples and parameters reviewed. Any deficiencies identified during the review will be noted and the effect on the generated data will be discussed. Any re-sampling or reanalysis recommendations will be then be made to the Project Manager. The DUSR will be electronically transmitted to the NYSDEC within 15 business days of validating the data and no later than 45 business days from receiving the laboratory data.

8.2.2 Data Validation

The determination to validate data will be made based on the presence of data anomalies, suspect data, laboratory issues, or if requested by the NYSDEC. Data validation will be performed on 100% of the samples collected during the project work. Data will be validated and qualifications applied in accordance with *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*, USEPA-540-R-07-003, July 2007 and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540-R-04-004, October 2004, as they applied to the analytical methods employed. If applicable, a data validation report will be prepared and reviewed by the Quality Assurance Office (QAO) before issuance. The data validation report will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and COC procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. A detailed assessment of each sample delivery group will follow. For each of the organic analytical methods, the following parameters will be assessed:

- Holding times,
- Instrument tuning,
- Instrument calibrations,
- Blank results,
- System monitoring compounds or surrogate recovery compounds (as applicable),
- Internal standard recovery results,

- MS and MSD results,
- Field duplicate results,
- Target compound identification,
- Result calculations,
- Pesticide cleanup (if applicable),
- Compound quantitation and reported detection limits,
- System performance,
- Results verification.

For each of the inorganic compounds, the following will be assessed:

- Holding times,
- Calibrations,
- Blank results,
- Interference check sample,
- Laboratory check samples,
- Duplicates,
- Matrix Spike(s),
- Furnace atomic absorption analysis QC,
- ICP serial dilutions,
- Results verification and reported detection limits,
- Result calculations.

8.3 Data Reporting

The data package provided by the laboratory will contain all items discussed above in a NT ASP Category B “CLP-equivalent” format. Data quality issues will be discussed in a case narrative included with the data report. The completed copies of the COC records (both external and internal) accompanying each sample from time of initial bottle preparation to completion of analysis shall be attached to the analytical reports.

Two copies of the analytical data packages and an electronic data deliverable (EDD) will be provided by the laboratory approximately 30 days after receipt of a complete sample delivery group. The

Project Manager will immediately arrange for filing one package. A second copy and the EDD will be used to generate summary tables. These tables will form the database for assessment of the site contamination condition.

The EDD format required is current format Earths of EQuIS® Environmental Data Management Software.

Each EDD must be formatted and copied using an MS-DOS operating system. To avoid transcription errors, data will be loaded directly into the ASCII format from the laboratory information management system (LIMS). If this cannot be accomplished, the consultant should be notified via letter of transmittal indicating that manual entry of data is required for a particular method of analysis. All EDDs must also undergo a QC check by the laboratory before delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion.

The Project Manager or Task Manager will maintain close contact with the QA reviewer to ensure all nonconformance issues are resolved prior to use of the data. The EDDs and data validation report will be electronically transmitted to the NYSDEC within 15 business days of validating the data and no later than 45 business days from receiving the laboratory data.

9.0 Internal Quality Control Checks

QC procedures and checks are used to evaluate the precision and accuracy of analytical data. Field QC checks are used to identify potential problems associated with sample collection procedures. Laboratory QC checks are used to identify problems associated with sample preparation and analysis.

9.1 Field Quality Control Checks

To check the quality of data from field sampling efforts, blanks and duplicate samples will be collected for analysis. Field duplicate and rinseate blank samples will be collected at a frequency of one in 20 samples. Trip blank samples will be analyzed at a frequency of one per each shipment of VOC samples. Field MS/MSD samples will be collected at a frequency of one in 20 samples. These samples will be treated as separate samples for identification, logging, and shipping purposes. Analytical results for blanks and duplicates will be reported with the field sample data.

9.2 Laboratory Quality Control Checks

The analytical laboratory must have an implemented QC program documented in a QA manual to ensure the reliability and validity of the analysis performed at the laboratory. All analytical procedures are documented in writing as standard operating procedures (SOPs) and each SOP must include a QC section that addresses the minimum QC requirements for the procedure. The internal QC checks differ slightly for each individual procedure, but in general the QC requirements include the following:

- Method blanks,
- Reagent/preparation blanks (applicable to inorganic analysis),
- Instrument blanks,
- MS/MSDs ,
- Surrogate spikes (organic methods only),
- Analytical spike (applicable to graphite furnace analysis),
- Laboratory control samples,
- Internal standard areas for GC/MS analysis,
- Mass tuning for GC/MS analysis,
- Endrin/4,4'-DDT degradation checks for pesticide analysis,
- Second, dissimilar column confirmation for pesticide and polychlorinated biphenyl (PCB) analysis.

All data obtained will be properly recorded. The data package will include a full deliverable package capable of allowing the recipient to reconstruct QC information and compare it to QC acceptance criteria. The laboratory will reanalyze any samples associated with nonconforming quality control checks, if sufficient volume is available. It is expected that sufficient volumes/weights of samples will be collected to allow for reanalysis when necessary.

10.0 Performance and System Audits and Frequency

Two types of audit procedures are conducted during any environmental work: performance and system audits. These audits are performed on the laboratory as well as field activities. The laboratory and field auditors will be independent of the function they will be auditing. Audits will be documented and maintained by the respective Laboratory or Contractor Project Manager.

10.1 Performance Audits

10.1.1 Laboratory Performance Audits

Laboratory performance audits are administered by the laboratory QA department on a periodic basis (e.g., semi-annually). The audit samples are used to monitor accuracy and identify and resolve problems in sample preparation and analysis techniques, which lead to the generation of nonconforming data.

The laboratory performance audits include verification of each analyst’s record keeping, proper use and understanding of procedures, and accuracy evaluation. Corrective action will be taken for any performance failure noted.

10.1.2 Field Performance Audits

The QAO or designee will perform field performance audits of the field sample team on an annual basis at a minimum. The field team leader will review all field data. The analytical results of the field blanks and replicate samples are indirect audits of the level of performance of field activities. If a nonconformance is found in the evaluation of field QC data, corrective action will be taken to resolve the issue. The corrective action will be documented.

10.2 System Audits

10.2.1 Laboratory System Audits

Laboratory system audits will be conducted against the QA Manual and the administrative and method SOPs, by the laboratory QA department, on an annual basis. System audits are used to ensure that all aspects of the laboratory’s QC program are implemented and effective. This involves a thorough review of all laboratory practices and documentation to confirm that work is performed according to project specifications.

Outside agency performance and system audits may be used to verify contract compliance or the laboratory’s ability to meet requirements for analytical methods and documentation. Copies of current certifications and accreditations may be used in lieu of an audit by the Contractor Project Manager.

10.2.2 Field System Audits

The QAO or designee shall perform field system audits of the field sampling team on an annual basis at a minimum. All field activities will be audited to ensure that the field work is being performed according to the approved work plans, QAPP, and method procedures. Accuracy, precision, and documentation clarity will be evaluated. Any time a deficiency is noted during an ongoing systems audit, the project manager or designee will inform the field staff immediately so that corrective actions may be implemented.

11.0 Preventive Maintenance

11.1 Field Instrument Preventive Maintenance

Written procedures will establish the schedule for servicing critical items in order to minimize the downtime of the measurement system(s). Field instruments will be checked and calibrated daily before use. Calibration checks will be documented on the field calibration log sheets. Critical spare parts such as tape and batteries will be kept on-site to reduce potential downtime. Backup instruments and equipment will be available on-site or within 1-day shipment to avoid delays in the field schedule.

11.2 Laboratory Instrument Preventive Maintenance

Designated laboratory employees regularly perform routine scheduled maintenance and repair of all instruments. All maintenance that is performed is documented in the laboratory's operating records. All laboratory instruments are maintained in accordance with manufacturer's specifications. The laboratory's QA Manual specifies the typical frequency with which components of key analytical instruments or equipment will be serviced.

11.3 Records

Logs shall be established to record maintenance and service. All maintenance records will be controlled and traceable to the designated equipment, instruments, tools, or gauges. Records produced shall be reviewed, maintained, and filed by the operators at the laboratories. The QAO may audit the field maintenance records to verify complete adherence to these procedures.

12.0 Corrective Action

12.1 Introduction

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, and corrected.

12.2 Procedure Description

When a significant condition adverse to quality is noted at site, laboratory, or subcontractor location, the cause of the condition will be determined and corrective action will be taken to preclude recurrence. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAO, Contractor Project Manager, Field Team Leader, and involved contractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action.

All project personnel have the responsibility, as part of the normal work duties, to promptly identify, report, and investigate conditions adverse to quality. Corrective actions will be initiated as follows.

- When predetermined acceptance standards are not attained
- When procedure or data compiled are determined to be deficient
- When equipment or instrumentation is found to be faulty
- When samples and analytical test results are not clearly traceable
- When quality assurance requirements have been violated
- When designated approvals have been circumvented
- As a result of system and performance audit findings
- As a result of a management assessment
- As a result of laboratory/field comparison studies
- As required by USEPA SW-846 and subsequent updates, or by the NYSDEC ASP

Project management and staff, such as field teams, remedial response planning personnel, and laboratory groups, will monitor on-going work performance in the normal course of daily responsibilities. Work may be audited at the sites, laboratories, or contractor locations. Activities or documents ascertained to be nonconforming with quality assurance requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings are logged, maintained, and controlled by the Task Manager.

Personnel assigned to quality assurance functions will have the responsibility to issue and control Corrective Action Request (CAR) Forms (Figure 12-1 or similar). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered. The CAR is issued to the personnel responsible for the affected item or activity. A copy is also submitted to the Contractor Project Manager. The individual to whom the CAR is addressed returns the requested response promptly to the QA personnel, affixing his/her signature and date to the corrective action block, after stating the cause of the conditions and corrective action to be taken. The QA personnel maintain the log for status of CARs, confirms the adequacy of the intended corrective action, and verifies its implementation. CARs will be retained in the project file.

Any project personnel may identify issues requiring corrective action; however, the QAO is responsible for documenting, numbering, logging, and verifying the closeout action. The Contractor Project Manager will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.

Figure 12-1 Corrective Action Form

CORRECTIVE ACTION REQUEST Number: ______________________ Date: __________
TO: __________________________________ You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by _____________
CONDITION:
REFERENCE DOCUMENTS:
RECOMMENDED CORRECTIVE ACTIONS:
Originator Date Approval Date Approval Date
RESPONSE
CAUSE OF CONDITION
CORRECTIVE ACTION (A) RESOLUTION (B) PREVENTION (C) AFFECTED DOCUMENTS
C.A. FOLLOW-UP: CORRECTIVE ACTION VERIFIED BY: ________________________ DATE:___________

13.0 References

American Society of Testing Materials, 2003. D1945-03. *Standard Test Method for Analysis of Natural Gas by Gas Chromatograph,* 2003.

EEA Inc. 2004. Phase II Environmental Subsurface Investigations, 254 Maspeth Avenue, Brooklyn, New York. October 2004.

Gannett Fleming Engineers, PC (GFE), 2004. Phase I Environmental Site Assessment, Cooper Tank Transfer Facility, 254 Maspeth Avenue, Brooklyn, New York, 11211. Project # 44440.01. October 2004.

GFE, 2005. Phase II Environmental Site Investigation, 252 Maspeth Avenue, Brooklyn, New York, 11211. File # 44440.004. May 12, 2005.

Taylor, J. K., 1987. *Quality Assurance of Chemical Measurements*. Lewis Publishers, Inc., Chelsea, Michigan

United States Environmental Protection Agency (USEPA), 1986. SW-846 Test Method for Evaluating Solid Waste, Washington, D.C., November 1986,

USEPA, 1987. *Data Quality Objectives for Remedial Response Actions Activities: Development Process*, EPA/540/G-87/003, OSWER Directive 9355.0-7, Washington, D.C.

USEPA, 1999a. Compendium Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). January 1999.

USEPA, 1999b. *USEPA Contract Laboratory Program, National Functional Guidelines for Superfund Organic Methods Data Review*, July 2007.

USEPA, 2004. USEPA *Contract Laboratory Program, National Functional Guidelines for Inorganic Data Review*, October 2004.