HASTINGS-ON-HUDSON FORMER MGP SITE
HASTINGS-ON-HUDSON, NEW YORK
REMEDIAL ACTION WORK PLAN
FORMER MANUFACTURED GAS PLANT SITE
(NYSDEC VCP INDEX NO. D2-003-02-08, SITE NO. V00728)

CONSOLIDATED EDISON CO. OF NEW YORK, INC.
31-01 20th Avenue
Long Island City, NY 11105

Prepared by:

GEI Consultants, Inc., P.C.
455 Winding Brook Drive
Glastonbury, CT 06033

October 2017

Table of Contents

Figures

Appendices

CA:ES:MO:amm

H:\WPROC\Project\CON-ED\HastingsOnHudsonSChar070251\RAWP\Draft-to-DEC-102517\report.v00728.2017-10-25.RAWP.docx

Professional Engineer Certification

I, Matthew J. O'Neil, certify that I am currently a NYS registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

_____ _____

Date

Matthew J. O'Neil
GEI Consultants, Inc., P.C.
New York State Professional Engineer
License Number 091317

Abbreviations and Acronyms

BTEX	Benzene, Toluene, Ethyl benzene, and Xylene
CAMP	Community Air-Monitoring Plan
Con Edison	Consolidated Edison Company of New York, Inc.
DER-10	[Division of Environmental Remediation]-10, Technical Guidance for Site Investigation and Remediation
EPA	United States Environmental Protection Agency
FER	Final Engeering Report
ft bgs	Feet below ground surface
GEI	GEI Consultants, Inc., P.C.
HASP	Health and Safety Plan
MGP	Manufactured Gas Plant
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAHs	Polycyclic Aromatic Hydrocarbons
PDI	Pre-Design Investigation
PPE	Personal Protective Equipment
RAO	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
SC	Site Charaterization
SCGs	Standards, Criteria and Guidance values
SCOs	Soil Cleanup Objectives
SMP	Site Management Plan
SVOC	Semivolatile Organic Compound
VCA	Voluntary Cleanup Agreement
VOCs	Volatile Organic Compounds

1. Introduction

The Consolidated Edison Company of New York, Inc. (Con Edison) has entered into a Voluntary Cleanup Agreement (VCA) with the New York State Department of Environmental Conservation (NYSDEC) to investigate and remediate potential contamination at several former manufactured gas plant (MGP) properties. One of these properties is known as the former Hastings-on-Hudson MGP Site (Site) (VCA Index No. D2-0003-02-08, Site ID No. V00728) located at 8, 10 and 12 Washington Avenue in the Village of Hastings-on-Hudson, Westchester County, New York. This Remedial Action Work Plan (RAWP) presents the NYSDEC-selected remedial alternative for the site to address the documented MGP-related impacts.

The NYSDEC's issued a Decision Document recommending a site cover in areas where the upper 2 feet of exposed surface soil exceed the soil cleanup objectives (SCOs) applicable to restricted residential use of the Site. This RAWP has been prepared to be consistent with the Order on Consent, Index Number D2-003-02-08 (the Order) signed by Con Edison and NYSDEC, the factors set forth in Title 6 of the New York Code of Rules and Regulations Part 375 (6 NYCRR Part 375) for remedial measures, and the May 2010 NYSDEC Division of Environmental Remediation (DER-10) Technical Guidance for Site Investigation and Remediation.

This RAWP presents a summary of the remedial investigation and subsequent investigations, the remedial action goals and objectives, and the MGP-impacted material excavation and Site restoration. It also presents the techniques used for material handling, waste characterization, processing, transportation, and disposal of the MGP-impacted material. This effort will be performed under the approval and oversight of the NYSDEC.

1.1 Site Description and History

The former MGP site is located on the south side of Washington Avenue on the corner of Ridge Street (formerly High Street) in the Village of Hastings-on-Hudson, Town of Greenburgh, Westchester County, State of New York. The site was relatively small and compact, occupying approximately 0.25 acre of land. The former MGP faced Washington Avenue to the north, which slopes down toward the Hudson River to the west. A moderate slope of land comprises the back portion of the site and most likely dictated the compact nature of the gas works. The current delineation of the proposed RAWP area includes three adjacent parcels of land zoned as MR-C: Multi-Family Residence/Commercial:

- 8 Washington Avenue, designated as Tax Lot 3A Block 619
- 10 Washington Avenue, designated as Tax Lot 3 Block 619

- 12 Washington Avenue, designated as Tax Lot 3 Block 619

The general property location is illustrated in **Figure 1**, and the site plan including the historic structure locations is presented in **Figure 2**.

The former MGP at the Site consisted of a retort building, small storage sheds, a 14,000-cubic foot gas holder, aboveground kerosene and crude oil storage tanks, and an 8-foot diameter tar well (**Figure 2**). The grounds of the former MGP appear to have been comprised of the parcels currently identified as Lots 3 and 3A of Block 619. In addition, the northern portion of the current Lot 7 may have briefly been part of, or used by, the MGP as well. However, it should be noted that elements of a retaining wall structure occupy the majority of this portion of Lot 7 and most likely did so since development of the property.

There are three buildings currently present where the MGP once stood; all three buildings have their frontage along Washington Avenue (to the north). The buildings abut one another structurally and do not have pedestrian or vehicle access ways in between them. From west to east, the buildings are as follows: 8 Washington Avenue is a residential apartment building; 10 Washington Avenue is a theatrical training studio; and 12 Washington Avenue is an antique/book shop at street level, with a residence on the second floor.

Ridge Street, which runs along the east side of the property, is elevated by approximately 15 feet over the elevation of the yard behind the buildings. The property slopes uphill away from the patios toward Ridge Street. The slope behind the property is reinforced with masonry and timbers. Several mature trees are present at the rear of the property and along the retaining structures.

1.2 Summary of Previous Investigation

The data discussed in the sections below are based on the sampling and findings of the following documents reviewed by GEI:

- Manufactured Gas Plant History Report, Hastings-On-Hudson MGP Site prepared by GEI Consultants, Inc. (GEI) dated March 2007.
- Site Characterization Report prepared by GEI dated December 2009.
- Remedial Investigation (RI) Report prepared by GEI dated February 2013.
- Pre-Design Summary Report prepared by Con Edison dated September 2017.

The locations of all samples referenced below are included in **Figure 2**. Boring and monitoring well logs are included in **Appendix A**.

1.2.1 Surface Soil

Surface soil samples (SS) were collected from five locations (HOH-SS-01 through HOH-SS-05) within the rear yards of the Site as part of the 2008 Site Characterization (SC) field work. Volatile organic compounds (VOCs) were not detected in any of the parent surface soil samples; however, Methylene chloride detected in the HOH-SS-05 duplicate sample at a concentration of 0.017 milligram per kilogram.

Polycyclic aromatic hydrocarbons (PAHs) were detected above the Unrestricted Use SCOs and Residential SCOs in all samples except HOH-SS-04. However, PAH concentrations were within the reported range of background PAH levels for comparative urban soils.

All samples contained concentrations of metals above the 6 NYCRR 375 Unrestricted Use SCOs but were generally within the researched background concentration ranges. All but sample HOH-SS-04 contained concentrations of metals above the Residential SCOs.

1.2.2 Subsurface Soil

The horizontal extent of visible impacts and analytical exceedances in the subsurface soil has been delineated at the Site. Two test pits (HOH-TP-01 and HOH-TP-02) were excavated during the 2008 SC field work. Test pit HOH-TP-01 was excavated at the northeastern corner of the 8 Washington Avenue rear yard and encountered the former gas holder but did not encounter the gas holder foundation. Test pit HOH-TP-02 was dug adjacent to the 12 Washington Avenue building wall near the former tar well.

PAHs were detected above the Unrestricted SCOs and the Residential SCOs in soil samples collected within the gas holder footprint. PAHs were detected above the Unrestricted SCOs within the footprints of the former tar well and crude oil tanks.

Benzene, Toluene, Ethyl benzene, and Xylene (BTEX) compounds were detected above the Unrestricted SCOs within the footprint of the former gas holder.

Lead and Mercury were detected above the Unrestricted SCOs and the Residential SCOs within the footprint of the former gas holder. Lead, Mercury, and Zinc were detected above Unrestricted SCOs within the footprint of the former crude oil tanks. Copper was detected above the Unrestricted SCOs within the footprints of the former gas holder and the former crude oil tanks. However, these metals were within the typical background concentration ranges for soils in the New England area and the general Eastern United States.

1.2.3 Pre-Design Shallow Soil Investigation

GEI collected soil samples from 15 locations to a maximum depth of 2 feet below ground surface (ft bgs) from August 22, 2017 to August 24, 2017. At each sample location, samples were collected at the following depth intervals:

- 0 to 2 inches bgs
- 2-6 inches bgs
- 6-12 inches bgs
- 12-18 inches bgs
- 18-24 inches bgs

There were no detections of VOCs in the samples collected above the Restricted Residential Use SCOs. Individual semivolatile organic compound (SVOCs) and metals were detected in analytical samples collected from both properties. SVOCs that were detected above the Restricted Residential Use SCOs at one or more sample locations included Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene. Metals detected above the Restricted Residential Use SCOs at one or more sample locations included Arsenic, Barium, Cadmium, Copper, Lead, Manganese, Mercury.

Based on the sampling results, 14 out of 75 samples collected meet the Restricted Residential Use SCOs. SVOCs or metals were detected above the Restricted Residential Use SCOs in 61 of the 75 samples collected. This included 31 that did not meet the Restricted Residential Use SCOs for SVOCs and 60 that did not meet the Restricted Residential Use SCOs for individual metals. SVOCs were detected above the Restricted Residential Use SCOs in at least one sample interval in 11 of the 15 sample locations. Metals were detected above the Restricted Residential Use SCOs in at least one sample interval in all 15 sample locations.

1.2.4 Groundwater

Dissolved phase BTEX, PAHs, or metals are present at concentrations above the New York State Ambient Water Quality Standards in perched groundwater samples collected from the former gas holder location, in groundwater samples collected near the former crude oil tanks, on Southside Avenue, and on Ridge Street. The extent of groundwater impacts has been delineated in all directions.

1.2.5 Soil Vapor and Indoor Air

VOCs are present in the indoor air of the on-site buildings at levels that are consistent with background indoor air data collected by the New York State Department of Health (NYSDOH), as part of its New York State-wide evaluation of typical indoor air quality within buildings not affected by environmental contamination. VOCs are also present in the sub-slab soil vapors beneath the buildings.

2. Remedial Action Goals and Objectives

The remedial objectives, goals, cleanup standards, and guidance to be followed in performing this RAWP are presented in the following sections.

2.1 Standards, Criteria, and Guidance

Standards, Criteria and Guidance values (SCGs) are defined in the 2010 NYSDEC Draft Department of Environmental Remediation (DER)-10. Standards and criteria values are New York State regulations or statutes, which dictate cleanup standards. Guidance values are not legal requirements. They are values that are determined to be applicable to the site and should be considered, based on professional judgment.

The following is a list of major SCGs that apply to the RAWP:

- 6 NYCRR Part 375
- Draft DER-10 – Technical Guidance for Site Investigation and Remediation (May 2010)
- Draft DER-10, Appendix 1A – NYSDOH General CAMP Requirements, Technical Guidance for the Site Investigations and Remediation.

2.2 Remedial Goals

The NYSDEC remedial program identifies the goal for site remediation under 6 NYCRR Sub-Part 375-2.8(a) as:

"…restore that site to pre-disposal conditions, to the extent feasible. At a minimum, the remedy selected shall eliminate or mitigate all significant threats to the public health and to the environment presented by contaminants disposed at the site through the proper application of scientific and engineering principles…"

The Site Remedial Goals, therefore, are (1) eliminate or mitigate all significant threats to public health and the environment; and, (2) remove or eliminate, to the extent feasible, identifiable sources of contamination, regardless of intended use of the site or presumed risk.

2.3 Remedial Action Objectives (RAOs)

RAOs are medium-specific or operable-unit specific objectives for the protection of public health and the environment. The RAOs for the Site support and are consistent with the Site

Remedial Goals presented above. Based on the findings of the RIs, the following RAOs have been developed for the Site:

2.3.1 Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent, to the extent practicable, inhalation exposure to contaminants volatilizing from soil.

2.3.2 Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent, to the extent practicable, contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-release conditions, to the extent practicable.

2.3.3 Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

3. Soil Excavation Scope

The excavation conducted under this RAWP will be limited to the criteria established in the Decision Document and will involve the following tasks:

- Shallow soil excavation to a depth of 2 feet bgs over the entire level area excluding the existing hardscaped areas;
- Installation of 2 feet of soil meeting the Restricted Residential Use SCOs; and
- Installation of a rip-rap cover on the exposed areas of the slope that did not meet the Restricted Residential Use SCOs.

The Contract Drawings and Specifications which more fully describe the work are included in **Appendix B**.

3.1 Site Preparation

The Contractor will prepare the site for the planned remediation. Where possible, the Contractor will utilize existing site controls such as existing fencing. Additional site preparation activities necessary to provide support for the soil excavation will include the establishment of work zones, decontamination facilities, and installation of temporary fencing/barriers around the work area. Temporary site facilities will include portable toilets, material storage, and equipment lay down areas.

The exclusion zone is the area within the site where all worker activity is subject to the monitoring, work procedures, training, and protective equipment required in the attached Health and Safety Plan (HASP). For this project, the exclusion zone will include the excavation areas and any areas used to temporarily store, handle, or treat any of the MGP-impacted soil and groundwater removed from the excavation. The exclusion zone will be separately and clearly delineated from the rest of the site and the perimeter security fencing. All personnel and equipment leaving the exclusion zone will be subject to the decontamination requirements described in Section 10 of this RAWP. The Decontamination Plan, Section 10, details the placement and operation of the decontamination pads. Due to the limited available space at the site, sequencing of the work and the changes in the locations of the work zones is anticipated.

Soil erosion and sediment control measures will be installed prior to excavation and maintained throughout the project, as appropriate. The Erosion and Sediment Control Plan, Section 8, details the appropriate sediment control measures.

3.2 Shallow Soil Excavation

The entire level area of the rear of both properties will be excavated to the target depth of 2 feet bgs for a total of approximately 330 cubic yards. The planned soil excavation limits are shown in **Figure 3**. Analytical sampling conducted during the SC, the RI, and the Pre-Design Investigation (PDI) have confirmed the horizontal extent and the depth of the excavation required to meet the established remedial goals. Therefore, additional confirmation sampling at the base of the excavation will not be completed.

3.3 Odor Control

To control odors during the excavation of MGP-impacted material, an odor control product, such as BioSolve® or Rusmar™ Foam will be employed. This material will be applied to the excavated areas, soil stockpiles, roll-offs, and containers as necessary to ensure that nuisance odors do not impact the local community. The odor control product will be readily available for use at the excavation and soil staging/stockpile areas at all times.

3.4 Material Handling

Stockpiling of materials will be used to minimize the duration and frequency of stationing trucks on Ridge Street. Soil stockpiles will be placed on liners and covered.

Once a lined truck bed is filled with excavated material it will be appropriately covered with a tarp. The material in the truck may also be coated with an odor reducing agent, if necessary. The truck will then proceed to a decontamination pad. Following decontamination, the truck will proceed directly to the Con Edison's designated disposal facility.

Soil disposal analytical samples were collected during the PDI to pre-characterize the soils for off-site disposal. The Contractor will be responsible for collecting any additional disposal characterization sampling sufficient for acceptance at the chosen Con Edison-approved disposal facility.

If necessary, suspect materials encountered during excavation that may exhibit hazardous characteristics will be segregated, stored on-site, sampled, and disposed of appropriately.

3.5 Demarcation Barrier

Prior to backfilling the excavation, a visual demarcation barrier will be placed along the bottom and sides of the excavation by the Contractor. The demarcation barrier will consist of a high visibility woven permeable geotextile or an equivalent system.

3.6 Backfill

The excavation will be backfilled with materials meeting the NYSDEC Part 375 Restricted Residential Use Criteria. Gravel, bedding sand, and top soil will be imported and placed as backfill in preparation for landscaping. Compaction of placed backfill will be as specified in a project specification such that it is suitable for the final restoration.

3.7 Installation of Rip-rap Cover

The sloped portion of the Site with detections above Restricted Residential SCOs will be remediated by installing a rip-rap cover system. This will be incorporated into the existing hardscaping on the slope which includes concrete block retaining walls. Installation will include the removal of existing ground vegetation, the placement of approximately 2- to 6-inch sand bed meeting the NYSDEC Part 375 Restricted Residential Use Criteria. The sand bed will be overlain with a geotextile material, and the well graded rocks or gravel will be placed over the geotextile material. The extent of the rip-rap cover is shown in **Figure 3**.

4. Permits

The Contractor will apply for and obtain all necessary Federal, State, and local permits associated with the RAWP.

Specific permits that must be obtained from the Village of Hastings on Hudson include:

- Building Permit: Exterior Renovation – Village Building Department
- Road/Lane Closure Permit – Village Police Department

Other permits that may be required include, but are not limited to:

- Permits required for any off-Site parking that is negotiated between the Contractor and the Village of Hastings on Hudson, Westchester County, and/or private parking facilities.
- Any other permits required to complete the Work.

5. Schedule

The milestone schedule for the remedial action noted below is conceptual and subject to change based on site access, property owner construction, and other factors.

Remedial Design Report	
Submit Draft RAWP and Design to NYSDEC	November 2017
NYSDEC Approve Final Design (anticipated)	November 2017
Remedial Construction	
Contractor Procurement Completion	November 2017
Contractor Obtain Local Permits/Preconstruction Submittals	October-November 2017
Contractor Mobilization	November 2017
Remediation Construction	November 2017-January 2018
Final Engineering Report	
Submit Draft FER to NYSDEC	February 2018
NYSDEC Approve FER (anticipated)	March 2018
Site Management Plan	
Submit Draft Site Management Plan (SMP) to NYSDEC	February 2018
NYSDEC Approve SMP (anticipated)	February 2018

6. Site Restoration Plans

At the completion of the excavation activities, institutional and engineering controls will be established to govern future work at the site which may encounter impacted materials. This will include maintenance of the soil cover system, periodic inspections, an environmental easement, and development of a SMP.

6.1 Soil Cover System Maintenance

The installed soil cover and the existing hardscaped area of the level portion of the Site and the installed rip-rap cover on the exposed sloped area will be maintained to ensure the Site complies with the Restricted Residential Use SCOs. Periodic inspections to confirm the condition of the soil cover system will be conducted in accordance with the schedule required by the NYSDEC.

6.2 Environmental Easement

An environmental easement will be filed for the two properties in accordance with the Decision Document. The environmental easement will:

- Require the remedial party or site owners to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3)
- Allow the use and development of the controlled property for restricted residential as defined by Part 375-1.8(g), although land use is subject to local zoning laws
- Restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH
- Require compliance with the Department approved Site Management Plan.

6.3 Site Management Plan

A SMP will be developed for the property and submitted to the NYSDEC following implementation of the remediation activities. This will include an excavation work plan, HASP, CAMP, and the requirements for future construction on the property.

7. Community Air Monitoring Plan

Intrusive activities at remediation sites typically generate airborne dust and vapors (VOCs) that have the potential to migrate off-site. In recognition of this potential hazard, the NYSDOH has promulgated a Community Air Monitoring Plan (CAMP) that establishes action levels of respirable dust and VOCs that are protective of the surrounding community. The requirements of the CAMP are contained in Appendix 1A of the 2010 Draft DER-10 Technical Guidance for the site Investigations and Remediation. The CAMP is intended to supplement, but be discrete from the air-monitoring program implemented by the Contractor for purposes of evaluating site worker health and safety.

7.1 CAMP Summary

A site-specific CAMP has been prepared for the site and is included in **Appendix C**. The CAMP is designed to provide monitoring procedures, Alert Limits, Action Limits, and contingency measures if Action Limits are approached. An Alert Limit is a contaminant concentration or odor intensity that triggers contingent measures. An Alert Limit does not suggest the existence of a health hazard, but serves instead as a screening tool to trigger contingent measures if necessary, to assist in minimizing off-site transport of contaminants and odors during remedial activities. An Action Limit is a contaminant concentration or odor intensity that triggers work stoppage.

During times of ground intrusive activities, fixed air monitoring stations will be placed upwind and downwind of the work area. VOCs and respirable particulates (PM-10) will be monitored at the upwind and downwind stations on a continuous basis. The CAMP includes a Contingency Plan that defines Alert Levels, Action Levels, and specific response activities to be implemented during working hours if an exceedance of an Alert Limit or Action Limit for a measured compound occurs. The response actions, potentially including work stoppage, are intended to prevent or significantly reduce the migration of airborne contaminants from the site.

If the real-time perimeter Action Limits are exceeded or significant nuisance odors are noted, Con Edison, the Engineer, and the Contractor will consult to determine what type of emission control action is appropriate. Actions that may be taken to reduce emissions include the following:

- Spraying water on exposed soil surfaces and/or roadways to suppress windblown dust.
- Covering working areas of exposed impacted soils, trucks loaded with impacts soils, or stockpiles of impacted soils with tarpaulins with vapor-suppressing foam or other vapor control agent.

- Temporarily relocating work to an area with potentially lower emission levels.
- Reduce the production rate or change the sequence of work activities.
- Change the work methods or equipment to alternatives that minimize air emissions.

In practice, these actions will typically be employed proactively to prevent action levels from being reached at the exclusion zone perimeter in the first instance. These above-mentioned Alert and Action Level Concentrations are included in the CAMP and will be summarized in the Contract Documents.

7.2 Fugitive Dust Control

Construction activities will be performed to limit the potential for fugitive dust emissions. Dust control measures will be implemented to minimize the potential for dust generation during soil excavation and handling, and placement of fill. Dust control measures will include water spraying, and/or suppressant foams. The Contractor will provide materials to act as a dust suppressant. This may include tarps and/or water, or chemical foam, (e.g., Rusmar™ Foam), or other Con Edison-approved methods. The Contractor will keep sufficient dust suppressant materials on site to suppress fugitive dust from the excavation. The material will be stored near the excavation and will be easily mobile in case of need.

Truck routes will be continuously monitored for excessive dirt or dust. Proper cleaning of trucks exiting the exclusion zone will aid in minimizing/eliminating dusty conditions on-site. A decontamination pad large enough to accommodate equipment and truck traffic will be constructed at exit points to clean tires of transport trucks exiting the Site.

Transport trucks exiting the exclusion zone will pass through an inspection area and/or be inspected to ensure tires and undercarriages are clean and that tarps are secured. Excessive mud and loose dirt observed on the trucks will be manually removed with brooms, brushes, and water spray as necessary.

7.3 Odor Control Plan

Construction activities will be performed in such a manner that limits the potential for nuisance odor emissions. Odor control measures will include the use of odor suppressant foams or solvents. The Contractor will provide materials to act as an odor suppressant. This may include chemical foam (e.g., Rusmar™ Foam), chemical solvents (e.g. BioSolve®) or other Con Edison-approved methods. The Contractor will keep sufficient odor suppressant materials on-site to suppress nuisance odors from open excavations, stockpiles, roll-off containers, or material transport vehicles. The odor suppressant materials and application equivalent, will be readily available for use at the excavation and soil staging/stockpile areas at all times. The Contractor will apply odor-suppressing materials to the excavated materials as necessary when

stockpiled, during excavation and loading operations, or at any other time and location as directed by Con Edison or NYSDEC to mitigate nuisance odors.

8. Erosion and Sediment Control Plan

The erosion and sediment controls are intended to mitigate erosion and sedimentation from the site as indicated in the Contract Documents.

8.1 Description of Construction Activities

This project involves the excavation of approximately 330 cubic yards of MGP-impacted material. The excavation will be performed to a depth of approximately 2 feet. Dewatering within the excavation area is not anticipated because the target excavation depth does not extend into the water table.

All storm water runoff from the exterior of the excavation area will be collected, routed, and discharged into the local drainage structures prior to contact with any impacted materials.

Access areas between the excavation area and the adjacent public streets will contain decontamination stations for all trucks and equipment. The decontamination waters will be collected and stored on-site in drums or a tank to be properly disposed of as necessary.

8.2 Implementation of Erosion Control Measures

Sediment fence will be installed around the entire perimeter of the remediation including all areas to be excavated. Decontamination stations will act as anti-tracking pads, thereby, removing all soil and sediment from all trucks/equipment wheels and bodies that are exiting the site onto public streets. All trucks shall have watertight compartments to prevent seepage from wet soil from leaking onto public streets.

The Contractor shall install and maintain the erosion control measures indicated in the Contract Documents for the duration of the excavation work. Additional erosion control measures may be needed due to unforeseen conditions. The Contractor shall install additional measures as necessary and as directed by Con Edison.

8.3 Storm water Runoff Control

In preparation for and throughout the duration of the remedial activities, the control and diversion of storm water runoff is essential to reduce the potential for impacted material discharges off site. Storm water contact with the impacted soils will be limited due to the erosion and sediment control barriers around the area of excavation. Therefore, it is not anticipated that runoff from the exterior will come in contact with the excavation area. The Contractor will be required to utilize appropriate control measures to route the runoff from the collection system to the municipal storm sewer. Storm water runoff control measures may

include the installation of berms, barriers, and a sump for the collection and discharge of the water.

8.4 Restoration

Upon completion of the remedy, the contractor will remove all sediment fencing and restore the surface to pre-construction conditions. All sediment accumulated in the sediment fencing materials will be removed and transported to a properly licensed Con Edison-approved disposal facility.

A sediment and erosion control plan is also provided in the Contract Drawings in **Appendix B**, which shows site location and details of the silt fence, hay bales, and other components of the sediment and erosion control measures.

9. Site Security Plan

The objectives of the site security plan at the Site are to prevent the vandalism/destruction of construction and equipment and to minimize health and safety concerns for the existing workers at the active facility during the work.

9.1 Perimeter Security

The Contractor will erect a temporary fence around the perimeter of each work area location. At a minimum, this will consist of temporary construction fencing, barriers, and lighting surrounding all work areas to include waste handling equipment, storage areas, excavation areas, and construction equipment. Where possible, the Contractor will utilize existing fencing. The fence will be secured at the end of each working day. Barriers or fencing extending onto or adjacent to site access roads shall be visible during day and evening hours.

9.2 Equipment Security

Unless otherwise restricted by the individual private property access agreements, all vehicles and/or equipment left in the work area must be secured at the end of each working day. In addition, vehicles and equipment must remain in a secured location overnight or during non-work days. No vehicles or equipment may be left overnight in an unsecured location. It is the responsibility of the Contractor to ensure that all non-essential equipment is de-energized when left on-site and not in use to prevent electrical/fire/explosive hazards. No equipment will run overnight and/or on non-working days.

The Contractor will make every effort to minimize the storage of equipment or materials in areas other than the specified storage area.

10. Decontamination Plan

The objectives of the decontamination plan at the Site are to provide the procedures and equipment necessary to decontaminate personnel and equipment to prevent cross-contamination from the excavation area to public areas (i.e., highways, roads, support zones, vehicles, etc.). In the event that impacted materials are encountered, the decontamination procedures for personnel and equipment are outlined below. This plan does not replace the decontamination procedures outlined in the HASP, **Appendix D**. This plan provides additional guidelines on decontamination locations, necessary equipment, and procedures.

10.1 Decontamination Procedures

The Contractor will establish decontamination areas for the following activities.

- Personnel decontamination
- Equipment decontamination
- Vehicle decontamination

10.1.1 On-site Personnel Decontamination

A personnel decontamination station where workers can drop equipment and remove personal protective equipment (PPE) will be set up at the boundary work zone within the work zone during remedial activities. It will be equipped with basins for water and detergent, and trash bags or cans for containing disposable PPE and discarded materials. Once personnel have decontaminated at this station and taken off their PPE, they will proceed to a final basin where they will wash themselves as a secondary means of personal hygiene (e.g., hands, face, etc.).

The specific decontamination procedures and requirements for the disposal of decontamination wastewater are outlined in the HASP, **Appendix D** and the Waste Management Plan **(**Section 11). The personnel decontamination station as well as the exclusion zone and contaminant reduction zone is shown in the Contract Drawings in **Appendix B**.

10.1.2 Equipment Decontamination

Hand tools and miscellaneous small equipment that come in contact with excavated soils or impacted groundwater will be decontaminated on a temporary decontamination pad in buckets of water and detergent.

A decontamination area will be established by the Contractor to clean equipment in accordance with the HASP. Potable water is not available at the site. Equipment that has been in contact with impacted soils will need to be cleaned with a pressure washer within the established off-site decontamination area. The decontamination pad will be sufficiently sized to ensure that the largest piece of Contractor equipment can be adequately decontaminated. Provisions will be made to control overspray at the decontamination pad.

All equipment leaving the Site will be decontaminated per these guidelines. In addition, any equipment previously utilized to excavate impacted material will be decontaminated prior to use in backfilling (e.g., excavator bucket).

Wastewaters produced during decontamination will be collected from the decontamination pad and transferred to on-site drums or a tank. The wastewaters will be characterized and properly disposed of by the Contractor. Disposal of the wastewater will be handled in accordance with the Waste Management Plan (Section 11).

Soils collected from the decontamination pads will be bulked with the excavated material and disposed of in accordance with the Waste Management Plan (Section 11).

10.1.3 Material Transport Vehicle Decontamination

Trucks transporting soil off site for ultimate disposal will enter the Site as described in the Traffic Control Plan. Care will be exercised when loading trucks not to spill material on the outside of the trucks. Before exiting the site, the Contractor will stage the trucks on the equipment decontamination pad. Trucks will then be visually inspected (i.e., box sidewalls, box tailgate, tires, etc.), cleaned and decontaminated as necessary prior to being allowed to leave the Site. In addition, trucks will be required to be tarped prior to departing the Site. All collected soil and decontamination fluids will be collected and managed in accordance with the Waste Management Plan (Section 11). The vehicle decontamination station as well as the exclusion zone and contaminant reduction zone is shown in the Contract Drawings in **Appendix B**.

10.2 Decontamination Equipment

The Contractor will be responsible for maintaining a sufficient supply of equipment required to implement decontamination procedures, including, but not limited to, the following items:

- Plastic trash barrels
- Liners for trash barrels
- Wash basins

- Alconox™ detergent concentrate
- Hand pump sprayers
- Long handled bristle brushes
- Large sponges
- Cleaning wipes for respirators
- Bench or stool(s)
- Stepladder(s)
- Pressure washer/steam generator
- Liquid detergent and paper towels
- Plastic trash bags
- Supplies/equipment to construct the decontamination pads
- All necessary hosing, connections, etc. to collect and transport decontamination fluids

11. Waste Management Plan

The objectives of the waste management plan at the Site are to provide the Contractor with the identification of waste streams to be generated for the proposed activities of this RAWP and management/disposal guidelines for each waste stream. The Contractor will dispose of all waste materials generated as a result of these activities in accordance with all applicable laws and regulations at a Con Edison-approved disposal facility. The procedures outlined in this waste management plan will be followed for all derived wastes.

11.1 Disposal Record Keeping

All manifests and/or bills of lading for all shipments will be submitted to the Engineer (GEI) prior to any vehicle departing the site. All manifests and/or bills of lading will be reviewed by the Engineer and signed by Con Edison or a designated Con Edison representative.

A log of all shipments and copies of all manifests and/or bills of lading will be maintained by the Engineer on-site for reference. Upon completion of the work, Con Edison will receive all logs and manifests and/or bills of lading. The logs, manifests, and bills of lading will be included in the Final Engineering Report (FER) following completion of the proposed activities to create a permanent record of disposal.

11.2 Material Shipping Procedures

All material transportation vehicles leaving the site must be watertight and will be decontaminated in accordance with the decontamination plan prior to departing the site. In addition, all vehicles transporting impacted soil from the site must have lined beds to prevent leakage, bed covers, and watertight gates.

Individual waste streams will be handled as follows.

11.2.1 MGP Impacted Soils and Bulky Waste

All excavated MGP-related material will be moved to the top of the slope and staged on a temporary stockpile until sufficient material is generated for a haul vehicle. The material from the stockpile will be placed directly into haul vehicles and transported directly to an appropriately licensed Con Edison-approved disposal facility. The Contractor will have a primary and an alternate receiving facility prepared to receive the impacted soils prior to excavation.

Vehicles containing excavated soils will be covered with a solid plastic tarp. If necessary, spray-on odor suppressing materials such as Rusmar™ Foam or BioSolve® may be used to reduce potential naissance odors during transit.

Impacted soils that contain too high a water content to be transported safely (e.g. without risk of a liquid spill off-site) must be amended on-site within the excavation area, by the Contractor prior to shipment off-site. All amendments used at the site will meet NYSDEC requirements.

11.2.2 Decontamination Water

Contaminated liquids from decontamination of equipment and personnel will be pumped into drums or a frac tank(s) and disposed of off-site. The drums or tank(s) must be sufficiently sized to contain the wastewater. Tanks should provide some measure of primary treatment (settling) with weirs, baffles or other appropriate technology, and flow equalization, if needed.

The Contractor will arrange for the off-site disposal of all generated wastewater. The Contractor will retain a licensed liquid waste hauler to remove this liquid from the site and properly dispose of this material in accordance with all applicable regulations. The Contractor will be responsible for obtaining any appropriate Federal, State, and/or local permits that may be required. The Contractor will have a primary and an alternate properly permitted, Con Edison-approved receiving facility prepared to receive all liquid wastes generated. In addition, the Contractor will ensure that off-site disposal and/or on-site storage volumes are adequate to avoid construction delays, if necessary.

Groundwater measurements from previous investigations indicate that the approximate depth to water in the excavation area ranged between 8.7 and 35.4 ft. bgs. Due to the depth to groundwater at the site, it is not anticipated that groundwater will be encountered during excavation. However, if impacted groundwater is collected, it will be containerized for off-site disposal.

Solid material collected in the frac tank(s) from settling will be bulked with the MGP-impacted soil and sent to an appropriately-licensed Con Edison-approved disposal facility as necessary.

11.3 Soil Disposal Characterization Analyses

Soil disposal analytical samples were collected during the PDI to pre-characterize the soils for off-site disposal. Any additional samples collected from impacted materials for disposal will be analyzed in accordance with the receiving facilities' guidelines and all Local, State, and Federal laws. The Contractor will coordinate with Con Edison and the property owner to collect any additional samples prior to the start of excavation activities. The Contractor shall provide the Engineer the results of all analyses immediately upon receipt.

12. Sample Collection and Analysis Plan

The sample collection and analysis plan for the site has been designed to support the requirements of the remedy. The remedy includes the removal of MGP-impacted material. This plan describes the sampling and analysis procedures for collecting representative samples of backfill and wastewater for disposal.

All analytical testing will be performed by a laboratory that holds a current NYSDOH Environmental Laboratory Approval Program certification. A copy of the sampling data will be maintained on site by the Engineer during the remedial activities.

12.1 Representative Sampling of Backfill

The excavation will be backfilled with imported materials. The Contractor will identify the New York State Department of Transportation-approved borrow pit location(s) of imported material prior to the start of excavation activities. The Contractor will provide certificates of clean fill for the imported material identifying said material as native. In addition, the Contractor will provide analytical results from the borrow pit(s), specific to the actual fill being imported to the site, as confirmation that the material is free of contamination. At a minimum, a sample of the backfill will be collected at the beginning, the middle, and the end of backfill operations. Backfill samples will be analyzed for Resource Conservation and Recovery Act (RCRA) 8 Metals, polychlorinated biphenyls by United States Environmental Protection Agency (EPA) Method 8082, VOCs by EPA Method 8260 or New York State Analytical Service Protocol (NYSASP) Method 95.1, and SVOCs by EPA Method 8270C or NYSASP Method 95-2.

12.2 Wastewater Sampling

Wastewater will be sampled by the Contractor in accordance with the conditions of the receiving facility for off-site disposal and the results provided to Con Edison and the Engineer.

13. Traffic Control Plan

A traffic management plan is provided in the Contract Documents which shows Site location, direction of traffic flow, and the location of flaggers or traffic control personnel as needed for trucks arriving and departing the Site.

Traffic control personnel will be provided when all trucks are exiting onto Washington Avenue from the site. Traffic control personnel shall also direct traffic as needed upon delivery of equipment, etc., or during work performed in the road right-of-way in accordance with the applicable permit requirements. No trucks will be allowed to idle for longer than 5 minutes while at the work area location.

Truck Route Notes:

1. Do not queue trucks and equipment in local streets.
2. Do not idle trucks delivering materials or awaiting loading on the site or on local streets.
3. Provide all necessary flagging for trucks entering/exiting the site.
4. Inform all authorities required as to the truck traffic and routes.
5. Follow approved local route to/from I-87.
6. Use only New York City Department of Transportation-approved through truck routes to exit New York City.

Directions Entering The Site:

Heading North on Route 87:

1. Take Exit 6 for Tuckahoe Rd (0.2 mi)
2. Keep a right at the fork, follow signs for Tuckahoe Rd W and merge onto Tuckahoe Rd (0.6 mi).
3. Continue onto Saw Mill River Road (0.2 mi).
4. Turn right onto Old Nepperhan Ave (0.1 mi).
5. Turn right onto Roberts Ave (0.8 mi).
6. Turn right onto N Broadway (2.2 mi).
7. Turn left onto Washington Ave (0.3 mi).
8. Turn left onto Ridge Street.

Heading South on Route 87:

1. Take Exit 9 for US-9 toward Tarrytown/Sleepy Hollow (0.2 mi)
2. Turn left onto U.S. 9 S/S Broadway (3.2 mi).
3. Turn right onto Broadway (1.5 mi).
4. Turn right onto Warburton Ave (0.4 mi).
5. Turn right onto Washington Ave (280 ft.).
6. Turn left onto Ridge Street.

Directions Leaving The Site:

To Points North:

1. Turn right onto Washington Ave
2. Turn left onto Warburton Ave (0.4 mi).
3. Turn left onto Broadway (1.5 mi).
4. Turn left to stay on Broadway (3.4 mi).
5. Turn right onto White Plains Rd (0.2 mi).
6. Turn right to merge onto the I-287/I-87 ramp.

To Points South:

1. Turn right onto Washington Ave
2. Turn right onto Broadway (2.3 mi).
3. Turn left onto Roberts Ave (0.8 mi).
4. Turn left onto Old Nepperhan Ave (0.1 mi).
5. Turn left onto Saw Mill River Rd (0.1 mi).
6. Continue straight onto Tuckahoe Road (0.4 mi).
6. Turn right to merge onto I-87 S.

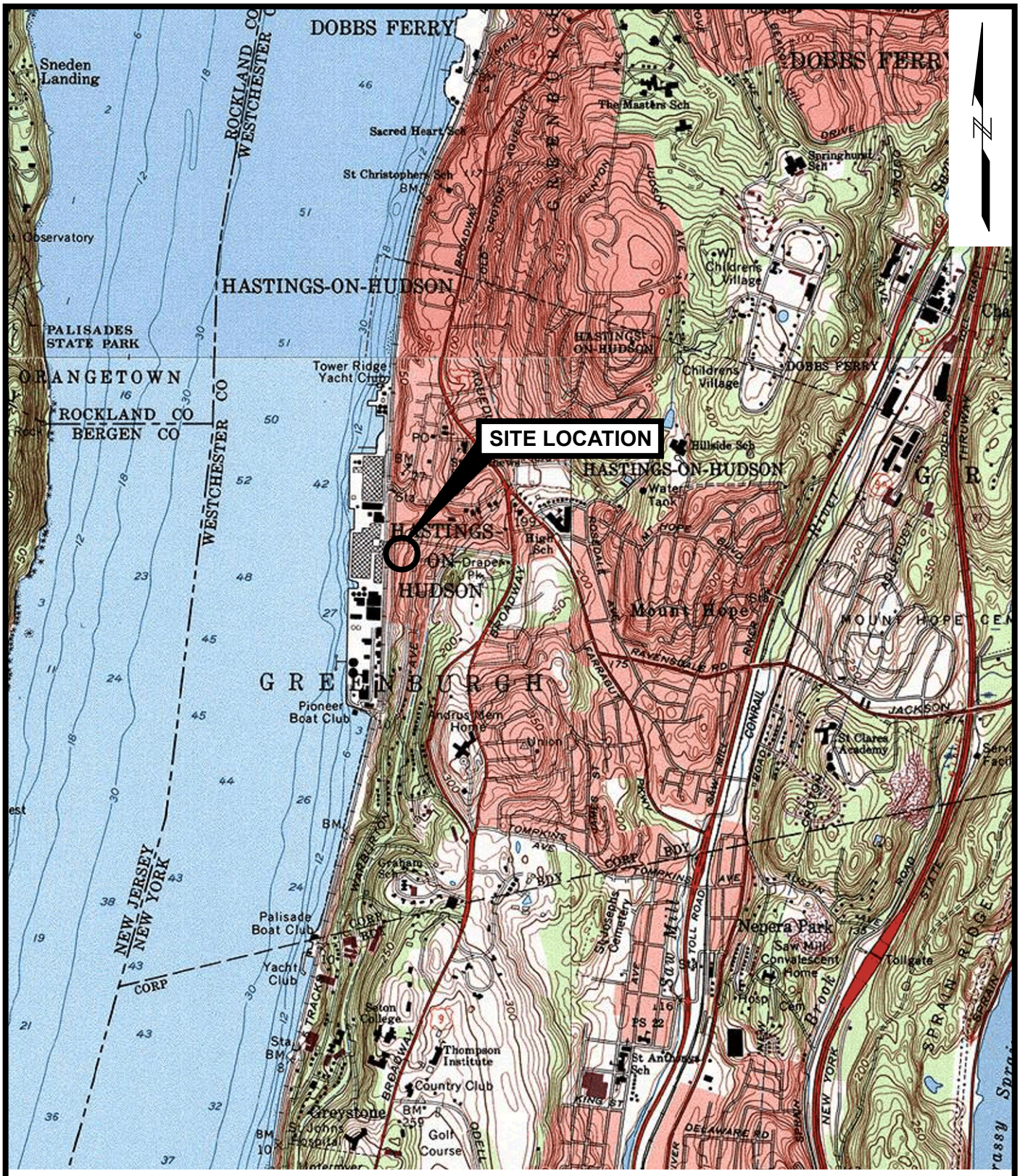
14. Final Engineering Report

Following the completion of the site remedial activities, a FER will be developed and stamped by an engineer licensed to practice in the State of New York. This report will include a summary of the field programs, documentation of any changes to the RAWP, documentation of the final disposal of waste, contract drawings, specifications, and any approved changes to those documents.

Specific components of the Final Engineering Report will include:

- Record drawings, specifications, addenda, and approved changes.
- The actual volumes of excavated material and wastewater.
- Results of analytical samples collected during the implementation of the remediation.
- The summary of remaining impacts at the site.
- Other plans and figures (if required), photographs, cross sections, data summary tables, and appendices that will provide NYSDEC with an accurate accounting of the remedial measures implemented at the Site.
- Approval and Closure documents from the NYSDEC.
- Approved permits.
- Summary of construction work, meetings, and changes in work scope.
- Shipping manifests and bills of lading (contaminated soil, clean fill, and decontamination liquids).
- Summary of Air Monitoring Data collected during the remedial activities.
- Certification that material transported off-site was disposed of at a properly-licensed Con Edison-approved disposal or treatment facility.
- "As-Built" survey drawings documenting the final site conditions prepared by a New York State-licensed land surveyor.

Figures



SOURCE:
Map created with TOPO! ® ©2001 National Geographic (www.nationalgeographic.com/topo) using U.S.G.S. 7.5 MINUTE SERIES TOPOGRAPHIC MAPS: Nyack 1979, White Plains 1994, Mt. Vernon 1995, and Yonkers 1998.

0 2000 4000
SCALE, FEET

REMEDIAL ACTION WORK PLAN
HASTINGS-ON-HUDSON FORMER MGP SITE
NEW YORK

CONSOLIDATED EDISON CO. OF NEW YORK, INC.

GEI Consultants

Project 070251-17-1701

SITE LOCATION MAP

October 2017 Figure 1

H:\TECH\project\Con Ed\Hastings on Hudson\Remedial design\RAWP\Figures

LEGEND:

- FORMER HASTINGS-ON-HUDSON MGP SITE BOUNDARY
- CURRENT PROPERTY BOUNDARY
- 45 — GROUND SURFACE CONTOUR (FT MSL)
- EXISTING STRUCTURE
- HISTORICAL STRUCTURE
- PATIO — GREY INDICATES 1st FLOOR
- PDI SURFACE SOIL SAMPLE
- MONITORING WELL
- PIEZOMETER
- SOIL BORING
- SURFACE SOIL SAMPLE
- (2008) — INDICATES SAMPLE FROM 2008
- (2011) — INDICATES SAMPLE FROM 2011 MOVED DUE TO NYSDEC REQUEST OR PROPERTY OWNER CONCERNS
- 6 NYCRR — NEW YORK STATE REGISTER AND OFFICIAL COMPILATION OF CODES, RULES AND REGULATIONS OF THE STATE OF NEW YORK
- 6 NYCRR 375 SCO UNRESTRICTED USE — REGULATORY COMPARISON AGAINST NYCRR, CHAPTER IV, PART 375-6 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES
- 6 NYCRR 375 SCO RESTRICTED USE RES — REGULATORY COMPARISON AGAINST NYCRR, CHAPTER IV, PART 375-6 RESTRICTED USE RESIDENTIAL SOIL CLEANUP OBJECTIVES
- NO EXCEEDANCE OF 6 NYCRR 375 SCOS (UNRESTRICTED USE)
- ONE OR MORE VOCS DETECTED ABOVE THE UNRESTRICTED USE SCOS
- ONE OR MORE SVOCS DETECTED ABOVE THE UNRESTRICTED USE SCOS
- ONE OR MORE METALS DETECTED ABOVE THE UNRESTRICTED USE SCOS
- ONE OR MORE VOCS DETECTED ABOVE THE RESTRICTED USE RESIDENTIAL SCOS
- ONE OR MORE SVOCS DETECTED ABOVE THE RESTRICTED USE RESIDENTIAL SCOS
- ONE OR MORE METALS DETECTED ABOVE THE RESTRICTED USE RESIDENTIAL SCOS

NOTES:

1. INTERIOR BUILDING LAYOUT IS APPROXIMATE; SURVEY INFORMATION WAS OBTAINED FOR EXTERIOR BUILDING FEATURES AND SAMPLING LOCATIONS, AND INTERIOR WALL WITH MIRRORS. SURVEY INFORMATION FOR ENVIRONMENTAL PURPOSES ONLY.
2. ALL EXISTING HARDSCAPING TO BE PROTECTED AND WILL REMAIN AFTER THE CONCLUSION OF THE WORK.

SOURCES:

1. SURVEYS CONDUCTED BY GEI ON 5/30/08, 9/28/11, AND 6/25/12.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

Remedial Action Work Plan
Hastings-On-Hudson Former MGP Site
Village of Hastings-On-Hudson, New York

Consolidated Edison Co. of New York, Inc.
Astoria, New York

GEI Consultants

PN: 070251-17-1701

SOIL SAMPLE LOCATIONS

October 2017 Fig. 2

---- \\gtb1v-fs01\CAD\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\070251_RAWP_FIGS.dwg - 10/13/2017

LEGEND:

- FORMER HASTINGS-ON-HUDSON MGP SITE BOUNDARY
- CURRENT PROPERTY BOUNDARY
- 45 — GROUND SURFACE CONTOUR (FT MSL)
- EXISTING STRUCTURE
- HISTORICAL STRUCTURE
- PATIO — GREY INDICATES 1st FLOOR
- PDI SURFACE SOIL SAMPLE
- MONITORING WELL
- PIEZOMETER
- SOIL BORING
- SURFACE SOIL SAMPLE
- (2008) — INDICATES SAMPLE FROM 2008
- (2011) — INDICATES SAMPLE FROM 2011 MOVED DUE TO NYSDEC REQUEST OR PROPERTY OWNER CONCERNS
- 6 NYCRR — NEW YORK STATE REGISTER AND OFFICIAL COMPILATION OF CODES, RULES AND REGULATIONS OF THE STATE OF NEW YORK
- 6 NYCRR 375 SCO UNRESTRICTED USE — REGULATORY COMPARISON AGAINST NYCRR, CHAPTER IV, PART 375-6 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES
- 6 NYCRR 375 SCO RESTRICTED USE RES — REGULATORY COMPARISON AGAINST NYCRR, CHAPTER IV, PART 375-6 RESTRICTED USE RESIDENTIAL SOIL CLEANUP OBJECTIVES
- NO EXCEEDANCE OF 6 NYCRR 375 SCOS (UNRESTRICTED USE)
- ONE OR MORE VOCS DETECTED ABOVE THE UNRESTRICTED USE SCOS
- ONE OR MORE SVOCS DETECTED ABOVE THE UNRESTRICTED USE SCOS
- ONE OR MORE METALS DETECTED ABOVE THE UNRESTRICTED USE SCOS
- ONE OR MORE VOCS DETECTED ABOVE THE RESTRICTED USE RESIDENTIAL SCOS
- ONE OR MORE SVOCS DETECTED ABOVE THE RESTRICTED USE RESIDENTIAL SCOS
- ONE OR MORE METALS DETECTED ABOVE THE RESTRICTED USE RESIDENTIAL SCOS
- 2-FOOT SURFACE SOIL EXCAVATION AREA
- RIP-RAP SLOPE INSTALLATION AREA

N

0 10' 20'
SCALE: 1" = 10'

NOTES:

1. INTERIOR BUILDING LAYOUT IS APPROXIMATE; SURVEY INFORMATION WAS OBTAINED FOR EXTERIOR BUILDING FEATURES AND SAMPLING LOCATIONS, AND INTERIOR WALL WITH MIRRORS. SURVEY INFORMATION FOR ENVIRONMENTAL PURPOSES ONLY.
2. ALL EXISTING HARDSCAPING TO BE PROTECTED AND WILL REMAIN AFTER THE CONCLUSION OF THE WORK.

SOURCES:

1. SURVEYS CONDUCTED BY GEI ON 5/30/08, 9/28/11, AND 6/25/12.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

Remedial Action Work Plan
Hastings-On-Hudson Former MGP Site
Village of Hastings-On-Hudson, New York

Consolidated Edison Co. of New York, Inc.
Astoria, New York

GEI Consultants

PROPOSED REMEDIAL ACTION

PN: 070251-17-1701 | October 2017 | Fig. 3

---- \\gtb1v-fs01\CAD\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Figures\RAWP\070251_RAWP_FIGS.dwg - 10/13/2017

Appendix A

Boring and Monitoring Well Logs

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-01

GROUND SURFACE ELEVATION (FT): 32.54 **LOCATION:** 8 Washington Avenue-NW Corner of Rear Yd.
NORTHING (FT): 787034.4 **EASTING (FT):** 662142.8 **TOTAL DEPTH (FT):** 12.0
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/22/2008 - 4/23/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT):
GENERAL NOTE: Temporary Well Screen

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
	0						(0'- 0.2') ORGANIC SOIL; ~2" of sod. FILL. (0.2'- 3') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse; ~20% construction debris, ~15% gravel, fine and coarse, ~15% silty fines, dry to moist, dark brown and orangeish gray, construction debris including brick, tile fragments, concrete; manual clearance to 5' bgs. FILL.
30		S-1	12/12	PID= 0.0			
		S-2	36/36	PID= 0.0		SB-01 continued 2' SE of man. clear. location due to fill obstruction at 5'	(3'- 6') SILTY SAND WITH GRAVEL (SM); Moved 2' southeast due to fill obstruction at 5' bgs and continued from 3' bgs; same soil/fill as above. FILL.
	5						
		S-3	36/36	PID= 0.0			(6'- 8') WIDELY GRADED SAND (SW); fine to medium sand; moist, light brown.
25						Env. Sample ID= HOH-SB-01 (7-9)	(8'- 9') SILTY SAND (SM); ~75% sand, fine; ~25% silty fines, moist, reddish brown.
		S-4	36/36	PID= 0.0			(9'- 10') NARROWLY GRADED SAND (SP); medium sand; moist, light orangeish brown.
	10					Env. Sample ID= HOH-SB-01 (10.5-12)	(10'- 12') WIDELY GRADED SAND WITH SILT (SW-SM); ~75% sand, fine to coarse; ~10% silty fines, ~5% gravel, coarse, moist, light brown.
							End of Boring at 12 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-01R

GROUND SURFACE ELEVATION (FT): 33.24 **LOCATION:** 8 Washington Avenue-N Port. of Rear Yd.
NORTHING (FT): 787024.9 **EASTING (FT):** 662162.2 **TOTAL DEPTH (FT):** 16.5
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/25/2008 - 4/25/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
	0	S-1	36/18	PID= 0.0			(0'- 1') NARROWLY GRADED SAND (SP); fine sand; dry, organics/topsoil present. (1'- 6') WIDELY GRADED SAND WITH SILT (SW-SM); ~85% sand, fine to medium, rounded; ~10% silt, <5% sand, coarse, moist, brown and tan.
30		S-2	36/14	PID= 0.0			
	5	S-3	36/18	PID= 0.0		Env. Sample ID= HOH-SB-01R (8-9)	(6'- 10') NARROWLY GRADED SAND (SP); ~90% sand, fine; ~5% gravel, fine, ~5% silt, moist, reddish brown.
25		S-4	36/28	PID= 0.0			(10'- 12') WIDELY GRADED SAND WITH GRAVEL (SW); ~55% sand, fine; ~25% sand, coarse, ~20% gravel, fine to medium, dry, tannish brown, gravel contained limestone fragments.
	10	S-5	36/24	PID= 0.0			(12'- 16.5') NARROWLY GRADED SAND (SP); ~90% sand, fine, rounded; ~5% sand, coarse, ~5% gravel, medium, dry, light brown and tan, gravel contained limestone fragments.
20							
	15	S-6	18/18	PID= 0.0		Env. Sample ID= HOH-SB-01R (16-16.5)	End of Boring at 16.5 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC.GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-02

GROUND SURFACE ELEVATION (FT): 33.26 **LOCATION:** 8 Washington Avenue-S Port. of Rear Yd.
NORTHING (FT): 787007.8 **EASTING (FT):** 662151.5 **TOTAL DEPTH (FT):** 17.5
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/22/2008 - 4/23/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT): 4/24/2008 9:00 am No Groundwater Observed
GENERAL NOTE: Temporary Well Screen

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
	0	S-1	36/30	PID= 0.0			(0'- 0.2') ORGANIC SOIL; ~2" of sod. FILL. (0.2'- 3') WIDELY GRADED SAND (SW); ~60% sand, fine to coarse; ~20% construction debris, ~20% gravel, dry, orangeish brown and light brown, construction debris including glass and brick; manual clearance to 5' bgs, boring moved within 1' of clearance location due to fill. FILL.
30		S-2	36/30	PID= 0.0		Env. Sample ID= HOH-SB-02 (3.5-4.5)	(3'- 4') SILT (ML); ~95% fines; <5% sand, coarse, <5% gravel, fine, moist, brown. (4'- 6') NARROWLY GRADED SAND (SP); ~95% sand, fine; ~5% sand, coarse, moist, light orangeish brown, 1" silt and coarse sand lens at bottom.
	5	S-3	36/30	PID= 0.0			(6'- 7.5') WIDELY GRADED SAND (SW); ~95% sand, fine to medium; ~5% sand, coarse, moist, brown. (7.5'- 9') NARROWLY GRADED SAND (SP); fine sand; moist, brown, silt lens at bottom.
25		S-4	36/36	PID= 0.0			(9'- 9.5') SILTY SAND (SM); ~55% sand, fine; ~45% silt, reddish brown. (9.5'- 12') NARROWLY GRADED SAND (SP); fine sand; light greenish gray.
	10	S-5	36/36	PID= 0.0			(12'- 13') SANDY SILT WITH GRAVEL (ML); ~55% fines; ~30% sand, ~15% gravel, fine to coarse, green and orange. (13'- 15') WIDELY GRADED SAND (SW); ~90% sand, fine to medium; <5% sand, coarse, <5% gravel, fine, <5% silt, moist, greenish brown.
20							
	15	S-6	30/30	PID= 0.0		Env. Sample ID= HOH-SB-02 (15-17)	(15'- 17.5') NARROWLY GRADED SAND (SP); ~95% sand, fine; <5% silt, greenish tan to orangeish tan, limestone fragments in tip.
							End of Boring at 17.5 feet. Bentonite

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
NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-03

GROUND SURFACE ELEVATION (FT): 37.76 **LOCATION:** 12 Washington Avenue-NE Corner of Rear Yd.
NORTHING (FT): 787053.8 **EASTING (FT):** 662242.0 **TOTAL DEPTH (FT):** 17.0
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/22/2008 - 4/24/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT): 4/25/2008 8:00 am No Groundwater Observed
GENERAL NOTE: Temporary Well Screen

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	S-1		PID= 0.0					(0'- 7.5') WIDELY GRADED SAND WITH SILT (SW-SM); ~75% sand, fine to medium; <10% construction debris, <10% silt, <10% gravel, dark brown, construction debris including bricks and concrete; manual clearance to 5' bgs. FILL.
		S-2		PID= 0.0					
		S-3		PID= 0.0					
35		S-4		PID= 0.0					
		S-5		PID= 0.0					
	5	S-6		PID= 0.0					
		S-7	36/30	PID= 0.0					(7.5'- 9') SILTY SAND (SM); ~75% sand, fine; ~15% silt, moist, brown.
30									
		S-8	36/30	PID= 0.0					(9.5'- 14.5') WIDELY GRADED SAND (SW); ~95% sand, fine to medium; <5% silt, <5% sand, coarse, moist, light brown, limestone fragments/gravel at 10' bgs.
	10								
		S-9	36/6	PID= 0.0					
25									
	15	S-10	18/14	PID= 1.0 PID= 18.7			PLO	Env. Sample ID= HOH-SB-03 (15.5-16.5)	(14.5'- 15') WIDELY GRADED SAND (SW); fine to medium sand; light orangeish brown, poor recovery. (15'- 16.5') NARROWLY GRADED SAND (SP); ~95% sand, fine; ~5% sand, coarse, slight petroleum-like odor, moist, light orangeish brown to gray.
		S-11	6/6	PID= 25.8 PID= 0.0			PLO PLO	Env. Sample ID= HOH-SB-03 (16.5-17)	(16.5'- 16.7') NARROWLY GRADED SAND (SP); fine sand; moderate petroleum-like odor, gray to orange, moderate petroleum-like staining. (16.7'- 17') NARROWLY GRADED SAND (SP); fine sand; moderate petroleum-like odor, gray to orange. End of Boring at 17 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-04

GROUND SURFACE ELEVATION (FT): 37.59 **LOCATION:** 12 Washington Avenue-N Port. of Rear Yd.
NORTHING (FT): 787042.1 **EASTING (FT):** 662233.9 **TOTAL DEPTH (FT):** 16.0
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/23/2008 - 4/24/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
	0	S-1		PID= 0.0			(0'- 3') SILTY SAND (SM); ~80% sand; ~15% silt, ~5% gravel, fine to medium, dark brown, manual clearance to 5' bgs. FILL.
		S-2		PID= 0.0			
35		S-3		PID= 0.0			(3'- 7') WIDELY GRADED SAND WITH SILT (SW-SM); ~75% sand, fine to medium; ~10% silt, <10% construction debris, ~5% gravel, fine to coarse, dark brown, construction debris including brick. FILL.
	5	S-4		PID= 0.0			
		S-5	36/28	PID= 0.0			
30						Env. Sample ID= HOH-SB-04 (8-9)	(7'- 9') WIDELY GRADED SAND (SW); ~95% sand, fine to medium; <5% sand, coarse, <5% silt, moist, brown.
		S-6	36/24	PID= 0.0			(9'- 12') NARROWLY GRADED SAND (SP); ~70% sand, fine; ~15% sand, coarse, ~10% gravel, fine, <5% silt, brown.
	10						
25		S-7	36/24	PID= 0.0			(12'- 16') NARROWLY GRADED SAND (SP); fine sand; light brown to tan.
	15	S-8	12/12	PID= 0.0		Env. Sample ID= HOH-SB-04 (15-16)	
							End of Boring at 16 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-05

GROUND SURFACE ELEVATION (FT): 36.51 **LOCATION:** 10 Washington Avenue-Centr of Rear Patio
NORTHING (FT): 787017.2 **EASTING (FT):** 662207.8 **TOTAL DEPTH (FT):** 17.0
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/24/2008 - 4/24/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
35	0	S-1	36/18	PID= 0.0			(0'- 0.5') NARROWLY GRADED SAND (SP); within brick patio; block removed - 4" imported sand at patio base. (0.5'- 3') WIDELY GRADED SAND (SW); ~95% sand, fine and medium; ~5% sand, coarse, brown, topsoil and organics in top 6".
		S-2	36/12	PID= 0.0			(3'- 6') WIDELY GRADED SAND WITH GRAVEL (SW); ~85% sand, fine to coarse; ~15% gravel, medium, moist, orangeish gray and black.
30	5	S-3	36/30	PID= 0.0			(6'- 8') WIDELY GRADED SAND (SW); ~90% sand, fine and medium; ~5% silt, ~5% sand, coarse, orangeish brown.
						Env. Sample ID= HOH-SB-05 (8-9)	(8'- 9') SILT (ML); silt, moist, brownish black to light brown, black material (coal-like material) at 8'.
25	10	S-4	36/36	PID= 0.0			(9'- 12') NARROWLY GRADED SAND (SP); ~90% sand, fine; ~5% sand, coarse, ~5% gravel, fine, brown.
		S-5	36/36	PID= 0.0			(12'- 17') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine; ~10% silt, moist, light brown to tan, varved fine sand and silt; lens of light grey silt with clay at 15' bgs.
20	15	S-6	24/24	PID= 0.0		Env. Sample ID= HOH-SB-05 (16-17)	
							End of Boring at 17 feet. Bentonite

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

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: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-06

GROUND SURFACE ELEVATION (FT): 33.70 **LOCATION:** 8 Washington Avenue-NE Port. of TP-1
NORTHING (FT): 787026.4 **EASTING (FT):** 662177.0 **TOTAL DEPTH (FT):** 18.0
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/22/2008 - 4/23/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT): ▼ 8.92 4/24/2008 9:00 am ; Perched or trapped groundwater observed in former holder
GENERAL NOTE: Temporary Well Screen

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								(0'- 0.5') TOPSOIL; (boring within TP-01 - excavation to 9' bgs then GP). FILL. (0.5'- 6.3') NARROWLY GRADED SAND WITH GRAVEL (SP); ~60% sand, medium; ~40% construction debris, dry, dark brown and light brown, construction debris including brick, glass, metal; 1-2" ash layer at 15" bgs. FILL.
30		S-1		PID= 0.0					
	5								
		S-2		PID= 0.0					(6.3'- 7') WIDELY GRADED SAND WITH GRAVEL (SW); ~50% sand, fine to coarse; ~35% gravel, fine to coarse, ~15% construction debris, dry, brown, construction debris including bricks and cobbles. (7'- 9') CLAYEY SAND (SC); ~60% sand, fine; ~40% clayey fines, wet.
		S-3		PID= 0.0					
▼ 25		S-4	36/36	PID= 0.0					(9'- 10') WIDELY GRADED SAND WITH GRAVEL (SW); ~50% sand, fine to coarse; ~25% gravel, ~25% construction debris, dark brown, bottom of TP-01 excavation at 9' bgs. (10'- 12') WIDELY GRADED SAND (SW); ~65% sand, medium to coarse; ~35% construction debris, wet, reddish brown, construction debris including brick, tile and glass.
	10								
		S-5	36/4	PID= 0.0			PLO		(12'- 15') POOR RECOVERY; construction debris, slight petroleum-like odor, brick in probe shoe.
20									
	15	S-6	36/24	PID= 24					(15'- 17') WIDELY GRADED SAND (SW); medium to coarse sand; wet, brown.
				PID= 52				Env. Sample ID= HOH-SB-06 (16-17.5)	
				PID= 220			PLO		(17'- 18') SILTY SAND (SM); ~50% sand, coarse; ~50% silt, moderate petroleum-like odor, black, timber in probe shoe; petroleum-like staining and sheen. End of Boring at 18 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-07

GROUND SURFACE ELEVATION (FT): 34.10 **LOCATION:** 8 Washington Avenue-SW Port. of TP-1
NORTHING (FT): 787017.3 **EASTING (FT):** 662175.5 **TOTAL DEPTH (FT):** 18.0
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/23/2008 - 4/23/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

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
30	0						FILL; Test Pit (TP-01) boring, outside of holder wall. Excavated to 7' bg then continued with GP. See boring log for SB-06 for shallow soil descrip. Less construction debris noted outside of holder wall.
	5	S-1	24/24	PID= 0.0			(7'- 9') NARROWLY GRADED SAND (SP); fine sand; moist, orange.
25		S-2	36/36	PID= 0.0			(9'- 10.5') NARROWLY GRADED SAND (SP); ~95% sand, fine; ~5% sand, coarse, light brown.
	10						(10.5'- 15') NARROWLY GRADED SAND (SP); ~80% sand, fine; ~10% sand, coarse, ~10% gravel, fine, moist, light brown.
20		S-3	36/36	PID= 0.0			
	15	S-1	36/30	PID= 0.0		Env. Sample ID= HOH-SB-07 (15-16)	(15'- 16') NARROWLY GRADED SAND (SP); ~85% sand, fine; ~15% sand, coarse, moist, dark brown and orange, mottled.
						Env. Sample ID= HOH-SB-07 (16-17)	(16'- 17') NARROWLY GRADED SAND (SP); ~95% sand, fine; ~5% gravel, fine to coarse, tan, limestone fragments at bottom.
							End of Boring at 18 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-08

GROUND SURFACE ELEVATION (FT): 35.58 **LOCATION:** 8 Washington Avenue-SE Corner of Rear Yd.
NORTHING (FT): 786998.4 **EASTING (FT):** 662175.5 **TOTAL DEPTH (FT):** 10.5
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/25/2008 - 4/25/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
35	0	S-1	36/28	PID= 0.0			Topsoil (0.5'- 1') NARROWLY GRADED SAND (SP); fine sand; dry, brown. (1'- 3') WIDELY GRADED SAND (SW); ~95% sand, fine and medium; ~5% sand, coarse, dry, orangeish brown.
		S-2	36/28	PID= 0.0			(3'- 6') WIDELY GRADED SAND (SW); ~90% sand, fine and medium; <5% sand, coarse, <5% silt, dry, brown, obstruction at 6' bgs; moved boring 5' east and continued.
30	5	S-3	36/24	PID= 0.0		Env. Sample ID= HOH-SB-8 (7.5-8.5)	(6'- 8.5') WIDELY GRADED SAND (SW); ~85% sand; ~15% sand, coarse, moist, reddish brown.
							Limestone cobble at 8.5' bg
	10	S-4	18/12	PID= 0.0		Env. Sample ID= HOH-SB-8 (9-10)	(9'- 10') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse; <5% gravel, medium, <5% silt, dark grayish brown. (10'- 10.5') NARROWLY GRADED SAND (SP); fine sand; orangeish brown.
							End of Boring at 10.5 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-09

GROUND SURFACE ELEVATION (FT): 37.30 **LOCATION:** 12 Washington Avenue-In Mini-TP in Rear Yd.
NORTHING (FT): 787048.3 **EASTING (FT):** 662238.5 **TOTAL DEPTH (FT):** 16.5
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/24/2008 - 4/24/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
	0	S-1		PID= 0.0			(0'- 4') SILTY SAND WITH GRAVEL (SW-SM); ~55% sand, fine and medium; ~20% gravel, fine to medium, ~15% silt, ~10% construction debris, brown, construction debris including brick and glass. FILL.
		S-2		PID= 0.0			
35							
		S-3		PID= 0.0			(4'- 6') WIDELY GRADED SAND WITH GRAVEL (SW); ~65% sand, fine and medium; ~20% gravel, fine to coarse, ~10% construction debris, ~5% silt, orangeish brown, brick fragments present. FILL.
	5						
		S-4	36/28	PID= 0.0			(6'- 7.5') NARROWLY GRADED SAND (SP); medium sand; moist, orangeish brown, boring in mini-test-pit excavation GP start at 6' bgs.
30							(7.5'- 9') WIDELY GRADED SAND (SW); ~95% sand, fine and medium; ~5% sand, coarse, wet, grayish brown.
		S-5	36/30	PID= 0.0		Env. Sample ID= HOH-SB-09 (10-11)	(9'- 12') NARROWLY GRADED SAND (SP); ~90% sand, fine; <5% sand, coarse, <5% silt, moist, brown, slightly mottled.
	10						
25		S-6	36/24	PID= 0.0			(12'- 15') WIDELY GRADED SAND (SW); fine and medium; moist, orangeish brown and gray.
	15	S-7	18/18	PID= 0.0		Env. Sample ID= HOH-SB-09 (16-16.5)	(15'- 16.5') NARROWLY GRADED SAND (SP); fine sand; moist, orangeish brown and gray.
							End of Boring at 16.5 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-10

GROUND SURFACE ELEVATION (FT): 35.73 **LOCATION:** 10 Washington Avenue-NW Corner of Rear Yd.
NORTHING (FT): 787025.0 **EASTING (FT):** 662190.3 **TOTAL DEPTH (FT):** 18.0
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/25/2008 - 4/25/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT): ▼ 10.59 4/25/2008 2:00 pm ; Perched or trapped groundwater observed in former holer
GENERAL NOTE: Temporary Well Screen

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	VISUAL IMPACTS	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
35	0	S-1		PID= 0.0					(0'- 1') NARROWLY GRADED SAND WITH GRAVEL (SP); ~55% sand, fine and medium; ~45% gravel, max. size 0.25, tan, FILL.
		S-2		PID= 0.0					(1'- 6') NARROWLY GRADED SAND (SP); ~90% sand, fine and medium; ~5% construction debris, ~5% silt, dark brown, construction debris including brick. FILL.
		S-3		PID= 0.0					
		S-4		PID= 0.0					
30	5	S-5	36/20	PID= 0.0					(6'- 13') WIDELY GRADED SAND (SW); ~55% sand, fine to coarse; ~45% construction debris, moist to wet, orangeish brown and black, construction debris including brick, tile, glass; wet at 12' bgs; GP start at 6' bgs - manual clearance location. FILL.
		S-6	36/18	PID= 0.0					
25 ▼	10	S-7	36/34	PID= 0.0				Env. Sample ID= HOH-SB-10 (11-12)	
				PID= 0.3					(13'- 15') WIDELY GRADED SAND (SW); ~55% sand, fine to coarse; ~45% construction debris, moderate petroleum-like odor, wet, brownish black, petroleum-like staining. FILL.
				PID= 0.6			PLO		
20	15	S-8	36/36	PID= 0.8					(15'- 18') WIDELY GRADED SAND (SW); ~55% sand, medium and coarse; ~30% gravel, fine to medium, ~15% construction debris, strong petroleum-like odor, blackish brown, slag and construction debris present. FILL.
				PID= 4.6					
				PID= 39.2					
				PID= 82.3			PLO		
				PID= 114				Env. Sample ID= HOH-SB-10 (17-18)	
				PID= 381					
				PID= 102					End of Boring at 18 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-11

GROUND SURFACE ELEVATION (FT): 35.83 **LOCATION:** 10 Washington Avenue-W Port. of Rear Yd.
NORTHING (FT): 787013.2 **EASTING (FT):** 662193.2 **TOTAL DEPTH (FT):** 14.0
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/25/2008 - 4/25/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
35	0						Bored to 3' bgs then continued with continuous GP sampling.
		S-1	36/36	PID= 0.0			(3'- 6') WIDELY GRADED SAND (SW); ~55% sand, fine to medium; ~40% construction debris, ~5% gravel, fine, slag/cinders present. FILL.
	5						
30		S-2	36/30	PID= 0.0		Env. Sample ID= HOH-SB-11 (8-9)	(6'- 9') WIDELY GRADED SAND (SW); ~90% sand, fine to medium; <5% coarse sand, <5% silt, dry to moist, orangeish brown, coal-type fragments (native) at 7.5' bgs.
		S-3	36/28	PID= 0.0			(9'- 12') NARROWLY GRADED SAND (SP); ~90% sand, fine; ~5% gravel, fine to medium, ~5% silt, light brown, limestone fragments at 11' bgs.
	10						
25		S-4	24/24	PID= 0.0		Env. Sample ID= HOH-SB-11 (13-14)	(12'- 14') NARROWLY GRADED SAND (SP); ~90% sand, fine; ~5% gravel, medium to coarse, ~5% silt, light tannish brown, limestone fragments at bottom.
							End of Boring at 14 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-12

GROUND SURFACE ELEVATION (FT): 36.87 **LOCATION:** 10-12 Washington Avenue-S Port. of Rear Yd.
NORTHING (FT): 787017.2 **EASTING (FT):** 662222.1 **TOTAL DEPTH (FT):** 9.0
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/25/2008 - 4/25/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
	0	S-1		PID= 0.0			(0'- 4') SILTY SAND WITH GRAVEL (SM); ~55% sand, fine; ~20% silt, ~15% gravel, fine to medium, ~10% construction debris, dark brown, organics in top 1'; construction debris including bricks and glass. FILL.
		S-2		PID= 0.0			
35		S-3		PID= 0.0			
		S-4		PID= 0.0			
		S-5		PID= 0.0			(4'- 5') WIDELY GRADED SAND (SW); ~90% sand, fine to medium; ~5% silt, ~5% gravel, fine to medium, moist, orangeish brown.
	5						(5'- 6.5') WIDELY GRADED SAND (SW); medium to coarse sand, rounded; orange.
		S-6	36/24	PID= 0.0			(6.5'- 8') SILTY SAND (SM); ~55% sand, fine; ~45% silt, reddish brown.
30						Env. Sample ID= HOH-SB-12 (8-9)	(8'- 9') NARROWLY GRADED SAND (SP); fine sand; tannish orange.
							End of Boring at 9 feet. Bentonite

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

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: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-13

GROUND SURFACE ELEVATION (FT): 37.95 **LOCATION:** 12 Washington Avenue-E Port. of Rear Yd.
NORTHING (FT): 787049.3 **EASTING (FT):** 662245.6 **TOTAL DEPTH (FT):** 13.5
DRILLED BY: Aquifer Drilling and Testing / Jiri K. **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 4/25/2008 - 4/25/2008
DRILLING DETAILS: Geoprobe / Geoprobe 420M, Mobile Hand Cart / Casing: 1.7 in. ID / Casing: 2 in. OD / 3000 psi / Core Size: 2 in.
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
	0	S-1	36/14	PID= 0.0			(0'- 1') TOPSOIL; FILL.
							(1'- 3') SILTY SAND (SM); ~55% sand, fine; ~40% silt, ~5% gravel, fine, brown, FILL.
35		S-2	36/8	PID= 0.0			(3'- 6.5') POOR RECOVERY; due to presence of construction debris (e.g., brick). FILL.
	5						
		S-3	36/24	PID= 0.0			(6.5'- 8') WIDELY GRADED SAND WITH SILT (SW-SM); ~80% sand, fine to medium; ~10% silt, <10% sand, coarse, orangeish brown.
30						Env. Sample ID= HOH-SB-13 (8-9)	(8'- 9') SILT (ML); ~95% fines; ~5% sand, fine to coarse, moist, brownish gray.
		S-4	36/24	PID= 0.0			(9'- 13.5') NARROWLY GRADED SAND (SP); ~95% sand, fine; ~5% sand, coarse, light tannish brown, limestone fragments at bottom.
	10						
		S-5	18/18	PID= 0.0		Env. Sample ID= HOH-SB-13 (12.5-13.5)	
25							End of Boring at 13.5 feet. Bentonite

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-101

GROUND SURFACE ELEVATION (FT): 50.66 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787024.2 **EASTING (FT):** 662266.0 **TOTAL DEPTH (FT):** 18.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/6/2011 - 10/6/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

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
50	0		60/NM				(0'- 5') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% sand, fine to coarse, ~15% gravel, fine, ~10% fines, non plastic; moist, brown tan.
45	5	S-1	60/48	PID= 0.0		Env. Sample ID= SB-101(8-9)	S-1 (5'- 10') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% sand, fine to coarse, ~20% gravel, fine to coarse, ~10% fines, non plastic; max. size 1, moist, reddish brown.
40	10	S-2	60/29	PID= 0.1 PID= 0.2 PID= 0.0		Env. Sample ID= SB-101(13.5-15)	S-2 (10'- 12') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% sand, fine to coarse, ~20% gravel, fine to coarse, ~10% fines, non plastic; moist, reddish brown. S-2 (12'- 15') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine, ~35% fines, low plasticity, ~15% gravel, fine to coarse; moist to wet, reddish brown.
35	15	S-3	36/0				S-3 (15'- 18') NO RECOVERY; refusal at 18' bgs, when drillers extract sample macro core barrel lost down borehole..
							End of Boring at 18 feet. Bentonite Pellets

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-101A

GROUND SURFACE ELEVATION (FT): 50.66 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787024.2 **EASTING (FT):** 662266.0 **TOTAL DEPTH (FT):** 16.5
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/7/2011 - 10/7/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

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
50	0						
45	5						
40	10						
35	15	S-1	18/12	PID= 0.1 PID= 0.1 PID= 0.3 PID= 0.1		Env. Sample ID= SB-101A(15-16)	S-1 (15'- 16') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, ~15% fines; moist, light brown, rock chips in tip of sampler may indicate refusal on bedrock.
							End of Boring at 16.5 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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 2
HOH-SB-102

GROUND SURFACE ELEVATION (FT): 38.67 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787154.9 **EASTING (FT):** 662196.6 **TOTAL DEPTH (FT):** 22.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/7/2011 - 10/7/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC IN./IN.	SAMPLE INFO: FIELD TEST DATA	STRATA	VISUAL IMPACTS	REMARKS	SOIL / BEDROCK DESCRIPTION
35	0		60/NM					(0'- 5') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% sand, fine to coarse, ~20% gravel, fine to coarse, ~10% fines; dry, red brown, contains brick fragments and fill materials. FILL.
	5	S-1	60/48	PID= 217 PID= 319 PID= 36 PID= 50.3				S-1 (5'- 6.5') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% sand, fine to coarse, ~20% gravel, fine to coarse, ~10% fines; dry, red brown, contains brick fragments and fill materials, indistinguishable odor. FILL. S-1 (6.5'- 10') SILTY SAND (SM); ~75% sand, fine, ~25% fines; moist to wet, red brown, staining.
30								
	10	S-2	60/54	PID= 0.0 PID= 0.3 PID= 0.3 PID= 0.3 PID= 0.3 PID= 0.0			Env. Sample ID= SB-102(11-12)	S-2 (10'- 15') SILTY SAND (SM); ~60% sand, fine, ~40% fines; moist to wet, red brown.
25								
	15	S-3	60/60	PID= 0.2 PID= 0.2 PID= 0.3 PID= 0.3 PID= 0.4 PID= 0.3				S-3 (15'- 19.2') SILT (ML); ~80% fines, non plastic, ~20% sand, fine; wet, red brown, soft.
20								S-3 (19.2'- 20') SILTY SAND WITH GRAVEL (SM); ~60% sand, fine to coarse, ~20% gravel, fine to coarse, ~20% fines; moist, gray brown.
	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
NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG

HOH-SB-102

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC IN./IN.	SAMPLE INFO: FIELD TEST DATA	STRATA	VISUAL IMPACTS	REMARKS	SOIL / BEDROCK DESCRIPTION
	20	S-4	24/24	PID= 6.7 PID= 1.2			Env. Sample ID= SB-102(21-22)	S-4 (20'- 22') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; moist, gray brown, core barrel shoe dented, rock flour present possibly indicating refusal on bedrock.
								End of Boring at 22 feet. Bentonite Pellets

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

NA = NOT APPLICABLE
NM = NOT MEASURED

Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-103

GROUND SURFACE ELEVATION (FT): 36.97 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787019.8 **EASTING (FT):** 662223.2 **TOTAL DEPTH (FT):** 7.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/11/2011 - 10/11/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC IN./IN.	SAMPLE INFO: FIELD TEST DATA	STRATA	SOIL / BEDROCK DESCRIPTION
	0		60/NM			(0'- 5') SILTY SAND WITH GRAVEL (SM); ~65% sand, fine, ~20% gravel, fine to coarse, ~15% fines; dry, dark brown, brick, debris. FILL.
35						
	5	S-1	24/24	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.1		S-1 (5'- 7') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~70% sand, fine, ~20% gravel, fine to coarse, ~10% fines; dry, brown black.
30						End of Boring at 7 feet. Bentonite Pellets

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-103A

GROUND SURFACE ELEVATION (FT): 36.97 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787024.8 **EASTING (FT):** 662223.2 **TOTAL DEPTH (FT):** 12.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/11/2011 - 10/11/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

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	S-1	60/18	PID= 0.0			S-1 (0'- 2') TOPSOIL; FILL.
35				PID= 0.0			S-1 (2'- 5') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~65% sand, fine to coarse, ~25% gravel, fine to coarse, ~10% fines; dry, dark brown orange, bricks and debris. FILL.
				PID= 0.0			
	5	S-2	60/8	PID= 0.0			S-2 (5'- 10') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~50% sand, fine to coarse, ~40% gravel, fine to coarse, ~10% fines; dry, black brown, bricks and debris. FILL.
30				PID= 0.0			
						Env. Sample ID= SB-103A(9-10)	
	10	S-3	24/18	PID= NM			S-3 (10'- 12') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~50% sand, fine to coarse, ~40% gravel, fine to coarse, ~10% fines; max. size 2, greenish brown, brick, glass, debris. Rock in core barrel shoe may indicate refusal on bedrock. FILL.
25						Env. Sample ID= SB-103A(11-12)	
							End of Boring at 12 feet.
							Bentonite Pellets

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-104/HOH-MW-1

GROUND SURFACE ELEVATION (FT): 35.91 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787022.1 **EASTING (FT):** 662191.4 **TOTAL DEPTH (FT):** 19.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/12/2011 - 10/12/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

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
35	0		60/NM						(0'- 5') SILTY SAND (SM); ~65% sand, fine to coarse, ~20% fines, ~15% gravel, fine to coarse; dry to moist, dark brown, debris, brick fragments, etc. FILL.
30	5	S-1	60/36	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0					S-1 (5'- 10') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% sand, fine to coarse, ~15% gravel, fine, ~10% fines; moist, dark tan brown tan orange.
25	10	S-2	60/27	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0				Env. Sample ID= SB-104/MW-1(14-15)	S-2 (10'- 15') SILTY SAND WITH GRAVEL (SM); ~65% sand, fine to coarse, ~20% fines, ~15% gravel, fine; moist to wet, dark brown.
20	15	S-3	48/31	PID= 0.0 PID= 42.6 PID= 109 PID= 187			NLO	Env. Sample ID= SB-104/MW-1(18-19)	S-3 (15'- 19') SILTY SAND WITH GRAVEL (SM); ~40% sand, fine to coarse, ~30% gravel, fine to coarse, ~30% fines; moderate naphthalene-like odor, wet, dark brown, brick, glass, and concrete fragments; sheen 18-19' bgs.
									End of Boring at 19 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
NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-105

GROUND SURFACE ELEVATION (FT): 31.17 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787116.2 **EASTING (FT):** 662150.3 **TOTAL DEPTH (FT):** 18.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/11/2011 - 10/11/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

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
30	0		60/NM				(0'- 5') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~65% sand, fine to coarse, ~25% gravel, fine to coarse, ~10% fines; max. size 4, dry, brown, some cobbles.
25	5	S-1	60/60	PID= 0.2 PID= 0.1 PID= 0.0 PID= 0.1 PID= 0.2 PID= 0.1 PID= 0.2			S-1 (5'- 6') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~65% sand, fine to coarse, ~25% gravel, fine to coarse, ~10% fines; max. size 1, moist, brown black. S-1 (6'- 10') SILTY SAND (SM); ~70% sand, fine to coarse, ~25% fines, low plasticity, ~5% gravel, fine to coarse; max. size 1, moist, orange brown.
20	10	S-2	60/60	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0		Env. Sample ID= SB-105(12-13) and DUP	S-2 (10'- 15') SILTY SAND (SM); ~70% sand, fine to coarse, ~25% fines, low plasticity, ~5% gravel, fine to coarse; wet, orange brown, lensed coarse sand 2" thick.
15	15	S-3	36/12	PID= 0.0 PID= 0.0		Env. Sample ID= SB-105(17-18)	S-3 (15'- 18') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~50% sand, fine to coarse, ~40% gravel, fine to coarse, ~10% fines; moist, tan gray, dense.
							End of Boring at 18 feet. Bentonite Pellets

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-106

GROUND SURFACE ELEVATION (FT): 33.05 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787026.7 **EASTING (FT):** 662160.4 **TOTAL DEPTH (FT):** 12.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/12/2011 - 10/12/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

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
30	0		60/NM				(0'- 2') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, ~15% fines; moist, dark brownish gray, debris, concrete and brick fragments. FILL.
							(2'- 5') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% sand, fine to coarse, ~15% gravel, fine to coarse, ~10% fines; max. size 1, brown.
	5	S-1	60/38	PID= 0.0			S-1 (5'- 5.5') TOPSOIL.
				PID= 0.0			S-1 (5.5'- 10') SILTY SAND WITH GRAVEL (SM); ~65% sand, fine to coarse, ~20% gravel, fine to coarse, ~15% fines; red brown.
25				PID= 0.0			
				PID= 0.0			
				PID= 0.0			
				PID= 0.0		Env. Sample ID= SB-106(9-10)	
	10	S-2	24/24	PID= 0.0			S-2 (10'- 12') SILTY SAND WITH GRAVEL (SM); ~65% sand, fine, ~20% gravel, fine, ~15% fines; moist, light brown, dense.
				PID= 0.0			
				PID= 0.0		Env. Sample ID= SB-106(11-12)	
				PID= 0.0			
							End of Boring at 12 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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-107

GROUND SURFACE ELEVATION (FT): 33.01 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787006.0 **EASTING (FT):** 662148.3 **TOTAL DEPTH (FT):** 19.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/12/2011 - 10/12/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

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
30	0		60/NM				(0'- 5') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% sand, fine to coarse, ~15% gravel, fine, ~10% fines; max. size 0.5, moist, brown.
25	5	S-1	60/24	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			S-1 (5'- 10') WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~75% sand, fine to coarse, ~15% gravel, fine to coarse, ~10% fines; moist, brown.
20	10	S-2	60/50	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0		Env. Sample ID= SB-107(12-13) and MS/MSD	S-2 (10'- 15') SILTY SAND (SM); ~65% sand, fine to coarse, ~30% fines, non plastic, ~5% gravel, fine; moist, light brown, dense.
15	15	S-3	48/48	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0		Env. Sample ID= SB-107(18-19)	S-3 (15'- 19') SILTY SAND (SM); ~65% sand, fine to coarse, ~30% fines, non plastic, ~5% gravel, fine; moist, light brown, dense.
							End of Boring at 19 feet. Bentonite Pellets

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 1
HOH-SB-110

GROUND SURFACE ELEVATION (FT): 35.87 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787014.3 **EASTING (FT):** 662190.7 **TOTAL DEPTH (FT):** 17.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/12/2011 - 10/12/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

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
35	0		60/NM				(0'- 5') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine, ~15% gravel, fine to coarse, ~15% fines; dry to moist, dark brown.
30	5	S-1	60/36	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			S-1 (5'- 10') SILTY SAND WITH GRAVEL (SM); ~70% sand, fine to coarse, ~15% gravel, fine to coarse, ~15% fines; max. size 1, moist, light brown tan orange.
25	10	S-2	60/48	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0		Env. Sample ID= SB-110(11-12)	S-2 (10'- 15') SILTY SAND WITH GRAVEL (SM); ~65% sand, fine to medium, ~20% gravel, fine to coarse, ~15% fines; max. size 2, moist, gray brown, dense, weathered bedrock, granite, mica, etc..
20	15	S-3	24/24	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0		Env. Sample ID= SB-110(16-17)	S-3 (15'- 17') NARROWLY GRADED SAND (SP); ~90% sand, fine, ~5% gravel, fine, ~5% fines; moist, light brown.
							End of Boring at 17 feet. Bentonite Pellets

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
NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 2
HOH-SB-108/SB-108A

GROUND SURFACE ELEVATION (FT): 22.90 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 787070.6 **EASTING (FT):** 662093.2 **TOTAL DEPTH (FT):** 30.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/7/2011 - 10/10/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC IN./IN.	SAMPLE INFO: FIELD TEST DATA	STRATA	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
20	0							
15	5	S-1	60/46	PID= 4 PID= 0.1 PID= 0.1 PID= 0.1				S-1 (5'- 8.7') SILTY SAND (SM); ~80% sand, fine, ~20% fines, low plasticity; moist to wet, red brown. S-1 (8.7'- 10') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine, ~10% fines; moist, red brown.
10	10	S-2	60/60	PID= .3 PID= .5 PID= 5 PID= 2 PID= 64		TLO		S-2 (10'- 12.5') SILTY SAND (SM); ~80% sand, fine, ~20% fines, non plastic; wet, red brown. S-2 (12.5'- 15') NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM); ~70% sand, fine to medium, ~20% gravel, fine, ~10% fines; moderate tar-like odor, moist, tan gray.
5	15	S-3	60/60	PID= 20.4 PID= 22.3 PID= 29.9 PID= 7.7 PID= 6.0 PID= 16.8 PID= 53.2		TLO		S-3 (15'- 20') SILTY SAND WITH GRAVEL (SM); ~65% sand, fine, ~20% fines, ~15% gravel, fine; moderate tar-like odor, moist, dark gray green.
	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
NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG

HOH-SB-108/SB-108A

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC IN./IN.	SAMPLE INFO: FIELD TEST DATA	STRATA	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
	20	S-4	60/60	PID= 64 PID= 124 PID= 70.3 PID= 86.6 PID= 47.6		TLO	Env. Sample ID= SB-108(21-22)	S-4 (20'- 23') SILTY SAND (SM); ~80% sand, fine, ~20% fines; moderate tar-like odor, moist, dark gray, soft.
0				PID= 14 PID= 3.2 PID= 0.2				S-4 (23'- 25') SILTY SAND (SM); ~85% sand, fine to medium, ~15% fines; moist, brown, loose.
	25	S-5	60/60	PID= 1.4 PID= 1.1 PID= 0.8 PID= 0.2 PID= 0.2				S-5 (25'- 30') SILTY SAND (SM); ~85% sand, fine, ~15% fines; moist, dark gray, soft, much more dense at bottom.
-5				PID= 0.2 PID= 0.2 PID= 0.2			Env. Sample ID= SB-108(29-30)	
	30							End of Boring at 30 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

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: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 2
HOH-SB-109

GROUND SURFACE ELEVATION (FT): 19.82 **LOCATION:** Hastings-on-Hudson
NORTHING (FT): 786988.9 **EASTING (FT):** 662091.2 **TOTAL DEPTH (FT):** 24.0
DRILLED BY: Aquifer Drilling and Testing / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Matthew Sweet **DATE START / END:** 10/10/2011 - 10/10/2011
DRILLING DETAILS: Geoprobe / Geoprobe Model 6610B / Casing: 2.5 in. OD
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

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		60/NM				(0'- 5') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, ~10% fines; moist, light brown.
15	5	S-1	60/50	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			S-1 (5'- 10') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~25% gravel, fine to coarse, ~25% fines; moist to wet, brown.
10	10	S-2	60/60	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0		Env. Sample ID= SB-109(10-11)	S-2 (10'- 15') SILTY SAND (SM); ~70% sand, fine, ~25% fines, ~5% gravel, fine; moist to wet, brown, dense.
5	15	S-3	60/60	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			S-3 (15'- 20') SILTY SAND (SM); ~85% sand, fine, ~15% fines; moist to wet, greenish brown, dense.
0	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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG

HOH-SB-109

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
	20	S-4	48/12	PID= 0.0 PID= 0.0		Env. Sample ID= SB-109(23-24)	S-4 (20'- 24') SILTY SAND (SM); ~85% sand, fine, ~15% fines; wet, greenish brown, dense.
							End of Boring at 24 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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 3
HOH-MW-2

GROUND SURFACE ELEVATION (FT): 48.74 **LOCATION:**
NORTHING (FT): 787069.8 **EASTING (FT):** 662264.5 **TOTAL DEPTH (FT):** 50.9
DRILLED BY: ADT / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Drew Blicharz **DATE START / END:** 6/15/2012 - 6/15/2012
DRILLING DETAILS: Sonic Coring
WATER LEVEL DEPTHS (FT): ▼ 35.06 ;
GENERAL NOTE:

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
45	0					HANDCLEARED to 5 feet	(0'- 1') ASPHALT; road base gravel. FILL.
							(1'- 5') WIDELY GRADED SAND WITH SILT (SW-SM); ~80% sand, ~10% gravel, ~10% fines; dry, brown, construction debris. FILL.
	5	1	60/48	PID= 10.0 PID= 1.0 PID= 0.0 PID= 0.0			(5'- 6.5') NARROWLY GRADED SAND (SP); fine to coarse, angular, ~50% sand, fine to medium, ~5% fines; 45% road base gravel, moist, brown, FILL.
40							(6.5'- 10') WIDELY GRADED SAND WITH SILT (SW-SM); ~85% sand, fine to coarse, ~10% fines, ~5% gravel, fine to coarse, subrounded; dry, brown.
	10	2	60/24	PID= 0.0 PID= 0.0 PID= 0.0			(10'- 15') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~10% gravel, fine to coarse, subrounded; dry, brown.
35							
	15	3	60/41.4	PID= 0.0 PID= 0.0 PID= 0.0			(15'- 20') SILTY SAND WITH GRAVEL (SM); ~65% sand, fine to coarse, ~20% fines, ~15% gravel, fine to coarse, subrounded; max. size 3, dry, brown.
30							
	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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 2 of 3
HOH-MW-2

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
	20	4	60/50.4	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(20'- 21.8') WIDELY GRADED SAND WITH SILT (SW-SM); ~85% sand, fine to coarse, ~10% fines, ~5% gravel, fine, subrounded; dry, brown. (21.8'- 25') WIDELY GRADED SAND (SW); ~100% sand, fine to coarse; dry, brown.
25	25	5	60/44.4	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(25'- 30') WIDELY GRADED SAND (SW); ~100% sand, fine to coarse; moist, brown.
20	30	6	60/52.8	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(30'- 33.75') WIDELY GRADED SAND (SW); ~100% sand, fine to coarse; moist, brown.
15							(33.75'- 35') SILTY SAND (SM); ~80% sand, fine to coarse, ~20% fines; moist to dry, brown.
▼	35	7	60/55.2	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0		Env. Sample ID= HOH-MW-2 (37.5-38.5)	(35'- 40') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; moist to wet, brown, wet at 37.5' bgs.
10	40	8	60/46.8				(40'- 45') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, brown.
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

NA = NOT APPLICABLE
NM = NOT MEASURED

Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG

HOH-MW-2

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
	45	9	60/58.2	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(45'- 47.6') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, brown. (47.6'- 48.2') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, brown and reddish brown, dense. (48.2'- 50') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, brown.
0	50	10	11/10.8	PID= 0.0		Env. Sample ID= HOH-MW-2 (50-50.3)	(50'- 50.5') WEATHERED BEDROCK. (50.5'- 50.9') BEDROCK. End of Boring at 50.9 feet. Monitoring well installed upon boring termination.

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE) IN PARTS PER MILLION

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 2
HOH-MW-3

GROUND SURFACE ELEVATION (FT): 37.96 **LOCATION:**
NORTHING (FT): 787025.5 **EASTING (FT):** 662230.4 **TOTAL DEPTH (FT):** 38.9
DRILLED BY: ADT / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Drew Blicharz **DATE START / END:** 6/11/2012 - 6/13/2012
DRILLING DETAILS: Sonic Coring
WATER LEVEL DEPTHS (FT): ▼ 25.60 ;
GENERAL NOTE:

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
35	0					HANDCLEARED to 5 feet	(0'- 1.3') WIDELY GRADED SAND WITH SILT (SW-SM); ~85% sand, fine to coarse, ~10% fines, ~5% gravel, fine to coarse, rounded; dry, light brown, roots present. FILL. (1.3'- 3.5') WIDELY GRADED SAND WITH SILT (SW-SM); ~80% sand, fine to coarse, ~10% gravel, fine to coarse, rounded, ~10% fines; max. size 6, dry, brown, brick fragments, roots, and glass fragments present, 6" cobble at 3.5' bgs. FILL.
	5	1	60/10.8	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(3.5'- 5') WIDELY GRADED SAND WITH GRAVEL (SW); ~80% sand, fine to coarse, ~15% gravel, fine to coarse, rounded, ~5% fines; dry, brown, trace cobbles and glass fragments. FILL. (5'- 10') WIDELY GRADED SAND WITH SILT (SW); ~90% sand, fine to coarse, ~10% fines; dry, brown.
30	10	2	60/46.8	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(10'- 15') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to coarse, rounded, ~5% fines; dry, brown, broken rock in bottom of sampler.
25	15	3	24/24	PID= 0.0 PID= 0.0			(15'- 17') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to coarse, rounded, ~5% fines; dry, brown.
20		4	36/27.6	PID= 0.0 PID= 0.0			(17'- 20') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% gravel, fine to coarse, rounded; max. size 3, dry, brown.
	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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG

HOH-MW-3

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	REMARKS	SOIL / BEDROCK DESCRIPTION
15	20	5	48/26.4	PID= 0.0 PID= 0.0 PID= 0.0			(20'- 25') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; dry, brown.
		6	72/45.6	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0		Env. Sample ID= HOH-MW-3 (29-30)	(25'- 30') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; moist, brown.
10	25						
5	30	7	60/46.8	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, brown.
0	35	8	42/38.4	PID= 0.0		Env. Sample ID= HOH-MW-3 (38-38.5)	(35'- 36.5') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, brown. (36.3'- 36.7') NARROWLY GRADED SAND (SP); ~85% sand, fine to medium, ~10% gravel, fine to coarse, subangular, ~5% fines; wet, reddish brown. (36.7'- 38.5') NARROWLY GRADED SAND (SP); ~50% sand, fine; 50% weathered bedrock, dry, light brown and white, dense, rock dust present. (38.5'- 38.9') BEDROCK; 3" present in sampler. End of Boring at 38.9 feet. Monitoring well installed upon boring termination.

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

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: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 3
HOH-MW-5

GROUND SURFACE ELEVATION (FT): 24.22 **LOCATION:**
NORTHING (FT): 787139.5 **EASTING (FT):** 662092.1 **TOTAL DEPTH (FT):** 55.0
DRILLED BY: ADT / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Drew Blicharz **DATE START / END:** 6/19/2012 - 6/19/2012
DRILLING DETAILS: Sonic Coring
WATER LEVEL DEPTHS (FT): ▼ 12.10 ;
GENERAL NOTE:

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
20	0					HANDCLEARED to 5 feet	(0'- 1') ASPHALT; road base gravel. FILL.
							(1'- 5') WIDELY GRADED SAND WITH SILT (SW-SM); ~80% sand, ~10% gravel, ~10% fines; dry, brown, construction debris. FILL.
	5	1	60/37.2	PID= 0.0 PID= 0.0 PID= 0.0			(5'- 10') SILT (ML); ~100% fines, low plasticity; moist, brown to reddish brown, mottled.
15							
	10	2	60/24	PID= 0.0 PID= 0.0			(10'- 15') SILT (ML); ~100% fines, low plasticity; max. size 3.5, moist, brown to reddish brown, mottled, 3.5" cobble at 11.3'.
10							
	15	3	60/60	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0		Env. Sample ID= HOH-MW-5 (14-15)	(15'- 19') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines; wet, brown to reddish brown, 1" layer of reddish brown silt at 16.6'.
5							(19'- 20') SILTY SAND (SM); ~65% sand, fine to medium, ~25% fines, ~10% gravel, fine to coarse, subrounded; wet, grayish brown.
	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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

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

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG

HOH-MW-5

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
	20	4	60/48	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(20'- 22') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, coarse, subrounded, ~5% fines; wet, brown.
0							(22'- 22.5') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine to medium, ~10% fines; wet, brown. (22.5'- 25') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines; wet, brown.
	25	5	60/60	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(25'- 26.3') WIDELY GRADED SAND (SW); ~95% sand, fine to coarse, ~5% fines; wet, brown, dense. (26.3'- 30') NARROWLY GRADED SAND WITH GRAVEL (SP); ~70% sand, coarse, ~30% gravel, fine to coarse, subrounded; wet, grayish brown.
-5							
	30	6	60/60	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(30'- 35') NARROWLY GRADED SAND WITH GRAVEL (SP); ~70% sand, coarse, ~30% gravel, fine to coarse, subrounded; wet, grayish brown, dense.
-10							
	35	7	60/60	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(35'- 37') NARROWLY GRADED SAND WITH GRAVEL (SP); ~70% sand, coarse, ~30% gravel, fine to coarse, subrounded; wet, grayish brown, dense. (37'- 40') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, fine to coarse, ~30% gravel, fine to coarse, subrounded; wet, grayish brown, loose.
-15							
	40	8	60/51.6	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0			(40'- 45') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, fine to coarse, ~30% gravel, fine to coarse, subrounded; wet, grayish 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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG

PAGE 3 of 3

HOH-MW-5

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
-20	45			PID= 0.0			
		9	60/43.2	PID= 0.0			(45'- 50') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, fine to coarse, ~30% gravel, fine to coarse, subrounded; max. size 3, wet, grayish brown.
				PID= 0.0			
				PID= 0.0			
-25				PID= 0.0			
	50	10	60/60	PID= 0.0			(50'- 54.8') WIDELY GRADED SAND WITH GRAVEL (SW); ~70% sand, fine to coarse, ~30% gravel, fine to coarse, subrounded; max. size 3, wet, grayish brown.
				PID= 0.0			
				PID= 0.0			
-30				PID= 0.0		Env. Sample ID= HOH-MW-5 (53-54)	
	55						(54.8'- 55') BEDROCK. End of Boring at 55 feet. Monitoring well installed upon boring termination.

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG
PAGE 1 of 2
HOH-MW-6

GROUND SURFACE ELEVATION (FT): 21.34 **LOCATION:**
NORTHING (FT): 787018.9 **EASTING (FT):** 662092.9 **TOTAL DEPTH (FT):** 40.9
DRILLED BY: ADT / Chris Stratton **DATUM VERT. / HORZ.:** NAVD 1988 / NAD 83
LOGGED BY: Drew Blicharz **DATE START / END:** 6/18/2012 - 6/18/2012
DRILLING DETAILS: Sonic Coring
WATER LEVEL DEPTHS (FT): ▼ 9.52 ;
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	PEN/REC IN./IN.	FIELD TEST DATA	STRATA	VISUAL IMPACTS	ODOR	REMARKS	SOIL / BEDROCK DESCRIPTION
20	0							HANDCLEARED to 5 feet	(0'- 1') ASPHALT; road base gravel. FILL.
									(1'- 5') WIDELY GRADED SAND WITH SILT (SW-SM); ~80% sand, ~10% gravel, ~10% fines; dry, brown, construction debris. FILL.
	5	1	60/60	PID= 0.0					(5'- 6.5') WIDELY GRADED SAND (SW); ~90% sand, fine to coarse, ~5% gravel, ~5% fines; dry, brown.
15				PID= 0.0					(6.5'- 7.6') SILTY SAND (SM); ~75% sand, fine, ~25% fines; dry, brown and reddish brown.
				PID= 0.0					(7.6'- 8.7') NARROWLY GRADED SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to coarse, subrounded, ~5% fines; max. size 3, dry, brown.
				PID= 0.0					(8.7'- 10') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine to medium, ~10% fines; moist to wet, brown.
	10	2	60/46.8	PID= 0.0			CLO		(10'- 11') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine to medium, ~10% fines; strong chemical-like odor, wet, brown.
10				PID= 0.0			CLO	Env. Sample ID= HOH-MW-6 (11.5-12.5)	(11'- 12') SILTY SAND (SM); ~80% sand, fine, ~15% fines, ~5% gravel, fine; strong chemical-like odor, wet, brown.
				PID= 0.0					(12'- 15') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; strong chemical-like odor, wet, brown.
				PID= 0.0			CLO		
	15	3	60/38.4	PID= 0.0			CLO		(15'- 16') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; moderate chemical-like odor, wet, brown.
5				PID= 0.0			NLO	Env. Sample ID= HOH-MW-6 (16.25-17.25)	(16'- 17.3') NARROWLY GRADED SAND WITH SILT (SP-SM); ~95% sand, fine to medium, ~5% fines; strong naphthalene-like odor, wet, dark gray to black, slight staining, sheen spots on platic sampling sleeve.
				PID= 0.0			CLO		(17.3'- 17.8') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; moderate chemical-like odor, wet, brown.
							CLO		(17.8'- 20') SILTY SAND (SM); ~80% sand, fine, ~15% fines, ~5% gravel, fine; moderate chemical-like odor, wet, brown, dense.
	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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: ConEdison
PROJECT: Hastings on Hudson
CITY/STATE: Hastings-on-Hudson, New York
GEI PROJECT NUMBER: 070251-6-1603

BORING LOG

HOH-MW-6

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
	20	4	60/54	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0					(20'- 25') NARROWLY GRADED SAND (SP); ~95% sand, fine, ~5% fines; wet, brown.
0	25	5	60/60	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0					(25'- 30') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, brown.
-5	30	6	60/51.6	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0					(30'- 31.4') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine to medium, ~10% fines; wet, brown. (31.4'- 33.6') NARROWLY GRADED SAND (SP); ~95% sand, medium, ~5% fines; wet, brown. (33.6'- 35') NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% sand, fine to medium, ~10% fines; wet, brown.
-10	35	7	60/60	PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0 PID= 0.0				Env. Sample ID= HOH-MW-6 (38-40)	(35'- 38') NARROWLY GRADED SAND WITH GRAVEL (SP); ~70% sand, fine to medium, ~25% gravel, fine to coarse, subrounded, ~5% fines; max. size 2.5, wet, brown. (38'- 40') NARROWLY GRADED SAND (SP); ~95% sand, fine to medium, ~5% fines; wet, light orange and brown.
-15	40	8	10/9	PID= 0.0 PID= 0.0					(40'- 40.4') WEATHERED BEDROCK; gray, fractured, mixed with fine to medium gray sand. (40.4'- 40.9') BEDROCK. End of Boring at 40.9 feet. Monitoring well installed upon boring termination.

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

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER IN TSF
S_V = TORVANE PEAK IN TSF

ENVIRONMENTAL BORING LOG COMBINED - HASTINGS ON HUDSON BORINGS.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 9/13/12

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-101

GROUND SURFACE ELEVATION (FT): 29.33 **LOCATION:**
NORTHING (FT): 787031 **EASTING (FT):** 662143 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Rob Allen **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/24/2017 - 8/24/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0			0		HOH-SS-101(0-2in)	(0'- 1') SAND WITH SILT (SP-SM); ~85% sand, fine to medium, ~10% fines, ~5% gravel, fine; dry, gray brown, organic roots and fibers.
				0		HOH-SS-101(2-6in)	
				0		HOH-SS-101(6-12in)	
				0		HOH-SS-101(12-18in)	(1'- 1.5') SAND (SP); ~95% sand, fine, ~5% fines; trace gravel, dry, brown, crushed glass.
				0		HOH-SS-101(18-24in)	(1.5'- 2') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to coarse, ~5% fines; max. gravel size 1.5, dry, tan.
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-102

GROUND SURFACE ELEVATION (FT): 29.74 **LOCATION:**
NORTHING (FT): 787025 **EASTING (FT):** 662156 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Rob Allen **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/24/2017 - 8/24/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0			0		HOH-SS-102(0-2in)	(0'- 1') SAND WITH SILT (SP-SM); ~85% sand, fine to medium, ~10% fines, ~5% gravel, fine; dry, brown, organic roots and fibers.
				0		HOH-SS-102(2-6in)	
				0		HOH-SS-102(6-12in)	
				0		HOH-SS-102(12-18in)	(1'- 2') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to coarse, ~5% fines; max. gravel size 1.5, dry, tan.
				0		HOH-SS-102(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-103

GROUND SURFACE ELEVATION (FT): 30.93 **LOCATION:**
NORTHING (FT): 787024 **EASTING (FT):** 662180 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Rob Allen **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/23/2017 - 8/23/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0						
				0		HOH-SS-103(0-2in)	(0'- 1') SAND WITH SILT (SP-SM); ~85% sand, fine to medium, ~10% fines, ~5% gravel, fine; dry, gray brown, organic roots and fibers.
				0		HOH-SS-103(2-6in)	
30				0		HOH-SS-103(6-12in)	
				0		HOH-SS-103(12-18in)	(1'- 2') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine, ~5% fines; dry, brown, trace organic roots and fibers.
				0		HOH-SS-103(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-104

GROUND SURFACE ELEVATION (FT): 29.70 **LOCATION:**
NORTHING (FT): 787008 **EASTING (FT):** 662147 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Rob Allen **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/24/2017 - 8/24/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0					HOH-SS-104(0-2in)	(0'- 0.2') SAND WITH SILT (SP-SM); ~85% sand, fine to medium, ~10% fines, ~5% gravel, fine; dry, brown, organic roots and fibers.
				0		HOH-SS-104(2-6in)	(0.2'- 1') SAND (SP); ~95% sand, fine, ~5% fines; trace gravel, dry, brown, crushed glass.
				0		HOH-SS-104(6-12in)	
				0		HOH-SS-104(12-18in)	(1'- 2') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to coarse, ~5% fines; max. gravel size 1.5, dry, tan.
				0		HOH-SS-104(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-105

GROUND SURFACE ELEVATION (FT): 30.91 **LOCATION:**
NORTHING (FT): 786999 **EASTING (FT):** 662159 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Rob Allen **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/23/2017 - 8/23/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0						
				0		HOH-SS-105(0-2in)	(0'- 1.5') SAND (SP); ~85% sand, fine to medium, ~10% gravel, fine to coarse, ~5% fines; max. gravel size 1, dry, dark brown, organic roots and fibers.
				0		HOH-SS-105(2-6in)	
30				0		HOH-SS-105(6-12in)	
				0		HOH-SS-105(12-18in)	
							(1.5'- 2') SAND (SW); ~85% sand, fine to coarse, ~10% gravel, fine to coarse, ~5% fines; max. gravel size 1, dry, light brown.
				0		HOH-SS-105(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-106

GROUND SURFACE ELEVATION (FT): 31.85 **LOCATION:**
NORTHING (FT): 787005 **EASTING (FT):** 662179 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Rob Allen **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/23/2017 - 8/23/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0					HOH-SS-106(0-2in)	(0'- 2') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to coarse, ~5% fines; max. gravel size 1, dry, light brown, organic roots and fibers.
				0		HOH-SS-106(2-6in)	
				0		HOH-SS-106(6-12in)	
				0		HOH-SS-106(12-18in)	
30				0		HOH-SS-106(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-107

GROUND SURFACE ELEVATION (FT): 35.27 **LOCATION:**
NORTHING (FT): 787049 **EASTING (FT):** 662247 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Tony Palomegue **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/22/2017 - 8/22/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0						
35				0		HOH-SS-107(0-2in)	(0'- 1') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; max. gravel size 0.5, dry, brown, organic roots and fibers, crushed glass and brick fragments.
						HOH-SS-107(2-6in)	
				0		HOH-SS-107(6-12in)	
							(1'- 2') SAND (SP); ~85% sand, fine to medium, ~10% gravel, fine to coarse, ~5% fines; max. gravel size 1, dry, grayish brown, crushed glass and brick fragments.
				0		HOH-SS-107(12-18in)	
				0		HOH-SS-107(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG

PAGE 1 of 1

HOH-SS-108

GROUND SURFACE ELEVATION (FT): 33.26 **LOCATION:**
NORTHING (FT): 787025 **EASTING (FT):** 662199 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Tony Palomegue **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/22/2017 - 8/22/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0			0		HOH-SS-108(0-2in)	(0'- 2') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; max. gravel size 0.5, dry, dark brown, organic roots and fibers, crushed glass and brick fragments.
				0		HOH-SS-108(2-6in)	
				0		HOH-SS-108(6-12in)	
				0		HOH-SS-108(12-18in)	
				0		HOH-SS-108(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-109

GROUND SURFACE ELEVATION (FT): 33.67 **LOCATION:**
NORTHING (FT): 787026 **EASTING (FT):** 662221 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Tony Palomegue **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/22/2017 - 8/22/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0			0		HOH-SS-109(0-2in)	(0'- 1') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; max. gravel size 0.5, dry, brown, organic roots and fibers, crushed glass and brick fragments.
						HOH-SS-109(2-6in)	
				0		HOH-SS-109(6-12in)	
				0		HOH-SS-109(12-18in)	(1'- 2') SAND WITH SILT (SP-SM); ~85% sand, fine to medium, ~10% fines, ~5% gravel, fine to medium; max. gravel size 0.5, dry, dark brown, organic roots and fibers, crushed glass and brick fragments.
				0		HOH-SS-109(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-110

GROUND SURFACE ELEVATION (FT): 35.47 **LOCATION:**
NORTHING (FT): 787026 **EASTING (FT):** 662236 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Tony Palomegue **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/22/2017 - 8/22/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0						
35				0		HOH-SS-110(0-2in)	(0'- 0.2') SANDY SILT (SM); ~70% sand, fine, ~30% fines; dry, brown.
						HOH-SS-110(2-6in)	(0.2'- 2') SAND (SP); ~85% sand, fine to medium, ~10% gravel, fine to coarse, ~5% fines; max. gravel size 2, dry, gray brown, organic roots and fibers in the top 4 inches.
				0		HOH-SS-110(6-12in)	
				0		HOH-SS-110(12-18in)	
				0		HOH-SS-110(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-111

GROUND SURFACE ELEVATION (FT): 33.37 **LOCATION:**
NORTHING (FT): 787005 **EASTING (FT):** 662201 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Tony Palomegue **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/22/2017 - 8/22/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0						
				0		HOH-SS-111(0-2in)	(0'- 1.5') SAND (SP); ~95% sand, fine, ~5% fines; trace gravel, dry, brown, organic roots & fibers, crushed glass and brick fragments.
						HOH-SS-111(2-6in)	
				0		HOH-SS-111(6-12in)	
				0		HOH-SS-111(12-18in)	
							(1.5'- 2') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; dry, tan.
				0		HOH-SS-111(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-112

GROUND SURFACE ELEVATION (FT): 33.63 **LOCATION:**
NORTHING (FT): 787008 **EASTING (FT):** 662219 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Tony Palomegue **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/22/2017 - 8/22/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0			0		HOH-SS-112(0-2in)	(0'- 1') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; dry, brown, roots, crushed glass and brick fragments.
				0		HOH-SS-112(2-6in)	
				0		HOH-SS-112(6-12in)	
				0		HOH-SS-112(12-18in)	(1'- 2') SAND WITH SILT (SP-SM); ~85% sand, fine to medium, ~10% fines, ~5% gravel, fine to medium; max. gravel size 0.5, dry, dark brown, roots, crushed glass and brick fragments. Crushed angular stone from 1-1.5'.
				0		HOH-SS-112(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-113

GROUND SURFACE ELEVATION (FT): 41.01 **LOCATION:**
NORTHING (FT): 787041 **EASTING (FT):** 662254 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Rob Allen **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/23/2017 - 8/23/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0			0		HOH-SS-113(0-2in)	(0'- 1') SILTY SAND (SM); ~80% sand, fine to medium, ~15% fines, ~5% gravel, fine to medium; dry, brown, crushed glass, organic roots and fibers.
				0		HOH-SS-113(2-6in)	
				0		HOH-SS-113(6-12in)	
40							(1'- 2') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; max. gravel size 0.5, dry, light brown.
				0		HOH-SS-113(12-18in)	
				0		HOH-SS-113(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-114

GROUND SURFACE ELEVATION (FT): 38.06 **LOCATION:**
NORTHING (FT): 787020 **EASTING (FT):** 662242 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Rob Allen **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/23/2017 - 8/23/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0					HOH-SS-114(0-2in)	(0'- 1.5') SAND WITH SILT (SP-SM); ~85% sand, fine to medium, ~10% fines, ~5% gravel, fine to medium; dry, brown, crushed glass, organic roots and fibers.
				0		HOH-SS-114(2-6in)	
				0		HOH-SS-114(6-12in)	
				0		HOH-SS-114(12-18in)	
							(1.5'- 2') SAND (SP); ~90% sand, fine to medium, ~5% gravel, fine to medium, ~5% fines; max. gravel size 0.5, dry, light brown.
				0		HOH-SS-114(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

GEI Consultants, Inc. P.C.
455 Winding Brook Drive
Suite 201
Glastonbury, CT 06033
(860) 368-5300

CLIENT: Consolidated Edison
PROJECT: Hastings on Hudson Former MGP Site
CITY/STATE: Hastings on Hudson, New York
GEI PROJECT NUMBER: 070251-14-1401

BORING LOG
PAGE 1 of 1
HOH-SS-115

GROUND SURFACE ELEVATION (FT): 39.47 **LOCATION:**
NORTHING (FT): 787000 **EASTING (FT):** 662228 **TOTAL DEPTH (FT):** 2.0
DRILLED BY: ADT / Rob Allen **DATUM VERT. / HORZ.:** NAVD 88 / NAD 83
LOGGED BY: E Spazzarini/C. Akudo **DATE START / END:** 8/23/2017 - 8/23/2017
DRILLING DETAILS: Hand Auger
WATER LEVEL DEPTHS (FT):
GENERAL NOTE:

ELEV. FT.	DEPTH FT.	SAMPLE INFO: TYPE and NO.	SAMPLE INFO: PEN/REC FT./FT.	SAMPLE INFO: PID (PPM)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
	0						
				0		HOH-SS-115(0-2in)	(0'- 1') SAND WITH SILT (SP-SM); ~85% sand, fine to medium, ~10% fines, ~5% gravel, fine; dry, brown, organic roots and fibers.
				0		HOH-SS-115(2-6in)	
				0		HOH-SS-115(6-12in)	
				0		HOH-SS-115(12-18in)	(1'- 2') SAND (SP); ~85% sand, fine to medium, ~10% gravel, fine to coarse, ~5% fines; dry, light brown, organic roots and fibers.
				0		HOH-SS-115(18-24in)	
							End of Boring at 2 feet. Backfilled with soil cuttings

NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (PPM)
JHS = JAR HEADSPACE PID READING (PPM)

NA = NOT APPLICABLE
NM = NOT MEASURED
Q_P = POCKET PENETROMETER
S_V = TORVANE PEAK

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

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

ENVIRONMENTAL BORING LOG HOH PDI BORING LOGS.GPJ GEI TEMPLATE 11-7-13.GDT 10/13/17

Appendix B

Contract Documents

SPECIFICATIONS
FOR
REMEDIAL ACTION

HASTINGS-ON-HUDSON
FORMER MANUFACTURED GAS PLANT
NYSDEC VCP INDEX NO. D2-003-02-08
Site ID: V00728

Prepared by
GEI CONSULTANTS, INC. PC
455 Winding Brook Drive
Glastonbury, CT 06033

SPECIFICATIONS
TABLE OF CONTENTS

Division 01 General Requirements

Division 02 Existing Conditions

Division 31 Earthwork

Division 32 Exterior Improvements

SECTION 01 11 00
SUMMARY OF WORK

PART 1 GENERAL

1.1. PROJECT DESCRIPTION

A. The Remedial Action (RA) for the former Hastings-on-Hudson Manufactured Gas Plant (MGP) site (Site) consists of the excavation and off-Site disposal of MGP-impacted material from a gas works that had been operated by a successor company to The Consolidated Edison Company of New York (Con Edison). The Site is located on Washington Avenue in Hastings-on-Hudson, New York, and consists of a five-story residential apartment building (8 Washington Avenue), a one-story building used as a theatrical/dance studio (10 Washington Avenue), and a two-story building that includes an antique and rare book shop at street level with a residence on the second floor (12 Washington Avenue). Additional information on the Site conditions and history are included in the *Pre-Design Investigation Summary Letter, Hastings-on-Hudson Former MGP Site*, GEI Consultants, Inc., September, 2017 and in the *Draft Remedial Investigation Report, Hastings-on-Hudson Former MGP Site*, GEI Consultants, Inc., September, 2015.

B. All tasks, requirements, deliverables, etc. contained in the Contract Documents are the sole responsibility of the Contractor unless specifically assigned to Others. Project Work to be performed by the Contractor includes, but is not limited to, the following:

1. Prepare and implement a Contractor Health and Safety Plan.
2. Prepare and implement a Site Operations Plan.
3. Install, operate, and maintain temporary facilities and controls, including:
    a. Supplemental perimeter fencing.
    b. Site and roadway traffic controls.
    c. Signage.
    d. Erosion controls.
    e. Worker health and safety measures.
    f. Equipment and personnel decontamination facilities.
    g. Sanitary facilities.
    h. Dust, odor, and vapor control.
4. Establish additional survey control points as necessary.
5. Obtaining local permits as required for completion of the Work.
6. Waste disposal characterization of the soils using *in-situ* sampling methods.
7. Perform the remediation:

a. Identify, temporarily relocate, or protect existing utilities and Site features to remain after the Project is complete.

b. Site preparation, to include removing fencing, relocating appurtenances and clearing and disposal of existing trash and debris in the area.

c. Transport soil and debris to an off-Site Con Edison approved disposal facility.

d. Reinstall all site features and appurtenances that are damaged or relocated during the performance of the Work. Replace any damaged features or appurtenances that cannot be repaired.

e. Backfill the Site and any adjacent areas disturbed/damaged during the performance of the Work to final grade.

8. Restore the Site:

a. Replace any removed or relocated fencing removed to allow for the performance of the Work.

b. Replace any removed or damaged trees/shrubs in kind.

c. Remove all temporary facilities and controls and perform general cleanup of the work zones to return the Site to its pre-construction condition.

d. Backfill all excavation areas as indicated in Contract Drawings.

9. Provide clear pathways at all times for Emergency Vehicles to enter and exit Ridge Street.

10. Provide and perform any other equipment, Work, or submittals required to facilitate items 1 through 9 above and the Work shown on the Contract Drawings.

1.2. CONTRACT DOCUMENTS

A. The Contract Documents include all Specifications, Contract Drawings, Con Edison's Supplemental Construction Contract Requirements (SCCR), and any subsequent approved Change Orders, and all other information as referred to in the Terms and Conditions.

B. The Contract Documents establish the performance, quality requirements, location, and general arrangement of workmanship and appearance. It is not the intent of the Contract Documents to show every pipe, wire, conduit, utility connection, detail, and appurtenance necessary to complete the Work for this Project. However, such connections and details that may be necessary to complete the Work in accordance with Contract Documents, code requirements, appropriate Federal, State, and Local regulations, and to the satisfaction of Con Edison, will be included in the Work.

C. The organization and division of Work contained within the Contract does not make Con Edison or the Engineer an arbitrator to establish contract limits between the Contractor and any Subcontractor.

1.3. CONTRACTOR REQUIREMENTS

A. Perform the scope of Work contained in the Contract Documents.

B. The Work will be performed on a known contaminated Site. Comply with the requirements of the Contractor Health and Safety Plan. Take precautions as necessary to protect the public and work force personnel from potential hazards.

C. Comply with the requirements of the Community Air Monitoring Plan (CAMP) as directed by Con Edison, taking precautions as necessary to protect the public and work force personnel from potential hazards. This includes, but is not limited to, the application of odor control measures, sequencing the Work to comply with the CAMP requirements, and the temporary covering soil stockpiles at no additional cost to Con Edison.

D. For any Work performed in close proximity to residential or commercial properties, utilities, or any other third-party property, use every precaution to protect the property, utility lines, trees, walls, and other structures and/or related appurtenances from damage.

E. Repair any damage caused directly or indirectly outside the Project limits as directed by Con Edison, at no additional cost to Con Edison.

F. Pay any fees, associated fines, or damages associated with performing excavation beyond the lines and grades shown in the Contract Drawings, or causing damage outside the Project limits.

G. Comply with all applicable OSHA safety regulations during the performance of the Work.

1.4. CONTRACT DRAWINGS AND SPECIFICATIONS

A. Maintain at the Site, 2 copies of all Contract Drawings, Specifications, addenda, approved shop drawings, Change Orders, schedules, and instructions, in good order. Mark one set to record all changes made during construction, and keep one set clean of all markings. Make both sets readily available for review by Con Edison or the Engineer.

B. The Contract Drawings include notes. Refer to the Contract Drawings in conjunction with the Specifications.

1.5. WORK BY OTHERS

A. Perimeter air monitoring will be performed by the Engineer. Work zone air monitoring for worker protection as required by the HASP is the responsibility of the Contractor.

B. Some permitting Work may be performed by Others, refer to Specification Section 01 41 00 – Regulatory Requirements – Permits.

PART 2 PRODUCTS

(Not Applicable)

PART 3 EXECUTION

(Not Applicable)

END OF SECTION 01 11 00

SECTION 01 18 00
UTILITY PROTECTION

PART 1 GENERAL

1.1. SUMMARY

A. This specification contains the requirements for the location and protection of utilities affected by the performance of the Work.

1.2. UTILITY COORDINATION

A. The Contractor is solely responsible for any and all required notifications to utility companies prior to commencing the Work, and for response to any emergencies that may arise during the Work. Certain active and inactive utilities may currently be present at the Site. The exact location and type of utility is to be determined by the Contractor without reliance on information provided by Con Edison or the Engineer. Several utilities may currently serve the Site or adjacent properties including, but not limited to, electric, natural gas, water, sanitary sewer, storm sewer, and telephone/other communications (e.g. fiber optic cable).

1.3. PROTECTION OF EXISTING UTILITIES

A. Comply with the requirements of all applicable utility protection laws or regulations.

B. Contact and cooperate with utility companies to locate all utilities (including pipelines, cables, power poles, guy wires, and other structures) on the Site prior to beginning the Work.

C. Protect all utilities from damage during construction, unless otherwise indicated to be removed or abandoned. If damaged, repair the utilities as required by the utility's owner at the Contractor's expense.

D. Provide support for all utilities encountered within the excavation areas, unless otherwise indicated to be removed or abandoned.

E. If a utility is encountered that is not shown on the Contract Drawings, or otherwise not made known to the Contractor prior to beginning the Work, promptly take the necessary steps to assure that the utility is not damaged, and notify Con Edison in writing of the presence of the utility. Con Edison will review the conditions and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the utility.

F. Immediately notify Con Edison of any incident involving a utility.

1.4. SUBMITTALS

A. Submit a utility survey as detailed in Specification Section 01 33 00 – Submittals.

B. Submit a utility incident report to Con Edison within 4 hours of any incident causing direct or indirect damage to a utility. At a minimum, document the following items in a utility incident report:

1. Description of the incident.
2. Damage assessment.
3. Corrective actions taken and further actions that may be required.
4. Initial estimate on the need for permanent repairs.

PART 2 PRODUCTS

(Not Applicable)

PART 3 EXECUTION

3.1. GEOPHYSICAL SURVEY

A. Complete a geophysical survey within and beyond the limits of the planned excavation. Geophysical survey will include the use at least two of the following methods: Ground Penetrating Radar (GPR), Magnetometer, M-Scope, Electrical Conductivity, Electrical Resistance, and/or Acoustics to identify subsurface anomalies.

B. Locate all subsurface anomalies detected during the survey and include in the utility survey submittal.

3.2. UTILITY CONFIRMATION TEST PITS

A. If a subsurface anomaly or utility line is in line with the excavation limits or could be crossing the excavation limits, then a confirmation test pit will be required to expose and physically verify the exact location and configuration of all nearby utilities.

B. Utility clearance test pits will be excavated to a minimum of 2-feet below ground surface using non-mechanical methods, such as hand auger, post-hole digger, and/or vacuum truck.

C. The length of the test pit should extend throughout the tolerance zone for the subsurface anomaly/utility line. If not previously marked, the tolerance zone will be defined in the field as the distance of one-half of the known diameter of the utility plus two feet on either side of the centerline as marked out.

END OF SECTION 01 18 00

SECTION 01 20 00
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1. SUMMARY

A. The items listed in Project Price Schedule constitute all of the pay items for completion of the Work.

1.2. PAYMENT TERMS

A. Payment will not be made unless the proper supporting documentation has been submitted and approved by Con Edison and the Engineer.

B. Payment includes full compensation for all required labor, products, tools, equipment, transportation, services, incidentals, erection, application, or installation of an item of the Work, including overhead and profit.

C. Payment will not be made for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined unacceptable before or after placement.
3. Products not completely unloaded from the transporting vehicle.
4. Products placed beyond the lines and levels of the required Work.
5. Loading, hauling, and disposing of rejected materials.
6. Products remaining on hand after completion of Work.
7. Additional Work undertaken to expedite Contractor's operations.
8. Repair or replacement of property located within or adjacent to the Work area.

D. Payment will be made for all Work actually performed during a particular payment period. Payments for lump sum items will be made based on the percent completion of the pay item, upon approval by Con Edison and the Engineer. Judgments of percent completion of lump sum items will be made in reference to the Project Price Schedule.

1.3. SUBMITTALS

A. Submit verification and supporting documentation with requests for payment, in accordance with terms of the Contract Documents.

1.4. QUANTITY ESTIMATES

A. Verify estimated quantities for unit prices in the field.

B. For all unit price Work, the contract price will include an amount equal to the sum of the unit price for each pay item times the estimated quantity of each item as indicated in the Project Price Schedule. The estimated quantities shown on the Project Price Schedule represent an estimate of the Project quantities. Quantities

and measurements supplied or placed in the Work in accordance with the Specifications and Contract Drawings, and verified by Con Edison and the Engineer, will determine payment.

C. Con Edison and the Engineer will verify the quantities and classifications of unit price Work invoiced by the Contractor. Con Edison and the Engineer will review their preliminary determination with the Contractor before rendering a written decision on an application for payment.

D. If the actual Work requires more or fewer units than the estimated units indicated on the Project Price Schedule, provide the required units at the contracted unit price. Under no circumstances may the Contractor exceed estimated quantities without prior written approval from Con Edison and the Engineer.

E. Con Edison and the Engineer reserves the right to increase or decrease any pay item quantity, or to eliminate any pay item, as a result of the actual conditions encountered during the performance of the Work. The elimination or alteration of pay items will in no way invalidate the Contract.

1.5. MEASUREMENT OF QUANTITIES

A. Measurement by Weight:

1. Weigh Scales: Certified in accordance with applicable laws and regulations for the state in which the scales are located. Certification must be within a period of not more than one year prior to the date of use.

2. The term “ton” will mean the short ton consisting of 2,000 pounds.

3. For shipments to off-Site disposal facilities, trucks will be weighed at the receiving facility for the purpose of measuring the quantity of Work for payment.

B. Measurement by Volume:

1. Volumes measured as in-place volumes will be determined by survey. Retain the services of an independent surveyor, licensed in the State of New York, whose determination of in-place volumes, with concurrence by Con Edison, will be authoritative and final for the purpose of measurement for payment. To compute in-place volumes, use the surface comparison function in the surveying software program, or other methods acceptable to Con Edison and the Engineer.

C. Measurement by Area:

1. Measured by square dimension using length and width, or radius, and verified by Con Edison and the Engineer.

D. Linear Measurement:

1. Measured by linear dimension, at the item centerline or mean chord, and verified by Con Edison and the Engineer.

E. Measurement by Time:

1. Measure by the actual time, rounded to the nearest time unit specified in the applicable pay item, and verified by Con Edison and the Engineer.

1.6. ASSESSMENT OF NON-CONFORMING WORK

F. Con Edison and the Engineer will conduct inspections of the Work as specified in the Terms and Conditions.

G. If, at any time prior to Final Acceptance of the Work, Con Edison and the Engineer determines that any part of the Work is not suitable or fails to conform to Contract requirements, Con Edison and the Engineer will have the options to take any of the actions outlined in the Terms and Conditions.

1.7. ELIMINATED ITEMS

A. If any items contained in the Contract Drawings or Specifications are found unnecessary for the proper completion of the Work, Con Edison and the Engineer may, upon written order to the Contractor, eliminate such items from the Work, and such action will in no way invalidate the Contract.

B. The Contractor will be paid for all Work performed and all documented costs incurred, including the mobilization of materials, prior to the elimination of such items.

1.8. MEASUREMENT AND PAYMENT OF PAY ITEMS

A. The Project Price Schedule lists the pay items for the Work.

B. The following paragraphs specify measurement and payment of the pay items listed on the Project Price Schedule:

Item 1 Mobilization

1. Work required to complete Mobilization includes, but is not limited to:

   a. Movement of personnel, equipment, and materials to and from the Site, if such movement is not included in any other pay item.

   b. Performing the pre-characterization program and obtaining acceptance letters from the Con Edison approved disposal facilities.

   c. Preconstruction coordination meetings.

   d. Preparation, submittal, and revision (if required) of all pre-mobilization submittals described in Specification Section 01 33 00 - Submittals.

2. Mobilization will be measured for payment as one unit, complete as specified.

3. Payment for Mobilization will be made on a percent complete basis of the lump sum price for the Pay item “Mobilization” listed on the Project Price Schedule. Payment of the lump sum price for “Mobilization” will constitute full compensation for all labor, supervision, materials, equipment, startup

submittals, incidentals and all other costs necessary to complete Mobilization Work, including the transport of all equipment, labor and temporary facilities and materials to and from the Site.

Item 2 Demobilization

1. Work required to complete Demobilization includes, but is not limited to:
   a. Movement of all personnel, equipment, and materials from the Site.
2. Demobilization will be measured for payment as one unit, complete as specified.
3. Payment for Demobilization will be made on a percent complete basis of the lump sum price for the Bid item "Demobilization" listed on the Project Price Schedule. Payment of the lump sum price for "Demobilization" will constitute full compensation for all labor, supervision, materials, equipment, Submittals, incidentals, and all other costs necessary to complete Demobilization Work, including the transport of all equipment, labor and temporary facilities and materials from the Site.

Item 3 Temporary Facilities and Controls

1. Work required to complete Temporary Facilities and Controls includes, but is not limited to:
   a. Provide odor/vapor suppressant materials and applicator.
   b. Installing the temporary security fence (including installing privacy screening on the temporary and permanent fencing).
   c. Implement the health and safety requirements specified in the Contractor Health and Safety Plan detailed in Specification Section 01 31 00 – Administrative Requirements.
   d. Install and maintain temporary facilities and controls as specified in Specifications Section 01 50 00 - Temporary Facilities and Controls, unless specifically identified as being provided by Others.
   e. Provide Project management and oversight as specified in Section 01 31 00 - Administrative Requirements.
   f. Maintain and repair all temporary facilities and controls, including those provided by Others, when Work is taking place at the Site.
   g. Removal and lawful disposal of all temporary facilities and controls, including those provided by Others, when Work is completed at the Site.
   h. All other recurring activities not included in another pay item, or specifically identified as being the responsibility of Others, required to complete the Work.

2. Temporary Facilities and Controls will be measured for payment as one unit, complete as specified.

3. Payment for Temporary Facilities and Controls will be made on a percent complete basis of the lump sum price for the Pay item "Temporary Facilities and Controls" listed on the Project Price Schedule. Payment of the lump sum price for "Temporary Facilities and Controls" will constitute full compensation for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete the Temporary Facilities and Controls Work, as specified in Specification Section 01 50 00 – Temporary Facilities and Controls.

Item 4 Excavation

1. Work required to complete Excavation includes, but is not limited to:

   a. Performing any clearing or grubbing of the Site required to complete the Work.

   b. Loading of any existing or generated construction debris for off-Site disposal.

   c. Excavation of soils.

   d. Stockpiling or direct loading of soils.

   e. Application of odor/dust/vapor control agents.

   f. Demolition/removal of the any portions of former MGP structures that are located within the excavation areas to the depth of the excavation.

   g. Loading of the demolished material for off-Site disposal.

   h. Perform any localized dewatering as required to complete the Work.

   i. Any material handling required for performing soil amendment, as required by disposal facilities, or as directed by Con Edison and the Engineer.

   j. Placement of a demarcation barrier at the locations shown on the Contract Drawings.

2. Excavation Work will be measured for payment on an in place cubic yard basis, as verified by survey.

3. Payment for Excavation Work will be made in accordance with the unit price for the Pay item "Excavation" listed on the Project Price Schedule. Payment of the unit price for "Excavation" will constitute full compensation for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete Excavation Work, as specified in Specification Section 31 23 00 – Excavation and Fill.

Item 5 Survey

1. Work required to complete Survey includes, but is not limited to:
   a. Conduct any surveying needed to meet the survey data requirements included in Section 31 09 00 Geotechnical Information.
   b. Performing any other surveying work needed to control and document the Work.
2. Survey will be measured for payment as one unit, complete as specified.
3. Payment for Survey will be made on a percent complete basis of the Project for the lump sum price for the Bid item "Survey" listed on the Project Price Schedule. Payment of the lump sum price for "Survey" will constitute full compensation for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete Survey Work, as specified in Specification Section 02 21 00 – Surveys.

Item 6 Transportation and Disposal: Soil

1. Work required to complete the Transportation and Disposal: Soil pay item includes, but is not limited to:
   a. Transportation and disposal of excavated soil from the Project Site to the approved disposal facilities in accordance with Specification Section 02 61 00 – Removal and Disposal of Contaminated Materials.
   b. Designing the Project excavation and sequencing so as not to exceed the capacity of the disposal facility to accept excavated materials.
   c. Analytical sampling required to meet the disposal facility requirements to receive approval from the selected disposal facility.
2. Transportation and Disposal: Soil will be measured for payment on a per ton basis, as documented by disposal facility scale weight tickets.
3. Payment for Transportation: Soil Work will be made in accordance with the unit price for the Pay item "Transportation and Disposal: Soil" listed on the Project Price Schedule. Payment of the unit price for "Transportation and Disposal: Soil" will constitute full compensation for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete Transportation and Disposal: Soil Work, as specified in Specification Section 02 61 00 – Removal and Disposal of Contaminated Materials.

Item 7 Transportation and Disposal: Debris

1. Work required to complete the Transportation and Disposal: Debris pay item includes, but is not limited to:
   a. Transportation and disposal of excavated debris from the Project Site at the approved disposal facility identified in the Contractor Site Operations Plan in accordance with Specification Section 02 61 00 – Removal and Disposal of Contaminated Materials.

b. Designing the Project excavation and sequencing so as not to exceed the capacity of the disposal facility to accept debris generated during the performance of the Work.

2. Transportation and Disposal: Debris will be measured for payment on a per ton basis, as documented by disposal facility scale weight tickets.

3. Payment for Transportation and Disposal: Debris Work will be made in accordance with the unit price for the Pay item "Transportation and Disposal: Debris" listed on the Project Price Schedule. Payment of the unit price for "Transportation and Disposal: Debris" will constitute full compensation for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete Transportation and Disposal: Debris, as specified in Specification Section 02 61 00 – Removal and Disposal of Contaminated Materials.

Item 8 Soil Amendment-Expendables

1. Work required to complete Soil Amendment includes, but is not limited to:

   a. The furnishing of Cement Kiln Dust (CKD) or other amendment materials approved by Con Edison and the Engineer.

2. Soil Amendment will be measured for payment on a per ton basis of CKD, or other approved amendment, used as directed by Con Edison and the Engineer. Deliveries will be made to the Site in sacs or containers, no bulk deliveries will be allowed. Payment will only be made for CKD used to reduce the moisture content of the soil. No payment, including any disposal or restocking fees, will be paid for CKD that is delivered to the Site but not incorporated into the Work.

3. Payment for Soil Amendment will be made in accordance with the unit price for the Pay item "Soil Amendment" listed on the Project Price Schedule. Payment of the unit price for "Soil Amendment" will constitute full compensation for the amendment of soils for the purpose of moisture reduction, at the direction of Con Edison and the Engineer, including all labor, equipment, and incidentals required to complete Soil Amendment Work, as specified in Specification Section 31 23 00 – Excavation and Fill.

Item 9a,b Odor Control – Expendables

1. Work required to complete Odor Control Foam System – Expendables includes, but is not limited to:

   a. The furnishing of odor control foam.

   b. The furnishing of odor control solvent.

2. Odor Control Expendables will be measured for payment by the gallon of concentrate(s) used, as directed by Con Edison and the Engineer.

3. Payment for Odor Control– Expendables Work will be made in accordance with the unit prices for the following Pay items listed on the Project Price Schedule:

   a. "Odor Control Foam – Expendables."

   b. "Odor Control Solvent – Expendables."

4. Payment will only be made for expendables used to reduce odors. No payment, including any disposal or restocking fees, will be paid for expendables that are delivered to the Site but not incorporated into the Work.

5. Payment of the unit price for "Odor Control – Expendables" will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide Odor Control – Expendables, as directed by Con Edison and the Engineer.

Item 10 Placement of Approved Off-Site Backfill Material – Granular Fill

1. Work required to complete Placement of Approved Off-Site Backfill Material – Granular Fill includes, but is not limited to:

   a. Procurement, transportation, placement, geotechnical testing, analytical testing, and compaction of approved Granular Fill, as specified in Specification Section 31 23 00 – Excavation and Fill.

2. Placement of Approved Off-Site Backfill Material - Granular Fill will be measured for payment on an in place cubic yard basis as verified by survey.

3. Payment for Placement of Approved Off-Site Backfill Material - Granular Fill Work will be made in accordance with the unit price for the Pay item "Placement of Approved Off-Site Backfill Material - Granular Fill" listed on the Project Price Schedule. Payment of the unit price for "Placement of Approved Off-Site Backfill Material - Granular Fill" will constitute full compensation for all labor, supervision, materials, equipment, stockpiling, incidentals and all other costs necessary to complete Placement of Approved Off-Site Backfill Material - Granular Fill Work, as specified in Specification Section 31 23 00 – Excavation and Fill.

Item 11 Placement of Approved Off-Site Backfill Material - Topsoil

1. Work required to complete Placement of Approved Off-Site Backfill Material - Topsoil includes, but is not limited to:

   a. Procurement, transportation, placement, geotechnical testing, analytical testing, and compaction of approved Topsoil, as specified in Specification Section 31 22 00 – Grading, Excavating, and Backfill.

   b. Conduct survey of final grade as required for payment.

1. Placement of Approved Off-Site Backfill Material - Topsoil will be measured for payment on an in place cubic yard basis as verified by survey.

2. Payment for Placement of Approved Off-Site Backfill Material - Topsoil Work will be made in accordance with the unit price for the Pay item "Placement of Approved Off-Site Backfill Material - Topsoil" listed on the Project Price Schedule. Payment of the unit price for "Placement of Approved Off-Site Backfill Material - Topsoil" will constitute full compensation for all labor, supervision, materials, equipment, stockpiling, incidentals and all other costs necessary to complete Placement of Approved Off-Site Backfill Material - Topsoil Work, as specified in Specification Section 31 22 00 – Grading, Excavating, and Backfill.

Item 12 Placement of Approved Off-Site Backfill Material – Rip Rap

1. Work required to complete Placement of Approved Off-Site Backfill Material – Rip Rap includes, but is not limited to:

   b. Procurement, transportation and placement of approved Rip Rap, as specified in Specification Section 31 37 00 – Rip Rap.

2. Placement of Approved Off-Site Backfill Material – Rip Rap will be measured for payment on a per ton basis as verified by borrow source weight tickets.

3. Payment for Placement of Approved Off-Site Backfill Material – Rip Rap Work will be made in accordance with the unit price for the Pay item "Placement of Approved Off-Site Backfill Material – Rip Rap" listed on the Project Price Schedule. Payment of the unit price for "Placement of Approved Off-Site Backfill Material – Rip Rap" will constitute full compensation for all labor, supervision, materials, equipment, stockpiling, incidentals and all other costs necessary to complete Placement of Approved Off-Site Backfill Material – Rip Rap Work, as specified in Specification Section 31 37 00 – Rip Rap.

Item 13 Transportation and Disposal: Wastewater

1. Work required to complete the Transportation and Disposal: Wastewater pay item includes, but is not limited to:

   a. Transportation of wastewater and decontamination fluids from the Project Site to the Con Edison approved disposal facility identified in the Contractor Site Operations Plan.

2. Disposal will be measured for payment on a per gallon basis, as documented by an appropriately calibrated and inspected flow meter at the receiving facility.

3. Payment for Transportation and Disposal: Wastewater Work will be made in accordance with the unit price for the Pay item "Transportation and Disposal: Wastewater" listed on the Project Price Schedule. Payment of the unit price for "Transportation and Disposal: Wastewater" will constitute full

compensation for all labor, supervision, fees, materials, tanks, equipment, incidentals and all other costs necessary to complete Transportation and Disposal: Wastewater Work, as specified in Specification Section 02 61 00 – Removal and Disposal of Contaminated Materials.

Item 14 Site Restoration

1. Work required to complete the Site Restoration pay item includes, but is not limited to:
   a. Installing grass surface in the areas indicated on the Contract Drawings.
   b. Restoring any site features that were removed or relocated during the performance of the Work.
2. Site Restoration will be measured for payment as one unit, complete as specified.
3. Payment for Site Restoration will be made in accordance with the lump sum price for the Pay item "Site Restoration" listed on the Project Price Schedule. Payment of the unit price for "Site Restoration" will constitute full compensation for all labor, supervision, fees, materials, equipment, incidentals and all other costs necessary to complete Site Restoration Work, as specified in Specification Section 32 90 00 Planting and Landscaping.

PART 2 PRODUCTS

(Not Applicable)

PART 3 EXECUTION

(Not Applicable)

END OF SECTION 01 20 00

SECTION 01 31 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1. SUMMARY

A. This Section describes the Project general requirements, administrative requirements, the minimum level of coordination and meetings required to execute the Work, and the required pre-mobilization submittals.

1.2. GENERAL REQUIREMENTS

A. Any data provided is not intended as a representation or warranty of continuity of conditions between soil borings nor of groundwater levels at dates and times other than the date and time measured. Con Edison and the Engineer will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. Data is solely made available for the convenience of the Contractor.

B. Furnish all supervision, labor, services, equipment, appliances and materials, and implement all operations as necessary to successfully accomplish the described and incidental work of the project completely. Perform all Work in accordance with the Contract Documents.

C. Con Edison will provide all final approvals and direction to the Contractor. References within the Contract Documents referring to approvals by and/or direction by others, including the Engineer, Property Owner or others will be interpreted to refer to Con Edison.

D. Overall implementation of the Work of this project is the sole responsibility of the Contractor. Any changes or modifications to the Work or construction, as directed by Con Edison and the Engineer, made necessary as a result of poor construction techniques, unsafe working conditions, or inadequate equipment or services provided by the Contractor will be made at no extra cost to Con Edison and the Engineer. Con Edison or the Engineer will inspect the Work and make any such determinations. These inspections to not relieve the Contractor of their requirements under the Contract.

E. Work in harmony with local Unions when performing work. Contractor will be responsible for additional project costs above the project price arising from Union/non-Union related issues during the work. Con Edison and the Engineer will not pay any additional costs necessary to complete the work, including those required to meet the baseline schedule.

F. Con Edison and the Engineer reserve the right to exclude or withdraw any work or items of work from the contract. Coordinate operations with others who will perform the work. Withdrawal or exclusion of items shall not be justification for adjustment of established prices for any items of work.

G. The Contractor's equipment must meet all regulatory standards and shall be clearly identified with the name, address and telephone number of the Contractor or any Subcontractors. Based on its condition or performance, Con Edison or the Engineer may declare equipment unsuitable for use on the project site and Contractor shall promptly replace that equipment at no additional cost. Provide and maintain 24-hour emergency telephone numbers of the principal owners and their designated representatives.

H. Normal project work hours during Monday – Friday shall be between 7:30 a.m. until 5 p.m. in accordance with all local codes. However, there will be no truck traffic on Ridge Street before 9 a.m. Contractor may also work Saturday as allowed by local jurisdiction with Con Edison approval. Contractor may exclude major holidays from his schedule. The Contractor shall obtain approval from Con Edison when it becomes necessary to perform work outside normal working hours established during project meetings.

I. Immediately report all complaints, government agency directives, and conditions out of scope to Con Edison and the Engineer. Any public inquiries pertinent to the work being performed shall be directed to Con Edison and the Engineer representatives on site. No communications, both on and off site, pertinent to the work are authorized between Contractor (including his Subcontractors) personnel and the public or media.

J. Immediately notify Con Edison and the Engineer of extra work not included in the previously authorized scope of work. The work shall not proceed without authorization from the Con Edison.

K. Schedule and coordinate all work in a manner satisfactory to Con Edison and the Engineer. GEI reserves the right to cancel the contract if, in its judgment, the Contractor is not scheduling or coordinating work in a satisfactory manner. In such cases others may complete the work and the Contractor will be responsible for any additional cost.

L. Ensure that Work does not interfere with access to fire hydrants, firehouses, bus stops, any subsurface utility structures in use, or any other emergency or municipal facility.

M. Hold Daily safety briefings or “toolbox talks”. These briefings shall be documented, and records maintained and provided to Con Edison and the Engineer. The documentation shall include a sign in sheet of the attendees, date, and topic(s) addressed in the briefing.

N. Con Edison and the Engineer must approve all Subcontractors. Promptly provide Subcontractor information, including health and safety information (EMR and OSHA incident rate for 3 prior years at a minimum) as requested, to Con Edison for review and approval prior to that Subcontractor performing work on the site. Con Edison and the Engineer may require removal of a Subcontractor from the

project for performance or non-compliance. Replacement of such subcontractor shall be at no additional cost to Con Edison and the Engineer.

O. New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratories must be used to provide analytical services required under the contract.

P. Comply with New York State Industrial Code Rule 753. All underground and overhead utilities, including electric, gas, communication, sanitary and storm sewers, water, etc., shall be identified prior to ANY intrusive work. Prior to breaking ground call the New York 811 at 1-800-962-7962 or 811, at least 48 hours prior to beginning any mechanized digging or excavation work to ensure underground utility lines are marked. This call is required under New York State law known as "Code 753," which states that all contractors engaging in excavation or demolition must provide notice of the location and date of any planned excavation or demolition to the appropriate One Call Center between two and ten working days prior to the work. This call is required for all such work performed on public streets, private properties and within Con Ed facilities. The Contractor shall comply with all other provisions of Industrial Code 16 NYCRR Part 753.

Q. All field activities involving contaminated or potentially contaminated material must be performed by properly and currently trained (e.g., HAZWOPER) personnel. Training certificates shall be provided to Con Edison and the Engineer for approval prior to commencement of the fieldwork.

R. All waste transportation deemed necessary shall be provided by properly licensed transporters with a valid transport permit, and approved by Con Edison. Con Edison shall be provided adequate time for review and approval of transporters. All transportation and disposal activities must be performed in accordance with all applicable federal, state and local regulations.

S. Only Con Edison-approved disposal facilities shall be used, and all disposal activities must be performed in accordance with all applicable federal, state and local regulations. Con Edison will not approve any additional disposal facilities. Current list is available from Con Edison.

T. Any discrepancy between various documents and drawings relating to work requirements shall be promptly brought to the attention of Con Edison and the Engineer or the Engineer for discussion and resolution. Contractor shall take no action on any items for which a discrepancy exists until Con Edison and the Engineer provides a resolution.

U. All excavation within 15 feet of utilities shall be performed by hand unless specifically directed otherwise by Con Edison and the Engineer.

V. Fire extinguishers present on-site shall show evidence of annual inspection by a fire safety vendor and that monthly inspections shall be documented on a tag or label affixed to the extinguisher.

W. Contractor shall provide SDS's to Con Edison for review a minimum of fifteen work days prior to the arrival of hazardous material on-site; SDS must be approved by Con Edison prior to use of the material. Con Edison may require the substitution of a similarly effective, less hazardous material than the one submitted. This substitution shall be done at no extra cost to Con Edison and the Engineer.

X. Ensure that any weight to be lifted or carried is not outside the capabilities of the equipment being used to lift or move it.

Y. Hard hats for Contractor and subcontractor personnel shall not be white or "Con Edison blue" in color. Tape or paint may not be applied to hard hats to comply with this requirement. All safety glasses must have permanently affixed side shields.

Z. Site specific HASP briefing/review shall be conducted by the Contractor every three months (after the initial briefing) during the project. This briefing shall be documented by the Contractor and a copy of such shall be provided to Con Edison and the Engineer.

AA. All tools and equipment entering the Site shall be available for inspection by Con Edison and the Engineer and shall be free to any contamination. Decontamination of previously (not related to this project) contaminated tools and equipment on this site is prohibited.

BB. Do not attempt to open or contact with bare skin any Con Edison electric manhole or vault until Con Edison conducts stray voltage testing at that location.

1.3. ON-SITE PERSONNEL

A. Con Edison will maintain full time on-Site representatives for the duration of the Work. The on-Site representatives will be responsible for overall contractual oversight of the Work and referred to as Con Edison. Con Edison reserves the right to change such authorized representative at any time.

B. The Engineer, who is a consultant to Con Edison, will maintain a full time on-Site representative for the duration of the Work. The Engineer will be responsible for administering the CAMP, observing the Work relative to conformance with the technical requirements of the plans and specifications, and is referred to as the Engineer.

C. The New York State Department of Environmental Conservation (NYSDEC) will maintain a part/full time field representative for the duration of the Work. The NYSDEC will address complaints, requests, or communications from the community.

D. Ensure Contractor personnel are qualified to perform work specified in the Contract Documents. All Project personnel are also subject to Con Edison approval. Promptly remove from the site any personnel deemed unacceptable by Con Edison.

Replacement of such personnel shall be at no additional cost to Con Edison and the Engineer.

E. Maintain a full-time on-Site Superintendent, who will be responsible for quality assurance, and Contractor health and safety for the duration of the Work. The Superintendent will be responsible for the supervision and/or coordination of all Contractor employees, Subcontractors, manufacturers, fabricators, suppliers, distributors, installers, and testing agencies whose services, materials or equipment are required to ensure the completion of the Work. The Superintendent shall have sufficient qualifications, experience, and authority to act as a single point of contact for the on-Site staff, to make adjustments to the means and methods as needed and as requested by Con Edison and the Engineer, and shall be authorized to represent the Contractor in all matters.

F. Maintain a dedicated Site Health & Safety Officer (SHSO) on-Site at all times during the performance of the Work. Submit qualifications of the SHSO in the Contractor HASP for review and approval by Con Edison and the Engineer.

1. The SHSO will be a safety industry professional with at least three (3) years of direct construction safety experience with other licenses or certificates as applicable to the specific project.

2. The SHSO will have satisfactorily completed the OSHA 30-hour Construction Safety Training, or other similar training, as a base requirement.

3. The SHSO must be thoroughly familiar with the provisions of the Contractor HASP and Specifications.

4. The SHSO must be on-Site at all times when Work is being performed. If the SHSO must leave the Site, or is absent for work, he/she must be immediately replaced by another SHSO that is acceptable to Con Edison and the Engineer, at no additional cost to Con Edison and the Engineer. All Work must stop if the SHSO is not on-Site for a significant time frame, as determined by Con Edison and the Engineer.

G. Maintain an OSHA Competent Person as defined by the OSHA Construction Standard at the site. The Superintendent or the SHSO may act as the OSHA Competent Person upon approval by Con Edison and the Engineer.

H. Ensure Contractor personnel are qualified to perform work specified in the Contract Documents. All Project personnel are also subject to Con Edison and the Engineer approval. Promptly remove form the site any personnel deemed unacceptable by Con Edison and the Engineer. Replacement of such personnel shall be at no additional cost to Con Edison and the Engineer.

I. Once Work commences, the SHSO will be responsible for performing, at a minimum, the following tasks:

1. Managing the Contractor Health and Safety Program.

2. Providing a Health and Safety orientation training to new employees.
3. Managing a Health and Safety incentive program, if any.
4. Performing Job Safety Analyses.
5. Performing, or overseeing the performance of, required work zone air monitoring, as required.
6. Ensuring immediate notification of Con Edison and the Engineer of any incidents, accidents, near misses, or unusual occurrences.
    a. Following up such notification, within 24 hours, with a completed report detaining an accident, incident, or Close Call with a Root Cause Analysis report.
7. Performing accident investigations.
8. Attending Con Edison and the Engineer meetings or periodic project meetings such as weekly progress/safety meetings, etc.
9. Attending all meetings on EH&S related incidents.
10. Providing any corrective action plans required by Con Edison and the Engineer.
11. Maintaining site safety records and statistics. These records shall be reviewed as an agenda item at each project meeting and be available at all times for inspection by Con Edison and the Engineer personnel and summarized in a weekly safety report.
12. Maintaining daily (full time) or weekly (part time) safety logs including walk through site reports.
13. Maintaining weekly safety logs to include a copy of the toolbox talk for the week.
14. Documenting Daily Job Briefings.

1.4. MEETINGS

A. Attend all Project meetings as deemed necessary by Con Edison and the Engineer during the term of the Agreement.

B. A kickoff meeting will be held after the notice to proceed is issued at a location to be determined to discuss Project submittals, schedule, etc. Attendance at the post-award meeting is required for the Contractor Superintendent, project manager, and SHSO.

C. A pre-construction meeting will be held at the Site after mobilization is complete (to include temporary office space), and prior to the start of the Work. At a minimum, the Contractor's project manager, SHSO, and Superintendent for the Project will attend the meeting. It is recommended that the Contractor assemble

input from primary Subcontractors prior to this meeting. Representatives from the NYSDEC will also be invited to attend this meeting.

1. This meeting is intended to make certain that the Work is properly scheduled, responsibilities are coordinated among Subcontractors and suppliers, and that those responsibilities are reflected on the Contractor submittals. Questions concerning the administrative requirements outlined during the pre-construction conference or any other aspect of the Project may also be addressed.

D. Beginning with the mobilization to the Site, the Contractor will facilitate weekly construction meetings for the duration of the Work. Prior to mobilization, if necessary, bi-weekly meetings may be held via teleconference. After mobilization, weekly meetings will be held at the Site. Present a progress update at weekly construction meetings that includes tasks completed from the prior week, currently active tasks, and tasks/activities planned for the next two weeks along with an updated project schedule. The format of the two week look ahead must be approved by Con Edison and the Engineer.

E. The standard meeting day and time for the weekly construction meeting will be established based on mutual agreement with Con Edison, the Engineer and the other participants. Prior to each weekly meeting the Contractor will submit meeting agenda items to Con Edison and the Engineer. The Engineer will then prepare a formal meeting agenda. The Engineer will also prepare and send minutes of each meeting to all participants before the next regularly scheduled meeting.

F. Special construction meetings will be held at the Site or other designated location to discuss urgent construction issues. The Contractor, Con Edison, or the Engineer may call special construction meetings. Coordination (agenda, meeting minutes, location, time, and attendance) of special construction meetings is the responsibility of the organization calling the meeting. Special construction meetings will be called as warranted.

G. Individuals authorized to discuss and make decisions on behalf of the Contractor, relative to the meeting agenda, must participate in all weekly construction and special construction meetings.

H. Make physical arrangements for all construction meetings to be held on the Site.

I. All expenses associated with attending the meetings, except those that are incurred by the Engineer, Con Edison, their representatives, or consultants, are to be borne by the Contractor.

1.5. REQUESTS FOR INFORMATION, CLARIFICATIONS, AND ALTERNATIVES

A. All requests for information, clarifications, or alternatives in the requirements of the Contract Documents must be made in writing to Con Edison and the Engineer. Submit any request for alternative forms as part of the Site Operations Plan for consideration for acceptance by Con Edison and the Engineer.

B. The Request for Information (RFI) form is provided in the Con Edison Supplemental Construction Contract Requirements.

C. Written requests must be provided regardless of any preceding conversations and preliminary decisions regarding the subject matter(s).

D. At the discretion of Con Edison and the Engineer, e-mail communications may qualify as "requests made in writing" for the purposes of this provision.

E. Con Edison or the Engineer will provide written responses to each request.

F. At their discretion, Con Edison may provide verbal approvals of requests to expedite the Work. In such cases, the Contractor is still required to provide written documentation of the request and approval from Con Edison and the Engineer.

G. Con Edison or the Engineer may also issue clarifications and/or design changes based on their own assessment of Project needs.

1.6. RECORDS

A. Maintain copies on-Site of all Project correspondence and Project documents generated during the Work.

1.7. EQUIPMENT LEFT ON-SITE

A. Provide Site security for the duration of the project.

B. Secure all equipment left on-Site outside of standard work hours.

C. Ensure that all equipment, where feasible, is de energized when left on-Site and not in use to prevent electrical/fire/explosive hazards. The Contractor is responsible for the security, operation, and maintenance of any systems that require such services outside standard work hours. If systems are operational outside the standard work hours, provide oversight at all times when equipment is in operation, or provide an electronic monitoring system with a remote communication feature to alert the appropriate personnel of a system failure. Repair system failures in a timely manner such that the project schedule is not affected.

1.8. COMMUNITY RELATIONS

A. Con Edison or NYSDEC will provide all external communications with the media/press, project stakeholders, property owner, elected officials, public, etc. Contractor shall not communicate with these entities regarding the work beyond referring such matters to Con Edison or NYSDEC present on Site.

PART 2 PRODUCTS

(Not Applicable)

PART 3 EXECUTION

(Not Applicable)

END OF SECTION 01 31 00

SECTION 01 33 00
SUBMITTALS

PART 1 GENERAL

1.1. SUMMARY

A. This section summarizes the protocol and procedures for the preparation and delivery of required submittals to Con Edison and the Engineer.

1.2. GENERAL REQUIREMENTS

A. Provide all submittals directly to Con Edison and the Engineer in accordance with the submittal schedule attached at the end of this Specification.

B. Include calculations, shop drawings, plans, reports, records, photographs, diagrams, and details with submittals, as needed, to facilitate the review and/or approval process.

C. Submittals may be transmitted electronically to Con Edison and the Engineer unless noted otherwise within the Contract Documents, or if paper copies are requested for a specific submittal item.

D. For all submittals requested via paper copy, provide four (4) copies to Con Edison and one (1) copy to the Engineer unless directed otherwise. Con Edison reserves the right to request any submittal be transmitted via paper copy at any point during the Project.

E. If directed by Con Edison or the Engineer, provide submittals electronically in the format requested (i.e. document file, drawing file, image file, etc.). For electronic drawings, submit AutoCAD 2012 (or later) file using the e-transmit feature (i.e. include external references, image files, color table file, font file, line file, etc.). Convert all AutoCAD add on data to AutoCAD format. Use descriptive layer titles (i.e. not numbers or internal use acronyms). Use extensive layer control and use line color by layer and line type by layer management. AutoCAD files of the Contract Drawings will be made available to the Contractor selected to perform the Work, upon request.

F. Certifications must be signed by an officer or other individual authorized to sign on behalf of the entity. Submittals requiring preparation by an engineer or surveyor must be signed and sealed by a Professional Engineer/Surveyor licensed to practice engineering in the State of New York and trained and experienced in that specific engineering discipline.

1.3. SUBMITTAL SCHEDULE

A. Refer to Table 013300-1 - Project Submittal Summary attached at the end of this Specification.

B. Schedule submittals to expedite the Work. Provide Con Edison and the Engineer a minimum of 10 working Days, excluding transmittal time, for review.

1.4. SUBMITTAL PROCEDURES

A. Use the submittal numbers assigned in Table 013300-1. For submittals not included in Table 013300-1, use the next sequential number as the submittal number. For revised submittals, use original number and a sequential alphabetic suffix. For multiple submittals with the same submittal number, use the original number with a sequential numerical suffix.

B. Provide a transmittal form for each submittal. An example form is provided in the supplemental construction contract requirements.

C. Include drawings and details as appropriate.

D. Use the same units of weights and measures on submittals that are used in the Contract Documents.

E. Submit all supplier and Subcontractor submittals.

F. Identify variations from the Contract Documents and product or system limitations that may be detrimental to successful performance of the completed Work.

G. Prepare submittals that are complete and contain sufficient detail for review by Con Edison and the Engineer.

H. Resubmit submittals if requested by Con Edison or the Engineer. When performing a submittal revision, identify all changes made since previous submission. For each re-submittal allow the same number of workdays required for review as the original submittal.

I. Submittals not requested will not be recognized or processed.

1.5. SUBMITTAL REGISTER

A. Maintain a technical submittal register at the Site. Include the submittal number, description, date submitted, status, and date of approval/rejection.

B. Update the submittal register (submittal log) as frequently as necessary.

1.6. SUBMITTAL REVIEW

A. Con Edison and the Engineer will review all submittals solely for the purpose of determining whether the information contained in the submittal conforms to the design concept of the Contract Documents. The submittal will be returned with one of the following classifications:

1. Approved: Work may proceed, no exceptions taken.

2. Proceed as Corrected: Work may proceed subject to comments, resubmittal not required.

3. Revise and Resubmit: Work may not proceed, resubmittal required for indicated items. Proceed with Work on other items subject to comments.

4. Rejected: Work may not proceed, resubmittal required, submittal

unresponsive and/or not in conformance with Contract Documents.

A. Con Edison and Engineer review is for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents. Review is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions or quantities. Approval of a specific item does not constitute approval of an assembly of which the item is a component. The Engineer's review and approval of the Contractor's submittals does not relieve the Contractor from complying with the requirements of the Contract Documents. The Contractor is responsible for: dimensions to be confirmed and correlated at the Site; fabrication processes and construction means, methods, techniques, sequences or procedures; coordination of the Work of all trades; and performing all Work in a safe and satisfactory manner.

1.7. PRE-MOBILIZATION SUBMITTALS

A. Contractor Health and Safety Plan:

1. Prepare a Contractor Health and Safety plan that has been prepared and signed by an Industrial Hygienist certified by the American Board of Industrial Hygiene. Submit Qualifications/Certification number with the Contractor HASP.

2. Contractor Health and Safety Plan must, at a minimum, include the following:

a. Blood Born Pathogen (BBP) program, to include notification procedures. If regulated medical waste is encountered, or generated the Con Edison on-Site representative must be notified immediately to ensure appropriate storage and disposal.

b. On-Site Chemical Storage Procedures to include:

i. List and quantities of chemicals to be used or stored on-Site, accompanied by SDSs not older than, or revised within, the past 5 years for each chemical.

ii. Storage locations and containers ensuring that storage will not impact sensitive receptors.

iii. A written explanation of the requested use of any chemicals not currently approved by Con Edison. SDSs must be received by Con Edison at least 15 work days prior to the request. Any non-approved chemicals brought to the Site shall be immediately removed at the Contractor’s expense as directed by Con Edison.

iv. During construction, maintain a log of what chemicals are on-Site and their quantities. Provide Con Edison copies of this log upon request, and/or after the Work has been completed.

v. Comply with local permit requirements, as needed, for threshold quantities of flammable or combustible materials.

c. Emergency Evacuation Plan to include Site egress locations and rally point.

d. Location and type of fire extinguishers on-Site.

e. Material Handling Plan and procedures.

f. Work Zone Air Monitoring Plan. The Contractor is required to sample the workers' breathing zones using real-time monitoring equipment to ensure that the workers are not exposed to chemical hazards at levels exceeding Level D action levels. The HASP will contain the airborne contaminants of concern, the corresponding action levels for respirator upgrades, make and model numbers of monitors to be used (as applicable), type of calibration equipment, frequency of calibration, and calibration procedure.

   i. Should Action Levels be exceeded for more than a short duration (i.e. 15 minutes), the Contractor shall be prepared to collect integrated air samples (e.g. "pump & charcoal tube", or equivalent) for appropriate airborne contaminants of concern for the remainder of the current shift (if more than four hours remain) AND the duration of the following shift as long as the activities to be performed are similar to those where the Action Level exceedance occurred. Con Edison shall receive copies of the analytical report showing the Time Weighted Average results within ten days of sample collection.

g. Description of the Medical Surveillance Program for the Contractor's workforce.

h. Description of Contractor site control measures. This includes, but is not limited to, the establishment/maintenance of Exclusion, Contamination Reduction, and Support Zones, and decontamination pads (personnel and vehicles/equipment).

i. Description of decontamination procedures for personnel and equipment/vehicles.

j. Description of training requirements for contractor personnel (29 CFR 1926.65 HAZWOPER, Elevated Work Platform, HazCom. etc.).

k. A Spill Containment and Cleanup Program, both for water and land spills. This will include the number of spill response kits maintained on-Site and what effective volume of spilled liquid materials each kit will be effective for.

l. Contractor will be required to include these Con Edison CEHSPs into their HASP, including the three-part Rules We Live By documents –

   i. CEHSP E08.02 – Noise Construction and Utility Activities.

ii. CEHSP S05.03 – Personal protective Equipment – protective Clothing.

iii. CEHSP S12.00 – Lockout/Tagout Procedures.

iv. CEHSP S17.01 – Electrical Enclosed Spaces (as applicable).

v. CEHSP S31.01 - Protection of Adjoining Property (as applicable).

vi. CEHSP A28.00 – Calling a Time Out.

vii. CEHSP A32.00 – Rules We Live By (three documents; Procedure, Matrix, Newsletter).

3. Notification procedures for injuries (OSHA Recordable and non-Recordable)/accidents/Close Calls to anyone on-Site (including members of the public). The Contractor will complete a Con Edison Contractor Injury Form and submit to Con Edison within one-business day of the incident. A root cause investigation report and preventive action plan is required to be submitted to and be accepted by Con Edison before Work on that same activity can continue. The Contractor may, however, perform Work on all other tasks/activities on the project while awaiting Con Edison's acceptance of the aforementioned documents.

4. Include relevant safety information for all proposed and likely Site activities including, but not limited to:

   a. Equipment Operation (Drilling, Excavation, Backfilling).

   b. Demolition.

   c. Traffic control plan for equipment and materials delivery/disposal. Plan should be compliance with the Con Edison Work Area Protection and Traffic Control Field Manual.

B. Critical Path Method Project Schedule:

1. Prepare a Critical Path Method (CPM) project schedule in accordance with Con Edison Supplemental Construction Contract Requirements (SCCR). Update and disseminate the schedule on a weekly basis prior to the weekly construction meetings. Microsoft Project shall be utilized for electronic schedule.

C. Pre-Construction Photographic Survey:

1. Perform a pre-construction photographic survey of the Site to 50 feet beyond the Project limits under the supervision of Con Edison and the Engineer.

   a. Submit the findings of the pre-construction survey to Con Edison and the Engineer for review and approval prior to mobilization.

2. Claims determined to be resulting from pre-existing structural and/or cosmetic damage, not identified during the pre-construction survey, will be the responsibility of the Contractor.

D. Schedule of Permits:

1. Submit a schedule of Contractor required permits with approximate lead time. Indicate any action items or information required from Con Edison, the Engineer, property owner, or other similar third party.

2. Submit copies of all supplemental and/or recurring data required by the permits to Con Edison and the Engineer, as needed. Include documentation that the supplemental data was provided to the entity that issued the permit, according to the schedule required by the permit.

3. Submit copies of completed permit applications to Con Edison and the Engineer, prior to submittal to the regulatory entity. Permit applications shall be submitted to Con Edison with sufficient time for review and submitted to the agency such that project schedule is not affected.

4. Submit copies of fully executed permit applications and final permits to Con Edison and the Engineer.

E. Site Operations Plan:

1. Prepare a narrative discussion and drawings describing the means and methods that will be used to execute the Work. The final design will be based on the requirements, intent, and concepts contained in the Contract Documents. Scale drawings included in the Site Operations Plan at no less than 40 feet per inch. At a minimum, the Site Operations Plan will include final submittals with means and methods for the following project elements:

a. Excavation and backfill plan showing sequencing and phasing of the excavation and backfill activities for the performance of the Work. Indicate how collected water will be managed and containerized for off-Site disposal.

b. Settlement monitoring plan outlining the means and methods that will be used to install and monitor the settlement monitoring points (SMPs) as detailed in Specification Section 31 09 00 – Geotechnical Instrumentation.

c. Traffic control plan for both material deliveries and off-Site waste transport.

d. A driver orientation plan. Provide all drivers with hard copies of the orientation plan and require each driver to sign a signature page stating that they have read and understood the plan. The driver orientation plan must include, but is not limited to, the following:

i. An overview of the Work.

ii. New York State traffic rules and regulations.

iii. Rules for driver conduct.

iv. Approved staging areas.

v. A hand-out detailing the haul routes, speed limits, warnings, designated staging areas, etc.

vi. Incident reporting requirements.

vii. A specific prohibition against the pre-loading of trucks (i.e. the loading of trucks for overnight storage prior to the material being taken to the disposal facility).

viii. Contingency plans detailing how the driver is to respond in the event of a traffic accident, release of any material being transported, or disposal facility unavailability upon arrival.

e. Manufacturer cut sheets for all products requiring approval by the Engineer prior to being incorporated into the Work.

f. Shop drawings.

g. Temporary security fence alignment, gate locations, construction details, and signage.

h. Security procedures and specifications for security related equipment.

i. Sanitary facility locations.

j. On-Site parking and traffic layout.

k. Off-Site parking and staging locations, if utilized, including routes to and from the Site.

l. List of all Subcontractors.

m. Gross level decontamination of delivery vehicle tires and chassis to remove surface soils prior to vehicles departing the Site.

n. Waste Management Plan to include waste characterization, sampling, preparation of a temporary waste storage pad, stockpile areas, containerization, labeling, transportation, manifesting (including providing template manifests/shipping documents for all anticipated waste streams), and the gathering of certificates of disposal for all waste streams.

o. Manufacturers' SDS's and product information for all stabilization agents, such as Cement Kiln Dust (CKD), and odor control agents.

p. Staff roles and responsibility summary, including explicit identification of Contractor or Subcontractor staff and qualifications, and who will personally perform and be responsible for the following tasks:

i. Site health and safety.

ii. Quality control.

iii. Construction documentation.

iv. For each company performing one of the above roles, include company contact information (address, telephone number, facsimile number, website, etc.). For each person identified in the Site Operations Plan, include a resume with license numbers, if the individual is performing work requiring licensure.

v. Crew size and equipment list for major tasks.

2. The Site Operations Plan must be submitted as one complete document; partial submittals will not be accepted for review. Organize the Site Operations Plan for use in the field and for review. The Site Operations Plan will be reviewed for both technical content and organization. Include a table of contents, sections and subsections, appendices, tables, drawings, data, etc.

3. All components of the Site Operations Plan are subject to review and approval by Con Edison and the Engineer. This includes, but is not limited to, manufacturer cut sheets, shop drawings, Subcontractor lists, etc. A change to any constituent component of the Site Operations Plan (e.g., a change in a Subcontractor) must be approved by Con Edison and the Engineer. The Site Operations Plan must be reviewed by the NYSDEC prior to intrusive activities taking place on-Site. Con Edison will provide approval of the Site Operations Plan upon NYSDEC approval. Non-intrusive mobilization activities may take place at the discretion of Con Edison prior to Site Operations Plan approval.

F. Laboratory Results and Facility Acceptance Letters:

1. Submit copies of all laboratory results generated during the pre-characterization portion of the Work to Con Edison and the Engineer, upon receipt.

2. Submit copies of all facility acceptance letters to Con Edison and the Engineer upon receipt.

G. Borrow Source Evaluation:

1. Submit the results of the borrow source evaluation for each source to be used as imported clean backfill indicating the material is in compliance with the geotechnical and environmental criteria. Perform the borrow source evaluations prior to the import of fill from the borrow source. Include the following:

a. Name, address, telephone number, facsimile number, and web site address of borrow source.

b. Certificate of clean fill from the borrow location stating that the soil is native in origin and free of contamination.

c. Analytical results from the borrow source, specific to the actual fill being imported to the Site, as confirmation that the material is free of contamination and in compliance with the clean fill environmental criteria.

d. Geotechnical test results from the borrow source, specific to the actual fill being imported to the Site, as confirmation that the material is in compliance with the clean fill geotechnical criteria.

H. Utility Survey:

1. Contact One Call for New York to perform a utility markout.

2. Perform a utility survey of the entire excavation area using a private utility locating service.

3. Confirm all suspected utility locations with the utility provider prior to beginning intrusive activities.

4. Provide a report of the utility survey to Con Edison and the Engineer prior to beginning intrusive activities to include:

a. Copies of Dig Safely numbers/tickets/utilities plates/private utility location information. The Engineer will maintain copies on-Site in a clearance package.

b. Survey of the utilities identified during the private utility mark out.

1.8. DAILY REPORT

A. Prepare a daily report summarizing the staff and equipment used, Work performed, and anticipated Work for the next Day. The daily report should also list all daily quantities applicable to pay items listed on the Project price schedule. The Contractor's internal documentation used for this purpose may fulfill this requirement, subject to approval by Con Edison. At a minimum, the daily report will include the following additional items:

1. Summary of any safety related issues including a summary of the daily safety meeting.

2. Description of any QC testing performed and the results.

3. Settlement monitoring data collected.

4. Excavation and backfill rate for each working Day. Submit certified weight tickets for material exported for off-Site disposal and for each load of imported backfill material.

5. Estimate of the excavation rate, number of trucks needed for transportation to the disposal facility, and the disposal facility production rate for the next Day.

6. Records of quantity surveys/measurements for pay items.

B. Submit the daily report to Con Edison and the Engineer by 10 AM of the next Day worked.

1.9. CERTIFICATES OF COMPLIANCE

A. Submit any certificates required for demonstrating proof of compliance with the Contract Documents to Con Edison and the Engineer as part of the submittal package.

B. Certificates must be signed by an official authorized to sign on behalf of the manufacturing or testing company.

C. For each certification, include the name and address of the Subcontractor, name of the requestor, the Project name and location, relevant test data (if required), and the dates of shipment and delivery.

D. Certifications do not relieve the Contractor from furnishing satisfactory materials.

PART 2 PRODUCTS

(Not Applicable)

PART 3 EXECUTION

3.1. SUBMITTAL SCHEDULE

A. Submit an updated Critical Path Method Project Schedule to Con Edison and the Engineer for review within 10 business days following the Pre-Award Meeting. Work cannot commence until the Critical Path Method Schedule has been accepted by Con Edison.

B. Submit a Site Operations Plan to Con Edison and the Engineer for review and approval within two weeks of award. Intrusive Work cannot commence until the Site Operations Plan has been reviewed by the NYSDEC and accepted by Con Edison.

C. Submit a Contractor HASP to Con Edison and the Engineer for review and acceptance within 10 business days following the Pre-Award Meeting. Intrusive Work cannot commence until the Contractor HASP has been accepted by Con Edison.

SUBMITTAL SUMMARY TABLE 01 33 00-1

Submittal Number	Description of Submittal	Submission Deadline	Referenced Specification Section
PRE-MOBILIZIATION			
1	Critical Path Method Project Schedule	Submitted within 10 business days following Pre-Award Meeting, updated weekly during construction	01 33 00
2	Pre-Construction Survey Results	2 weeks after award	01 33 00
3	Site Operations Plan	2 weeks after award	01 33 00
4	Contractor Health and Safety Plan	Within 10 business days following Pre-Award Meeting	01 33 00
6	Remedial Action Contingency Plan	2 weeks after award as part of SOP	01 33 00
7	Disposal Facility List and Waste Transporter Permits	2 weeks after award as part of SOP	02 61 00
8	Transporter Contingency Plan	2 weeks after award as part of SOP	02 61 00
9	Schedule of Permits	1 week after award	01 31 00
10	Facility Acceptance Letters	Upon receipt	01 33 00
11	Borrow Source Evaluation	2 weeks prior to importing fill to the Site	01 33 00
12	Utility Survey	1 week prior to mobilization	01 33 00
13	Permits and Data Submittals	1 month after award for applications; Final Permits Prior to submittal to controlling agency	01 33 00
14	Final Executed Permits	Upon receipt	01 33 00
REMEDIATION/CONSTRUCTION			
15	Daily Report	10:00 AM of the next work Day	01 33 00
16	Daily Performance Logs	Close of business the following work day	SCCR
17	Safety Data Sheets for chemicals not previously submitted in the Contractor HASP	15 work days prior to need on Site	01 31 00
18	Waste manifests, bills of lading, and certified weight slips	Upon Receipt	02 61 00
19	Driver Orientation Signature Sheets	Daily	02 61 00
PROJECT CLOSEOUT			
20	Substantial Completion	Work is at Substantial Completion	01 77 00

Submittal Number	Description of Submittal	Submission Deadline	Referenced Specification Section
21	Record Documents	Prior to application for Final Acceptance	01 77 00
22	Utility Repair Confirmation	Prior to application for Final Acceptance	01 77 00
23	Permit Closeout	Prior to application for Final Acceptance	01 77 00
24	Final Acceptance	Work is complete	01 77 00

END OF SECTION 01 33 00

SECTION 01 41 00
REGULATORY REQUIREMENTS - PERMITS

PART 1 GENERAL

1.1. SUMMARY

A. This Section establishes responsibility for obtaining Project permits between Con Edison, the Engineer, and the Contractor.

1.2. CON EDISON APPROVALS

A. Con Edison will obtain the following approvals for the performance of the RA:

1. Approvals from the New York State Department of Environmental Conservation.

1.3. CONTRACTOR PERMITS

A. Obtain the following Project permits:

1. Specific permits that must be obtained from the Village of Hastings on Hudson include:

a. Building Permit: Exterior Renovation – Village Building Department

b. Road/Lane Closure Permit – Village Police Department

2. Other permits that may be required include, but are not limited to:

a. Permits required for any off-Site parking that is negotiated between the Contractor and the Village of Hastings on Hudson, Westchester County, and/or private parking facilities.

b. Any other construction related permits required to complete the Work.

B. This Section does not describe all permits required for performance of the Work. Any permits not identified in this Section, or elsewhere in the Contract Documents, are the responsibility of Contractor.

C. Regardless of who is responsible for obtaining a permit, the Contractor is responsible for performing the Work in accordance with the terms and conditions of all permits.

D. Provide any technical and equipment related data requested by Con Edison or the Engineer.

1.4. COORDINATION/ASSISTANCE

A. The Engineer will coordinate delivery of Contractor submittals to NYSDEC, as may be required.

B. Provide all data requested by Con Edison or the Engineer to support permit applications. When necessary, the Engineer may provide data summaries or other Project information in support of Contractor permit submittals.

C. Any coordination and/or assistance between the Contractor, Con Edison, or the Engineer are provided in the interest of expediting the Project. Provision of coordination and/or assistance does not relieve the Contractor of any obligations in obtaining the required permits.

PART 2 PRODUCTS

(Not Applicable)

PART 3 EXECUTION

(Not Applicable)

END OF SECTION 01 41 00

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1. SUMMARY

A. The Work required under this section includes furnishing all labor, equipment, supplies, laboratory testing, materials, and performing all operations required for providing temporary facilities and controls during the performance of the Work.

PART 2 PRODUCTS

2.1. MATERIALS AND FACILITIES

A. All furnished materials must be suitable for their intended use and conform to applicable codes and standards.

B. Provide appropriate first aid supplies in accordance with all applicable and relevant Federal, State, and local regulations.

C. Provide hand carried, portable, UL rated, Class ABC, dry chemical extinguishers or a combination of extinguishers of NFPA recommended classes for the exposures. Provided fire extinguishers at all temporary facilities, workstations, trailers, and offices. Keep detailed records of maintenance and expiration dates.

D. Provide a sufficient number of self-contained, single occupancy toilets with chemical flush and aerated re-circulation, which are properly vented and fully enclosed with fiberglass or other nonabsorbent material. At a minimum, provide two single occupancy toilets outside of exclusion zone. One toilet will be designated as “Women Only.”

E. Provide fully equipped hand wash stations outside of toilets and in the personnel decontamination area.

F. Due to the limited size of the Site and short duration, construction trailers are not required during the performance of the Work.

G. Provide and maintain a sufficient supply of materials/equipment required to implement decontamination procedures, including, but not limited to, the following items:

1. Plastic trash barrels.
2. Liners for trash barrels.
3. Wash basins.
4. Alconox™ or approved equivalent detergent concentrate.
5. Hand pump sprayers.
6. Long handled soft bristle brushes.
7. Large sponges.

8. Cleaning wipes for respirators.
9. Bench or stool(s).
10. Stepladder(s).
11. Pressure Washer/Steam generator, as necessary.
12. Liquid detergent and paper towels.
13. Plastic trash bags.
14. Supplies and equipment to construct the decontamination pad.
15. All necessary hosing, connections, etc. to collect decontamination fluids.

H. Install temporary fencing at the locations shown on the Contract Documents.

1. Temporary fencing must be at least 8 feet in height, and firmly secured to withstand wind and prevent unauthorized access.
2. Cover both temporary and permanent fence with opaque privacy fabric around the entire work area for the duration of the Project.
3. Anchor the temporary and permanent fencing as needed to resist wind loads acting on the privacy fabric.
4. Existing fencing around the Site is shown on the Contract Drawings. Protect this security fencing from damage, and repair and replace fencing that is damaged by the Contractor's activities.
5. Furnish, install, and maintain all other proposed temporary fencing, gates and barriers around work areas as required by the Contract Documents and to complete the Work.
6. Furnish the DEC MGP remediation sign as detailed in the Contract Drawings.

I. Install erosion controls at the locations shown on the Contract Documents.

PART 3 EXECUTION

3.1. GENERAL

A. Operate and maintain all equipment and systems to ensure that that the temporary facilities, controls, utilities, and other services are provided without disruption.

B. Design, furnish, install, and maintain all temporary Site facilities and controls required for the performance of the Work.

C. Provide and maintain all temporary environmental controls, as necessary for protection of the environment, throughout the performance of the Work.

D. Provide and maintain proper barricades and warning signs at all closures, holes, hazards, and equipment areas.

E. Ensure that all Subcontractors comply with the provisions of this Specification.

3.2. SANITARY FACILITIES

A. Empty the sanitary facilities before the capacity is exceeded, or on a weekly basis, whichever occurs first. Clean sanitation facilities concurrently with emptying.

B. Clean and restock hand wash stations as needed.

3.3. TEMPORARY UTILITIES

A. Provide suitable decontamination water for the duration of the Project.

B. Supply potable drinking water for on-Site personnel for the duration of the Work.

C. Provide all temporary utility services in accordance with this Specification for the duration of the Project. This includes, but is not limited to, installation, operation, maintenance, and removal of all equipment and/or systems required to ensure uninterrupted service and paying all fees associated with installation, connection, service, and shut-off.

D. Install temporary service connection points for use during the Work, as necessary. The use of existing on-Site utility connections is not permitted.

E. Perimeter Air Monitoring Stations will be serviced with solar power provided by the Engineer.

3.4. PERSONNEL DECONTAMINATION

A. Comply with all requirements of the Contractor Health and Safety Plan.

B. Provide the means for Con Edison, the Engineer, property owner representative, and visiting regulatory agency representatives to comply with the Contractor Health and Safety Plan.

C. Provide a decontamination station where personnel can drop equipment and remove personal protective equipment (PPE).

1. Equip the decontamination station with basins for water and detergent, and trash bags or cans for containing disposable PPE and other discarded materials.

2. Supply a sink as a secondary means of personal hygiene for personnel.

D. Pump all personnel decontamination wastewater collected on-Site into the on-Site wastewater collection system.

3.5. EQUIPMENT DECONTAMINATION

A. Install decontamination equipment in accordance with the Contract Drawings.

1. Locate and operate a decontamination pad at any point that equipment leaves the Site.

2. Provide a decontamination pad of sufficient size to ensure that the largest piece of equipment can be adequately decontaminated.

B. Remove heavy contamination using a broom and/or brushes within the excavation area prior to movement to the decontamination pad.

C. Perform heavy equipment decontamination within the limits of the decontamination pad.

D. Pressure wash heavy equipment before it departs the Site, as needed, and as directed by Con Edison.

E. Decontaminate any equipment used to excavate impacted materials prior to backfilling.

F. Pump all vehicle decontamination wastewater collected on-Site into the on-Site wastewater collection system.

G. Collect and remove soils from the decontamination pad and bulk with excavated materials that will be disposed of off-Site.

3.6. SITE SECURITY

A. The Work will be completed on a third-party property. Take every security precaution necessary to prevent any unauthorized access to the Work area, and to control construction traffic to and from the Site.

3.7. TRASH DISPOSAL

A. Provide trash removal services for non-impacted waste from the support zone.

END OF SECTION 01 50 00

SECTION 01 57 00
TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.1. SUMMARY

A. The Work required under this section includes furnishing all labor, equipment, supplies, laboratory testing, materials, and performing all operations required for providing environmental controls during the performance of the Work.

B. For the purposes of this Specification, environmental protection is defined as the retention of the environment in its natural state to the greatest extent possible during construction and to enhance the natural appearance in its final condition. Environmental protection requires consideration of air, water, and land resources and involves noise, solid waste management, and management of other pollutants. Comply with all applicable or relevant and appropriate Federal, State, and local laws to provide for abatement and control of any environmental pollution arising from the construction activities in performance of the Work.

1.2. COMMUNITY AIR MONITORING PLAN

A. The Contractor will comply with the requirements of the Community Air Monitoring Plan (CAMP – prepared by the Engineer). The CAMP and resulting deliverables for this project are based on requirements of the New York State Department of Health.

B. CAMP monitoring will be implemented by the Engineer. Contractor will provide access, as necessary, for perimeter and other monitoring required by the CAMP. Activities that are expected to require perimeter air monitoring include:

1. Excavation and stockpiling subsurface soils, including excavation or the purposes of installing excavation support,
2. Handling soil for off-Site disposal.
3. Removal of former MGP structures and piping.
4. Backfilling the excavations.
5. Placement of cover soils.

PART 2 PRODUCTS

2.1. ODOR SUPPRESSENT

A. Provide a mechanism to reduce/control odors generated by open excavations, soil stockpiles, and materials placed in trucks for off-Site transport.

B. Acceptable odor suppressants and applicable application equipment include the following:

1. Rusmar AC920 or equivalent. Other Rusmar products such as AC645, AC904, and AC912 may be used as an alternate to AC920. Rusmar Foam Technology, 216 Garfield Avenue, West Chester, Pennsylvania 19380 (800) 733-3626, www.rusmarinc.com. Provide a foam application unit with a minimum capacity and flow rate equal to or in excess of the RUSMAR PFU 400/25 for application.
2. Biosolve™: Use for short-term and localized applications. The Westford Chemical Corporation, P.O. Box 798, Westford, Massachusetts, 01886, (800) 225-3909, www.biosolve.com. Provide hand-held pump sprayers for application.

PART 3 EXECUTION

3.1. ENVIRONMENTAL PROTECTION

A. Con Edison or the Engineer may notify the Contractor in writing of any non-compliance with Federal, State, and/or local laws. After receipt of the notice, immediately inform Con Edison and the Engineer of the proposed corrective action and take such actions if they are approved by Con Edison and the Engineer. If the Contractor fails or refuses to promptly comply, Con Edison or the Engineer may issue an order suspending or halting all or parts of the Work until satisfactory corrective action has been taken. Claims for extensions of time, or for excess costs or damages by the Contractor due to a stop Work order as described above, will be denied.

B. Provide the methods, means, and facilities required to prevent the contamination of soil, water, or the atmosphere from the discharge of noxious substances from construction operations.

C. Provide the equipment and personnel needed to perform emergency measures required to contain any spills, and to remove impacted soils and/or liquids.

1. Excavate and dispose of any impacted earth off-Site, and replace with suitable compacted fill and topsoil as directed by Con Edison and the Engineer.
2. Coordinate the requirements for the stockpiling of impacted materials with the requirements specified in Section 31 23 00 – Excavation and Fill.

D. Take special measures to prevent harmful substances from entering public waters.

1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.

E. Provide systems for control of atmospheric pollutants.

1. Prevent toxic concentrations of chemicals.
2. Prevent harmful dispersal of pollutants into the atmosphere.

F. Do not pollute any stream, river, waterway, roadway, or soil with fuel, oil, grease, lubricant, hydraulic fluid, bitumen, calcium chloride, acid, base, or other harmful

materials. Comply with the appropriate Federal, State, and local regulations and guidelines for the handling and disposal of all materials.

G. Properly dispose of any debris resulting from the performance of the Work. Disposing of any debris, soil, water, effluent, by product, waste, trash, chemical, fuel, oil, grease, lubricant, bitumen, calcium chloride, acid, base, or other harmful material etc., in or adjacent to the Project area is not acceptable. Remove any unauthorized dumped materials and restore the area as directed by Con Edison or the Engineer. If necessary, areas contaminated as a result of unauthorized activity or dumping by the Contractor will be remediated or excavated by the Contractor at no additional cost to Con Edison and the Engineer.

H. Dispose of all contaminated materials (debris, soil, water, effluent, by-product, waste, trash, chemical, fuel, oil, grease, lubricant, bitumen, calcium chloride, acid, base, used erosion controls, or other harmful material etc.) resulting from the Work in accordance with all applicable or relevant and appropriate Federal and State laws prior to completion of construction.

3.2. DUST, ODOR, and VAPOR CONTROLS

A. Apply odor-suppressing materials to the excavated materials when stockpiled, during excavation and loading operations, or at any other time and location as directed by Con Edison and the Engineer or NYSDEC.

B. Provide the labor, equipment, and materials required to apply odor and vapor suppressant materials to all exposed soils, including stockpiles, within 5 minutes of the start of intrusive activities, or when directed by Con Edison and the Engineer. No separate payment will be made for the operation of vapor/odor control equipment. Payment for vapor/odor suppression materials will be as per the unit price. Failure to apply vapor/odor suppression materials within the specified time will result in all Work being suspended until such time as Con Edison and the Engineer feels the request for controls has been fully satisfied. No additional payment for such downtime shall be due to the Contractor.

C. Maintain sufficient materials on hand to apply vapor/odor suppression materials, as directed during the entire period when intrusive work is being performed.

D. Cover and berm stockpiles with a secured polyethylene tarp if left untouched for longer than 2 hours.

E. Provide dust control at the approved offload point using water trucks, hoses, or engineered dust suppression materials, as needed.

F. Control objectionable dust caused during the performance of the Work. Apply water or use other methods as necessary to keep dust in the air to a minimum. Calcium chloride may be used to control serious or prolonged dust problems, subject to approval by Con Edison and the Engineer.

G. Notification by Con Edison and the Engineer or NYSDEC will be provided when real time monitoring being performed at the Site perimeter indicates levels have reached 10% of the action levels specified in the CAMP for a 10 minute period. Upon notification, immediately begin to implement dust and odor/vapor controls.

3.3. NOISE CONTROL

A. All Work is to be performed in compliance with the Village of Hastings-on-Hudson codes and ordinances regarding acceptable noise levels at all times.

B. Equip vehicles and motorized equipment with appropriate noise control devices to maintain noise levels that conform to current OSHA standards and State and local regulations. Take immediate steps to correct any deficiencies noted, or as directed by Con Edison and the Engineer.

C. Properly maintain all mufflers and noise control devices, and replace when necessary. Operate all construction equipment in the manner that it was intended. Excessive amount of noise and vibration due to improper use of equipment is prohibited.

D. All equipment that is required to operate beyond standard work hours will, to the maximum extent possible be, electrically driven.

END OF SECTION 01 57 00

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1. SUMMARY

A. Final Acceptance covers the administrative and technical requirements for final cleaning, inspection, Project as-built documents, system demonstrations and adjustments, warranties, bonds, final payment, and other procedures for Project closeout in accordance with the Contract Documents.

1.2. CLOSEOUT PROCEEDURES AND REQUIRED SUBMITTALS

A. Substantial Completion:

1. When the Contractor considers the Work or designated portion thereof to be at Substantial Completion, provide written notice, with a list of items to be completed or corrected (punch list), the value of items on the list, and reasons why the Work is not complete.

2. For this project Substantial Completion is defined as all excavation and backfill Work completed with only sod placement and minor restoration Work remaining to be completed.

3. The Contractor will coordinate a site meeting with Con Edison, the Engineer, and a facility representative to review the punch list items.

4. Con Edison and the Engineer will inspect the site with the Contractor and the property owner to determine the status of completion.

5. Should Con Edison or the Engineer determine that Work is not Substantially Complete, the Contractor will be notified in writing. The Contractors punch list will then be updated with the noted deficiencies.

6. The Contractor will within two (2) days of the notice provide a schedule for when all defects will be corrected and/or the Work completed for review.

7. Upon Con Edison's approval, remedy any deficient and/or incomplete Work and upon completion, notify Con Edison and the Engineer. Con Edison, the Engineer, and the property owner will then re-inspect the Work for the purpose of Final Acceptance.

B. Project As Built Drawings:

1. Submit record surveys in electronic format, and provide five (5) paper copies to Con Edison and one (1) paper copy to the Engineer that have been signed and sealed by a surveyor licensed to practice in the State of New York. At a minimum, record drawings are to include:

a. Encountered structures left in place.

b. Encountered pipes that were removed, not removed, and the terminal ends of cut/capped pipes.

c. Utility locations, elevations, and inverts.

d. Bottom and limits of remedial excavation.

e. Demarcation Barrier grade and limits.

f. Backfill grade.

g. Final grade.

h. Benchmark coordinates and elevation.

i. Final quantities for any pay items that were required to be determined via survey must be clearly indicated on the surveyor stamped as-built drawings.

C. Provide copies of all Project records including, but not limited to, the following:

1. Manifests and bills of lading.

2. Weight tickets.

3. Testing results.

4. Health and Safety reports.

5. Copies of permits.

D. Utility Relocation:

1. Submit written confirmation from the utility providers that all temporarily relocated utilities have been restored to pre-remediation condition, and that all temporary utility connection points have been restored to a suitable condition.

E. Permit Closeout:

1. Submit written confirmation that all permits have been closed with their governing authority and that any and all remaining fees have been paid in full.

F. Post-Construction Photographic Survey

1. Perform a post-construction photographic survey of the Site to 50 feet beyond the Project limits under the supervision of Con Edison and Engineer.

a. Submit the findings of the post-construction photographic survey to Con Edison and the Engineer for review and approval.

2. The Engineer will complete a post-construction assessment of adjacent structures and features.

a. The assessment of adjacent structures and features will be completed by a professional engineer licensed in the state of New York that must, at

a minimum, include all the structures and features that were assessed prior to the state of Work.

b. The assessment will include video/photographic documentation of the existing conditions of the Site and surrounding structures. The assessment will include still photographs/shots of all cracks and pre-existing damage observed. Video documentation will include a time index. Photographs will be time/date stamped.

c. The assessment will include video/photographic documentation of the post-RA conditions of the Site and surrounding structures. The locations of video/photographic documentation will mirror those collected during the pre-construction survey.

G. Final Acceptance:

1. Submit written certification that confirms the following: Contract Documents have been reviewed, Work has been inspected, Work is complete in accordance with the Contract Documents including satisfactory compliance with any performance guarantees, any previously noted deficiencies have been corrected or remediated, equipment has been tested in presence of Con Edison and the Engineer, and Work is complete and ready for final inspection.

2. Con Edison and the Engineer will inspect Work to verify status of completion.

3. Should Con Edison or the Engineer consider the Work to be incomplete or defective, the Contractor will be notified in writing identifying incomplete or defective Work.

4. Take immediate action to remedy incomplete and deficient Work and send written notice when Work is complete. Con Edison and the Engineer will re-inspect Work to verify the status of completion.

PART 2 MATERIALS

(Not Applicable)

PART 3 EXECUTION

(Not Applicable)

END OF SECTION 01 77 00

SECTION 02 21 00
SURVEYS

PART 1 GENERAL

1.1. SUMMARY

A. The Work required under this section includes furnishing all labor, materials and equipment, and performing all operations required for performing surveying Work.

B. This section details the surveying requirements for the performance of the Work.

1.2. QUALIFICATIONS

A. Subcontract with a Professional Surveyor licensed in the State of New York to serve as the independent surveyor for the Project.

B. The selected surveyor may not be replaced unless the Contractor submits a written request to Con Edison for approval that details the reason(s) for the requested change and includes any noted deficiencies.

1.3. REFERENCE POINTS

A. Established horizontal control points and benchmarks, as needed. Protect the reference points from disturbance during performance of the Work.

B. When laying out and controlling the performance of the Work, use horizontal and vertical datum's that are consistent with those used in the Contract Drawings.

1.4. TERRESTRIAL SURVEY

A. Provide topographic survey, as needed, to control the Work and collect the information required to create the Record Drawings as detailed in Specification Section 01 77 00 – Closeout Procedures.

B. At the conclusion of the Work, provide an ALTA level survey of the Site that meets the requirements of DER-33 / Institutional Controls: A Guide to Drafting and Recording Institutional Controls.

PART 2 PRODUCTS

(Not Applicable)

PART 3 EXECUTION

3.1. TERRESTRIAL SURVEY PERFORMANCE

A. Promptly report to the Engineer the loss or destruction of a reference point.

B. Perform the terrestrial survey Work using a total station with the following measurement tolerances:

1. Horizontal: +/- 0.05 feet.

2. Vertical: +/- 0.01 feet.

C. Keep a complete and accurate log of all survey and control work. Maintain a copy of the log on-Site at all times.

D. Survey crews must comply with all requirements of the Contractor Health and Safety Plan.

END OF SECTION 02 21 00

SECTION 02 41 19
SELECTIVE DEMOLITION

PART 1 GENERAL

1.1. SUMMARY

A. The Work required under this section includes furnishing all labor, materials and equipment and performing all operations required for the partial or complete removal of structures, at grade, above grade, and below grade during the performance of the Work.

1.2. GENERAL

A. Consult the drawings for the extent of all demolition Work required and remove all indicated materials, finishes, and other items indicated thereon to be removed.

1.3 SUBMITTALS

A. Submit a demolition plan as part of the Site Operations Plan to Con Edison for review and approval indicating the proposed methods and sequence of operations for the selective removals and demolition Work, prior to commencement of operations.

PART 2 MATERIALS

(Not Applicable)

PART 3 EXECUTION

3.1. PREPARATION

A. Provide safeguards including warning signs, barricades, temporary fences, warning lights and other items as needed for the protection of all personnel during demolition and removal Work.

B. Protect from damage the existing finish work that is not scheduled for demolition.

C. Section pavement to be removed using complete depth saw cuts.

3.2. GENERAL

A. Remove only the below grade structures indicated for demolition on the Contract Drawings or as directed by Con Edison when unknown structures are encountered. Use precautions to protect existing structures to remain and their finishes during demolition.

B. Remnant foundations to be demolished must be cut in neat lines at the excavation extents. The Contractor may not chase remnant foundation elements outside of the excavation extents. Cut and cap all pipes encountered at the excavation limits to the satisfaction of Con Edison.

C. Do not pull on remnant foundation elements extending outside of the excavation extents, and do not use impact tools to break up remnant foundation elements until they have been sectioned off at the excavation extents.

D. Do not comingle waste streams unless they are intended for disposal at the same facility, and the comingling is acceptable to the facility without altering the disposal cost of the constituent components.

E. Do not use cutting torches until the work area is clear of flammable materials. Verify the condition and content of hidden spaces before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during any flame-cutting operations.

F. Maintain adequate ventilation when using cutting torches.

3.3. MATERIAL HANDLING

A. Store demolished materials on a debris pad, or in a container designed for the purpose.

B. Dispose of any debris in accordance with Section 02 61 00 – Removal and Disposal of Contaminated Material.

C. The on-Site burning of materials is not permitted.

3.4. CLEANUP

A. Remove all debris, residuals, and materials at the conclusion of demolition activities.

END OF SECTION 02 41 19

SECTION 02 61 00
REMOVAL AND DISPOSAL OF CONTAMINATED MATERIALS

PART 1 GENERAL

1.1. SUMMARY

A. The Work required under this section includes furnishing all labor, materials and equipment, and performing all operations required for the pre-characterization, proper management, off-Site transportation, and disposal of waste materials and waste liquids generated during performance of the RA.

1.2. GENERAL

A. Pre-characterization of materials for disposal is the sole responsibility of the Contractor. Pre-characterization data collected in September 2017 will be provided to the contractor for their use. Collect a sufficient number of samples to generate a waste profile that is acceptable to the Con Edison approved disposal facility and obtain acceptance letters for the material.

B. This Section includes transportation of excavated materials and debris to specified disposal facilities. The Contractor is responsible for the cost of all material transportation. Only use routes designated by Con Edison as outlined in the Contract Documents. It is the responsibility of the Contractor to use equipment and personnel capable of navigating the local traffic patterns while maintaining minimum daily production required to meet the Project milestones. The Contractor is responsible for all delays and/or damages (whether direct or incidental) caused by any of the following; trucks not following approved traffic routes, inadequate scheduling of trucks, causing traffic delays, and using equipment that cannot safely navigate the local roadways.

C. The Contractor is solely responsible for proper vehicle loading. Ensure the vehicle contents are properly contained and secured in the vehicle, including proper lining and covering of loads. All vehicles leaving the Site will abide by all applicable load and weight limits. All fines, taxes, penalties, or judgments resulting from overweight or improperly loaded vehicles are the responsibility of the Contractor.

1.3. SUBMITTALS

A. Con Edison will provide the Contractor with the list of disposal facilities that will be used during the Work for the disposal of material from the Site. The Contractor is responsible for finalizing arrangements with Con Edison approved disposal facilities that they intend to use during the performance of the Work.

B. Submit copies of all laboratory results and letters of acceptance from the disposal facilities generated during the pre-characterization.

C. Submit copies of all waste manifests, bills of lading, and certified weight slips from a scale approved for use by Con Edison for all materials removed from the Site for disposal.

D. Submit copies of Permits for all waste transporters.

E. Provide truck driver orientation signature sheets for all truck drivers.

PART 2 PRODUCTS

2.1. IMPACTED MATERIAL CONTAINERS

A. Vehicles and storage containers used for the storage and/or transport of impacted materials must be structurally sound and tight to prevent the leakage or spillage of materials during transit.

B. Provide vehicles and containers used for the storage and/or transport of materials with solid sealable covers. The use of mesh roll top covers is not permitted.

2.2. TRUCK BED LINERS

A. Furnish truck bed liners that are 6-mil (minimum thickness) polyethylene sheets of sufficient length and width to cover the interior bed of the haul truck with no seams, and has sufficient material to completely cover over the load with overlap. Securely fasten the liner before covering the vehicle bed with the solid tarp.

B. Provide staging/ladders so that workers can place liners in the truck bed safely. Drivers may not place liners or cover loads.

PART 3 EXECUTION

3.1. WASTE PRE-CHARACTERIZATION SAMPLING

A. The Site Operations Plan and Contractor sampling plan must be approved by Con Edison before beginning the pre-characterization program.

B. Perform the utility survey detailed in Section 01 33 00 – Submittals prior to beginning the intrusive Work.

C. Generate a waste profile using *in-situ* sampling that is acceptable to the Con Edison approved disposal facility that will receive impacted soil during the performance of the Work.

D. Analyze the samples at a laboratory that holds a current ELAP (Environmental Laboratory Accreditation Program) accreditation, and provide copies of the result to Con Edison and the Engineer.

E. Submit the required materials directly to the disposal facility and submit copies of acceptance letters to Con Edison and the Engineer.

3.2. LOADING AND TRANSPORTATION OF MATERIAL

A. All waste transporters (non-contaminated construction debris and bulky wastes transporters, as well as contaminated waste transporters) must be Con Edison approved.

B. All trucks entering the Site shall be free of contamination and/or visual dirt. Con Edison reserve the right to reject trucks that arrive to the Site dirty.

C. Provide a dedicated flagger for traffic control on Ridge Street as noted in drawings to ensure a smooth flow of traffic and to minimize congestion on Ridge Street during all trucking activities.

D. Appropriately cover trucks filled with excavated material prior to exiting the Site to prevent vapor and fugitive dust emissions during transport. Ensure gross vehicle weight conforms to the most current local, city, state, federal Department of Transportation and bridge and tunnel requirements from the point of origin to the final disposal facility.

E. Perform all Work in and around trucks in appropriate personal protective equipment. Address these specific activities in the Site specific Contractor HASP.

F. Drivers will not be permitted to exit their vehicles within the exclusion zone without proper personal protective equipment and proof of OSHA HAZWOPER 40 hour certification.

G. Vehicles and equipment will not idle in excess of three minutes while on-Site.

H. Staging/ladders must be provided to access truck beds. Drivers and Site workers will not be allowed to climb on vehicles.

I. Visually inspect transport vehicles for evidence of contamination (inside of wheels and undercarriage) prior to leaving the Site. All trucks leaving the Site will proceed to a decontamination station for cleaning prior to exiting onto public roads.

    1. Brush off equipment using a broom and/or brushes within the excavation area prior to movement to the decontamination pads to decrease the amount of respirable particulates leaving the remediation area.

    2. If necessary, and if directed by Con Edison, pressure wash heavy equipment at the decontamination pad before allowing it to leave the Site.

J. Proceed directly to the designated treatment, storage, and disposal facility when departing the Site. No off-Site overnight storage of loaded trucks at locations other than the Con Edison approved disposal facility is permitted.

K. The Contractor is responsible for any and all actions necessary to remedy situations involving material spilled or leaked in transit, or mud or dirt tracked off-Site. This includes trucks carrying imported fill or other materials to the Site (i.e. dust generated from trucks entering the Site on adjacent roads). Perform cleanup in accordance with all applicable Federal, State, and local regulations at no additional cost.

L. All transporters used will be properly licensed, permitted, and certified for the service provided.

M. Do not combine material from the Site with any other material, without Con Edison approval.

N. Con Edison will sign transport bills of lading or manifests. Con Edison will provide a hazardous waste generator number, if required. Turn over all remaining records to Con Edison at the completion of the RA.

O. Ensure that transport vehicles are properly secured, labeled, and placarded prior to exiting the Site.

3.3. TRUCK WEIGHT CHECKS

A. Con Edison may make arrangements for a third party scale to perform periodic checks on loaded vehicles in transit to the disposal facility.

B. Vehicles identified for a third party weight check are to proceed directly to the scale selected for use by Con Edison, and then continue on to the disposal facility.

3.4. DISPOSAL OF MATERIALS

A. Dispose of soil excavated from the Site at a Con Edison approved disposal facility. If the Contractor identifies a facility that is not approved by Con Edison, the Contractor must identify the facility and provide the required documentation to Con Edison for approval prior to utilizing the facility.

B. In the event that material cannot be sent to an approved thermal desorption facility or landfill, notify the Con Edison in writing that the material will require additional analytical sampling, or that it must be disposed of as hazardous waste at a Subtitle C landfill.

C. If any unanticipated materials are encountered during excavation that appear to exhibit hazardous characteristics, these materials should be segregated, stored on Site, sampled, and disposed of appropriately.

D. No Presumed Asbestos Containing Material (PACM) has been observed at the Site. If any PACM is discovered during the course of Work, all Work in the affected area will immediately be stopped and the on-Site Con Edison Construction Representative is to be notified immediately.

E. If decontamination of construction debris and/or bulky material is necessary, it is to be conducted on the decontamination pad.

F. Segregate non-contaminated construction debris and bulky wastes for transport to a Con Edison approved landfill or recycling facility.

G. Dispose of decontamination wastewater at an off-Site liquid waste treatment facility that has been approved for use by Con Edison. Provide all laboratory analysis required by the Con Edison approved facility to dispose of the wastewater.

H. Bulk solid material collected in liquid waste containers, as a result of settling, with excavated material and send to the disposal facility specified for use during the Project.

I. Metal obtained during the performance of the Work may be cleaned, to the satisfaction of Con Edison, and sold as scrap with proceeds to accrue to the Contractor.

END OF SECTION 02 61 00

SECTION 31 09 00
GEOTECHNICAL INSTRUMENTATION

PART 1 GENERAL

1.1. SUMMARY

A. The Engineer will oversee a geotechnical instrumentation program consisting of vibration monitoring during the performance of the Work.

B. The Contractor will implement a program consisting of settlement and crack gauge monitoring during the performance of the Work.

1.2. SUBMITTALS

A. Submit the following information for review and acceptance by Con Edison as part of the Contractors SOP:

1. Details for each type of instrument.

2. Manufacturer's product data or catalogue cuts for instruments to be installed.

3. Installation procedures and details for casing and surface protection.

B. Submit the results of all geotechnical monitoring performed by the Contractor during the Work as part of the Daily Report.

1. At a minimum, provide a summary of the settlement and stability monitoring on a weekly basis as part of the Daily Report. Provide more frequent summaries if requested by Con Edison.

PART 2 PRODUCTS

2.1. VIBRATION MONITORS

A. The Engineer will furnish two (2) Minimate Plus vibration monitors with geophone attachments from Instantel, or Con Edison approved equivalent, for use during the performance of the Work.

2.2. CRACK MONITORING GAUGES

A. Install Crack Monitor Plus gauges by Humboldt based on the results of the pre-construction inspection, as approved by Con Edison and the Engineer. For bidding purposes assume up to 5 crack gauges will be required during the performance of the Work.

2.3. SETTLEMENT MONITORING POINTS

A. Furnish and place settlement monitoring points (SMPs) consisting of refractive lenses at locations shown on the Contract Drawings.

PART 3 EXECUTION

3.1. PROTECTION

A. Protect all instruments from damage due to construction operations, weather, traffic, and vandalism.

B. The Contractor is liable for all costs associated with the replacement of instruments that are damaged as a direct result of their actions or the actions of their Subcontractors.

C. Conduct no Work within 30 feet of damaged instrumentation until the instrument is repaired or replaced, as needed.

3.2. SETTLEMENT AND STABILITY MONITORING

A. Establish a system of settlement and stability monitoring as shown on the Contract Drawings. Perform settlement and stability monitoring using Settlement Monitoring Points (SMPs).

B. Monitor both horizontal and vertical movement of the SMPs.

C. Tolerances:

1. Determine the initial location of each point with respect to a benchmark(s) identified in the settlement monitoring plan portion of the Contractors SOP.

2. Determine the location of points to an accuracy of plus/minus 0.01 feet in the horizontal and vertical direction.

D. Alter the means and methods of the Work if movement exceeding 0.50 inch is measured, unless otherwise approved by Con Edison. The maximum allowable cumulative vertical or horizontal movement measured at any SMP is no more than 1.00-inches. Stop all related construction activities to prevent additional movement if the maximum allowable movement criterion is exceeded. These criteria may be adjusted by Con Edison based on actual conditions experienced on-Site.

3.3. VIBRATION LIMITS

A. Conduct all Work in such a manner that vibrations caused by the Work do not damage nearby structures.

B. Do not allow vibration levels at the adjacent structures to exceed the guidance criteria set forth by USBM RI 8057, excerpted in the table below.

Frequency, Hz	**Maximum Safe Particle Velocity value (in/s)**
1, 2, 3, 4	0.18, 0.36, 0.54, 0.75
4 – 14	0.75
14, 20, 30, 40	0.75, 1.0, 1.4, 2.0
40 – 100	2.0

C. The guidance provided in the USBM maximum safe particle velocity values table does not relieve the Contractor from responsibility with regard to fulfillment of the terms of the Contract and the requirement to protect the existing structures and restore or replace damage caused either directly or indirectly during the performance of the Work.

D. Con Edison or the Engineer may instruct the Contractor to implement vibration reduction strategies in order to mitigate vibration levels which exceed the USBM criteria during the performance of the Work.

E. Requests for an increase in time or relevant pay items related to the implementation of any vibration reduction strategies needed to meet the requirements of this Section will be denied.

3.4. DATA ACQUISITION

A. The Contractor will record daily readings on all crack monitoring gauges during the performance of the Work.

B. The recording of vibration data will be performed by the Engineer, if required.

C. Provide safe access to all Engineer controlled instrumentation equipment located on-Site.

D. The licensed independent surveying Subcontractor must also collect and interpret all SMP data collected during the performance of the Work.

E. Immediately following installation of the SMPs, take an initial set of readings to provide baseline data points and to demonstrate the adequacy of the completed installation.

F. At a minimum, daily monitoring will be required for all SMPs during the excavation Work, unless otherwise specified by Con Edison.

G. Within 24 hours of each survey, submit to Con Edison the latest survey elevations and coordinates at each monitoring point along with all previous survey information as part of the daily report. Notify Con Edison within 30 minutes of a survey measurement that indicates movement greater than or equal to 0.5 inches.

END OF SECTION 31 09 00

SECTION 31 10 00
SITE PREPARATION

PART 1 GENERAL

1.1. SUMMARY

A. The Work required under this section includes furnishing all labor, materials and equipment, and performing all operations required to complete the Site Preparation Work prior to performance of the RA.

B. Work in this section shall include but not be limited to:

1. Clearing and disposal of existing debris and trash within project area.
2. Site Surveys
3. Establish work areas
4. Identify and mark out utilities

1.2. PROTECTION OF EXISTING UTILITIES

A. Comply with the requirements of all applicable utility protection laws or regulations.

B. Contact and cooperate with utility companies to locate all utilities (including pipelines, cables, power poles, guy wires, and other structures) on the Site prior to beginning the Work.

C. Protect all utilities from damage during construction, unless otherwise indicated to be removed or abandoned. If damaged, repair the utilities as required by the utility's owner at the Contractor's expense.

D. If a utility is encountered that is not shown on the Contract Drawings, not identified during a utility mark out, or otherwise made known to the Contractor prior to beginning the Work, promptly take necessary steps to assure that the utility is not damaged, and give written notice to Con Edison and the Engineer. Con Edison and the Engineer will review the conditions and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the utility.

E. Immediately notify Con Edison and the Engineer of any incident involving a utility.

1.3. SUBMITTALS

A. Submit a utility survey as detailed in Specification Section 01 33 00 – Submittals.

B. Submit a utility incident report to Con Edison and the Engineer within 4 hours of any incident causing direct or indirect damage to a utility. At a minimum, document the following items in a utility incident report:

1. Description of the incident.
2. Damage assessment.

3. Corrective actions taken.

4. Initial estimate on the need for permanent repairs.

PART 2 PRODUCTS

(Not Applicable)

PART 3 EXECUTION

3.1. GENERAL SITE PREPARATION ACTIVITIES

A. Clear all debris and rubble from the Work areas and in any other areas which will be used for construction support as noted on the Contract Drawings or as approved by Con Edison and the Engineer.

B. Clear all debris and rubble from the air monitoring station locations as directed by Con Edison.

C. Provide protection for structures and appurtenances during the Work.

D. Provide temporary relocation of appurtenances that have the potential to become damaged during performance of the Work.

E. Establish work zones, temporary facilities, and decontamination facilities.

3.2. CLEAN UP

A. Remove and legally dispose of construction debris and other items having no value to a Con Edison approved disposal site.

END OF SECTION 31 10 00

SECTION 31 23 00
EXCAVATION AND FILL

PART 1 GENERAL

1.1. SUMMARY

A. The Work required under this section includes furnishing all labor, materials, equipment, and performing all operations required for the excavation, handling, backfilling and stabilization of material during the performance of the Work.

B. All excavation and backfill Work performed must be done in a manner complies with the Community Air Monitoring Plan (CAMP) that has been prepared for the Site.

1.2. SUBMITTALS

A. Excavation and Backfilling Plan: Submit an excavation and backfilling plan as part of the Site Operations Plan as described in Specification Section 01 33 00 – Submittals.

B. Borrow Source Evaluation: Submit the results of the borrow source evaluation for each material source as described in Specification Section 01 33 00 - Submittals.

PART 2 PRODUCTS

2.1. BACKFILL

A. Granular Fill:

1. Furnish Granular Fill that is free of organic or deleterious materials and meets the following gradation requirements, or equivalent, as approved by the Engineer.

U.S. Standard Sieve	Percent Finer by Dry Weight
1 inch	100
No. 4	70 to 100
No. 200	0 to 10

2. Complete a Modified Proctor maximum density test via ASTM D1557-latest edition, and grain size analysis via ASTM D6913-latest edition for each sample of sand fill collected.

B. Topsoil:

1. Furnish Topsoil that conforms to material designation Topsoil-Type A in section §713-01 of the New York State Department of Transportation Standard Specification, January 7, 2010 letting, which includes the following gradation requirements:

U.S. Standard Sieve	Percent Finer by Dry Weight

2 inch	100
1 inch	85 to 100
0.25 inch	65 to 100
No. 200	20 to 65
2 micron particle	0 to 20

2. Complete an analysis for pH, organic content, and grain size via ASTM D6913-latest edition, for each sample of Topsoil collected.

C. Environmental Analysis Requirements:

1. In addition to any laboratory analysis required specific to the fill type, analyze each fill sample for RCRA 8 Metals, PCBs by EPA Method 8082, VOCs by EPA Method 8260, and SVOCs by EPA Method 8270C at a laboratory that is appropriately licensed to perform the analysis in the State of New York. Forward analytical results to Con Edison at least two weeks prior to the material being imported to the Site.

2. The imported fill must meet the Commercial Soil Cleanup Objectives listed in Appendix 5 *for Site Investigation and Remediation* published by the NYSDEC to meet the environmental analysis requirements for the Project.

PART 3 EXECUTION

3.1. CAMP REQUIREMENTS

A. Implement airborne dust and vapor suppression measures required to comply with the CAMP and as directed by Con Edison. These actions may include, but are not limited to, any of the following measures:

1. Applying water on exposed soil surfaces and/or roadways to suppress dust.

2. Covering working areas of exposed soils with tarpaulins, vapor suppressing foam, or other vapor controls.

3. Modifying the means and methods of the Work (i.e. using different or additional equipment, etc.).

4. Modifying the production rate (i.e. excavation rate, etc.).

5. Changing the sequence of activities.

3.2. EXCAVATION AND MATERIAL HANDLING

A. Perform excavations in accordance with OSHA regulations.

B. Perform the Work to the lines and grades shown on the Contract Drawings, and remove any debris encountered.

C. Temporary stockpiling will be required due to constraints presented by the available space. Stockpiled material must be placed on stockpile pads that are constructed as shown on the Contract Drawings.

D. Load the material into trucks for disposal at the facility designated for use in the approved Contractor SOP.

1. Perform gravity dewatering of soil within the excavation or within lined roll-off containers, on an as needed basis. Soil should be gravity dewatered such that the water is allowed to be collected and sent to the on-Site wastewater collection system.

2. Use soil amendments only for soils that are inherently too wet and cannot be dried sufficiently using other techniques. Soil amendment includes Cement Kiln Dust (CKD), or other Con Edison approved amendment, that reduces the moisture content of soil/sediment to a level that meets the requirements of the disposal facility. Soil amendments may only be used with the approval of the Con Edison. The use of quick lime and/or lime kiln dust containing greater than 50% Ca/MgO as an amendment to soils is not allowed.

3. Perform localized dewatering on an as needed basis, with Con Edison concurrence, and send the collected wastewater to the on-Site wastewater containment system. Complete the dewatering work in accordance with the excavation and fill portion of the reviewed and accepted Contractor Site Operations Plan.

E. Segregate bulk solid waste and construction debris encountered during the excavation.

F. Remove all historical subsurface structures within the excavation limits, refer to Specification Section 02 41 00 – Selective Demolition for additional requirements on the demolition portion of the Work. If structures not shown on the Contract Drawings are encountered, notify Con Edison immediately. No additional payment will be made for removal of unidentified structures without proper notification and approval from Con Edison.

G. Manage excavated materials in accordance with the Section 02 61 00 – Removal and Disposal of Contaminated Materials.

H. Perform all excavations using excavation sloping/benching consistent with OSHA requirements to ensure slope stability.

I. Handle materials in a manner that will protect Site personnel, the public, and the environment in accordance with all applicable Federal, State, and local laws and regulations, and to prevent cross contamination.

3.3. BORROW SOURCE EVALUATION

A. Perform borrow source evaluations for geotechnical and environmental criteria to ensure that the imported material meets the Project requirements. Submit the results of the borrow source evaluation to Con Edison.

3.4. BACKFILL

A. Backfill the excavation areas to the lines and grades shown on the restoration plan in the Contract Drawings.

B. Do not place backfill without the approval of Con Edison. Placement of backfill prior to Con Edison approval is at the Contractor's risk and may require removal at the Contractor's cost. Commence backfill placement and compaction upon confirmation of the horizontal and vertical limits of the excavation, as directed by Con Edison.

1. Place backfill using a method that does not cross contaminate backfill, or disturb/damage adjacent structures and property.

2. Place and compact backfill in maximum 12-inch lifts.

3. Maintain moisture content within +3 to –3 percent of the optimum moisture content.

4. Perform field geotechnical testing.

5. Compact the sand fill backfill to the percent of the maximum dry density (as determined by Modified Proctor during the borrow source evaluation) indicated in the table. Perform compaction testing to assess the degree of compaction. Do not place overlying lifts of backfill until in place compaction tests indicate that the current layer has been compacted in accordance with this criterion.

Project Area	Percent Compaction (%)	Test Frequency (per lift of material)
Less than 2 feet below finished grade.	90	50 ft by 50 ft

6. Use an appropriately licensed testing Subcontractor that is certified to test soil by ASTM D6938-latest edition, Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods-Shallow Depth.

C. Field Control Quality

1. If compaction testing indicates that the Work does not meet the specified requirements, provide additional compaction, or remove the soil and replace with acceptable backfill.

2. Con Edison reserves the right to reject backfill that differs visually from the identified source material and to randomly test backfill materials for conformance with the specifications. Remove and replace backfill that fails to meet the specifications at no cost to Con Edison.

3. Divert or otherwise prevent surface water from entering excavations to the greatest extent practicable without causing damage or flooding to adjacent properties.

END OF SECTION 31 23 00

SECTION 31 25 00
EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.1. SUMMARY

A. The Work required under this section includes furnishing all labor, equipment, supplies, laboratory testing, materials, and performing all operations required for providing erosion and sediment controls during the performance of the Work.

B. Ensure that all subcontractors comply with the provisions of the specifications.

1.2. EROSION AND SEDIMENT CONTROLS

A. Implement and maintain an Erosion and Sediment Control Plan in accordance with, but not necessarily limited to, the Contract Drawings.

B. Storm water runoff shall be controlled as required for the control of erosion and sedimentation and as required to prevent the discharge of storm water off-Site, which has come into contact with stockpiled soil.

C. Storm water shall be diverted/routed away from temporary facilities, excavations, stockpiles, and management pads to minimize potential contact with excavated soil and to prevent storm water runoff from entering the excavation and temporary facilities.

D. In areas of concentrated vehicular traffic (such as the site access/egress points, vehicle storage or staging areas), exposed soil or pavement surfaces shall be wetted with water as necessary to prevent the release of airborne dust. Perform watering to the extent required to prevent dusting of adjacent properties and streets.

E. Public streets, shall be free of dirt, dust, contaminated materials, or other building/construction materials associated with the Work. If such materials are deposited, spilled, leaked, or spread on off-Site roadway, immediately remove such material.

1.3. CONTROL OF POLLUTANTS OTHER THAN SOIL/MUD/DUST

A. All pollutants that occur on the Site during construction shall be handled and disposed in a manner that does not impact stormwater runoff.

B. Fueling of Contractor’s equipment, to the extent practicable, shall be performed away from storm drain inlets and catch basins.

PART 2 PRODUCTS

2.1. GENERAL

A. All furnished materials must be suitable for their intended use and conform to applicable codes and standards.

B. Install erosion controls at the locations shown on the Contract Documents.

2.2. SILT FENCE

A. Silt Fence and stakes: Refer to New York State Department of Transportation Standard Specifications Section 209.

B. Straw bales and stakes: Refer to New York State Department of Transportation Standard Specifications Section 209.

2.3. INLET PROTECTION – SILT SACK

A. Prefabricated drainage structure inlet protection: Refer to New York State Department of Transportation Standard Specifications Section 209.

B. Prefabricated drainage structure inlet protection will be sized to fit the inlet.

PART 3 EXECUTION

3.1. GENERAL

A. Provide and maintain all erosion controls, as necessary for protection of the environment, throughout the performance of the Work.

B. Conduct operations to minimize erosion of soils and to prevent silting and muddying of lands adjacent to or affected by the Work

C. Ensure that all Subcontractors comply with the provisions of this Specification.

3.2. EROSION CONTROLS

A. Install and maintain the erosion controls as depicted on the Drawings. Install additional silt fence and straw bales as needed and as directed by Con Edison and Engineer.

B. Installation of erosion and sedimentation controls prior to commencing intrusive Work.

C. Maintain erosion and sedimentation control measures until final stabilization of the site has been achieved.

D. Implement additional temporary sedimentation and erosion control measures deemed appropriate by the Engineer.

3.3. STORMWATER RUN-ON/RUN-OFF CONTROL

A. Intercept stormwater and divert it away from excavations and Work areas through use of dikes, ditches, curb walls, pipes, sumps, or other Con Edison-approved means. This requirement includes temporary measures as required to protect adjoining properties from surface drainage caused by construction operations.

B. Prevent stormwater run-on/run-off from transporting materials off-site. Any stormwater coming into contact with contaminants shall be containerized and sent off-site for disposal. Minimize the amount of water requiring transport or treatment.

C. All control measures necessary for stormwater management are the Contractor's responsibility. Should, in the opinion of the Con Edison, the Contractor fail to provide adequate run-on controls, all costs related to the collection, storage and disposal of the resulting impacted storm water shall be the responsibility of the Contractor.

3.4. INSPECTION AND MAINTENANCE

A. Inspect erosion controls on a daily basis during the work. Repair any deficiencies immediately. Maintain records of the inspections at the site in a log book. Log book will be available for review by Con Edison, the Engineer, or the NYSDEC upon request.

B. Inspection and repairs shall be conducted immediately after rain or flooding events, and at least once each day during prolonged rain events.

C. Remove sediment deposits and place them in designated spoil areas. Do not allow sediments to migrate off-site. If sediment has been in contact with contaminated materials, it shall be incorporated into material to be disposed, or further characterized to determine appropriate disposition.

D. Immediately repair damage to erosion and sediment control systems, as directed by the Con Edison.

3.5. STREET SWEEPING

A. Sweep the truck haul route including adjacent sections of Ridge Street and Washington Avenue on a weekly basis.

B. Perform additional street sweeping as directed by Con Edison during the performance of the Work.

3.6. STOCKPILE MANAGEMENT

A. Manage stockpiles in accordance with Sections 01 50 00 – Temporary Facilities Controls.

3.7. DUST MANAGEMENT

A. Manage dust in accordance with Sections 01 57 00 – Temporary Environmental Controls.

END OF SECTION 31 25 00

SECTION 31 37 00
RIPRAP

PART 1 GENERAL

1.1. SUMMARY

A. The Work required under this section includes furnishing all labor, materials, equipment, and performing all operations required for the installation of a riprap slope.

1.2. SUBMITTALS

A. Submit a borrow source evaluation for the riprap and gravel blanket materials to be incorporated into the Work. The requirements for the borrow source submittal are contained in Specification Section 31 23 00 – Excavation and Fill.

PART 2 PRODUCTS

2.1. GRAVEL BLANKET

A. Furnish a gravel blanket that conforms to New York Department of Transportation Standard Specifications, 2008, section 620-2.05.

2.2. RIPRAP

A. Field stone, quarry stone, or rock fragments used for riprap shall be sound, of accepted quality, and free from structural defects. These stones shall have approximately rectangular shapes with one reasonably flat side for the top surface.

B. Furnish riprap materials that conform to New York Department of Transportation Standard Specifications, 2008, section 620, figure 620-1.

PART 3 EXECUTION

3.1. SUBGRADE PREPARATION

A. Excavate the riprap area to the lines and grades shown on the Contract Drawings within an allowable tolerance of plus 15 inches or minus 3 inches from the designated finish surface of the riprap. Either extreme must be reached as a uniform rate over an area greater than 200 square feet

3.2. RIPRAP PLACEMENT

A. Begin placement of the riprap stone at the bottom of the slope and proceed upwards, placing larger stones in the lower courses of the slope

B. Do not drop riprap stone from height greater than 1 foot during placement.

C. The finished riprap is to be free from objectionable pockets of small stones and clusters of large ones.

D. The finished surface at the ends of the riprap is to be flush with the adjacent fill surface

END OF SECTION 31 37 00

SECTION 32 90 00
PLANTING AND LANDSCAPING

PART 1 GENERAL

1.1. SUMMARY

A. The Work required under this section includes furnishing all labor, equipment, supplies, materials, and performing all operations required for the placement of sod.

1.2. QUALITY CONTROL

A. Perform sod placement in accordance with standard local practice and all applicable regulations for the State of New York.

1.3. DELIVERY, STORAGE, AND HANDLING

A. Exercise maximum care to retain the soil existing on the roots of the sod during transporting, handling, and transplanting operations.

B. The dumping or dropping of sod from vehicles is not permitted.

C. Plant sod within twenty-four hours from the time of harvesting, unless it is tightly rolled, or stored roots-to-roots. The maximum period of time from harvesting to planting may not exceed forty-eight hours.

D. All sod in stacks must be kept moist and protected from exposure to the sun and from freezing.

1.4. SUBMITTALS

A. Submit recommended fertilizer application rates with source of recommendation.

B. Submit the location and name of the facility from which the sod will be harvested for use on the Site.

1.5. PROJECT CONDITIONS

A. Perform topsoil preparation and sod placement as soon as possible after completion of remediation, backfilling, and grading.

B. Proceed with sod placement only when existing and forecasted weather conditions permit.

PART 2 PRODUCTS

2.1. FERTILIZER

A. Use a fertilizer that is appropriate for the local soil type and climate.

PART 3 EXECUTION

3.1. GROUND PREPARATION

A. Remove all boulders, stumps, roots, or other objects with any dimension larger than 2 inches from the ground surface.

B. Cultivate the topsoil to a loose depth of approximately 4 inches. Perform plowing, harrowing, cultivating, and all other operations with proper equipment and in such a manner as to break up clods.

C. Fertilize the bare topsoil prior to the placement of the sod.

D. Moisten the ground surface prior to placement of the sod.

3.2. APPLICATION OF TEMPORARY GRASS SEED

A. Apply temporary seeding to areas lacking vegetation if no construction activities will be performed in the area for more than 30 days.

B. Uniformly apply temporary seed at rates recommended by manufacturer, unless otherwise approved by Con Edison.

3.3. APPLICATION OF SOD

A. Lay the sod smoothly, edge to edge, with all openings plugged with sod, except as noted in section 3.4.

B. Stagger vertical joints between sides.

C. Press sod firmly into contact with the sod bed by tamping or rolling immediately after placement.

D. Provide true and even surface, ensure knitting and protect all exposed sod edges without damaging the sod or deforming the finished sod surface.

E. Water the sod immediately after placement.

3.4. COORDINATION WITH IRRIGATION SYSTEM INSTALLATION

A. Cut holes in the sod such that the operation of the automatic sprinkler system, if present at the time of installation, is not impeded.

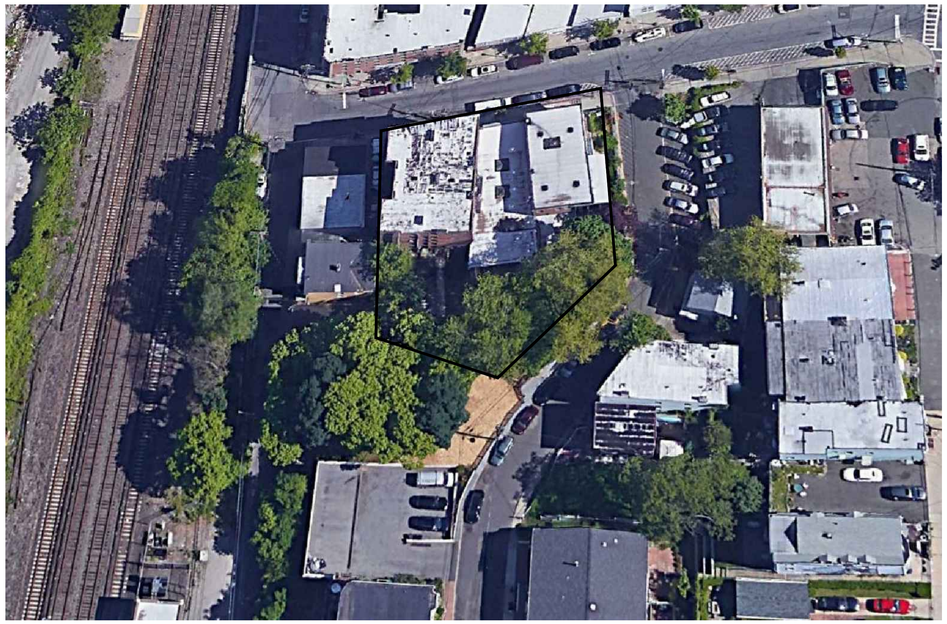
END OF SECTION 32 90 00

REMEDIAL DESIGN WORK PLAN

HASTINGS-ON-HUDSON FORMER MGP SITE
HASTINGS-ON-HUDSON, NEW YORK

SOURCE: ESRI

SITE LOCATION



SOURCE: GOOGLE EARTH

SCHEDULE OF DRAWINGS

Dig Net of NEW YORK CITY & LONG ISLAND
800-272-4480 | 811

811 Know what's below. Call before you dig.

811 Determine lo que esta bajo tierra. Llama antes de excavar.

PREPARED FOR:

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
2151 ST. RAYMOND AVENUE
BRONX, NEW YORK

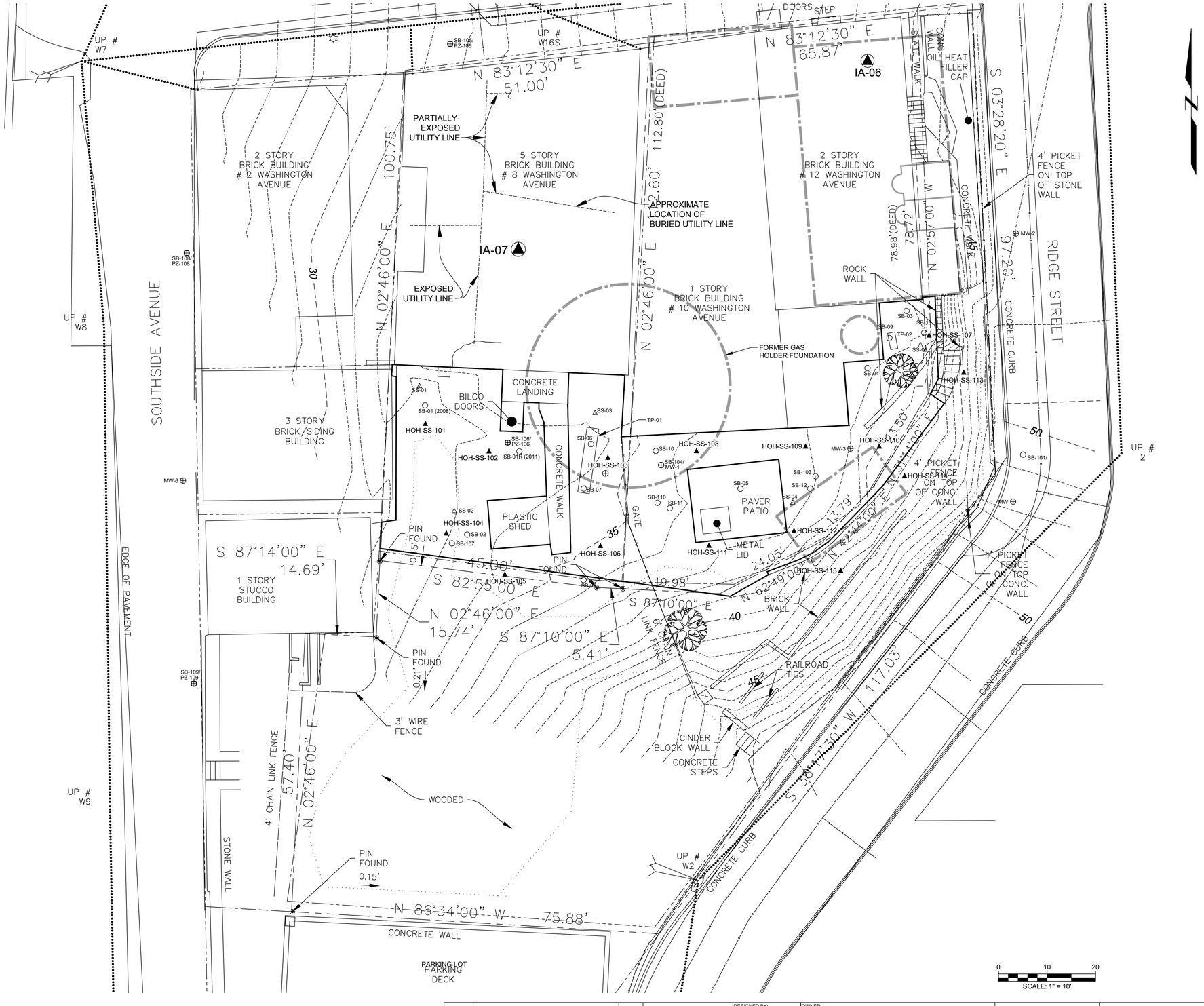
GEI Consultants
GEI CONSULTANTS, INC.
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

Not for Construction

DRAWING NO.

C00

1 OF 13



LEGEND:

- CURRENT PROPERTY BOUNDARY
- 45 — GROUND SURFACE CONTOUR (FT MSL)
- HISTORICAL STRUCTURE
- PATIO — GREY INDICATES 1st FLOOR
- ▲ PRE-DESIGN INVESTIGATION SURFACE SOIL SAMPLE
- ⊕ MONITORING WELL
- ⊞ PIEZOMETER
- ○ SOIL BORING
- △ SURFACE SOIL SAMPLE
- INDOOR AIR
- (2008) INDICATES SAMPLE FROM 2008
- (2011) INDICATES SAMPLE FROM 2011 MOVED DUE TO NYSDEC REQUEST OR PROPERTY OWNER CONCERNS
- ····· OVERHEAD WIRES

NOTE:
INTERIOR BUILDING LAYOUT IS APPROXIMATE; SURVEY INFORMATION WAS OBTAINED FOR EXTERIOR BUILDING FEATURES AND SAMPLING LOCATIONS, AND INTERIOR WALL WITH MIRRORS. SURVEY INFORMATION FOR ENVIRONMENTAL PURPOSES ONLY.

Not for Construction

SOURCES:

1. SURVEYS CONDUCTED BY GEI ON 5/30/08, 9/28/11, AND 6/25/12.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY: -
DRAWN BY: JM/SG
CHECKED BY: -
APPROVED BY: -
DATE: 10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

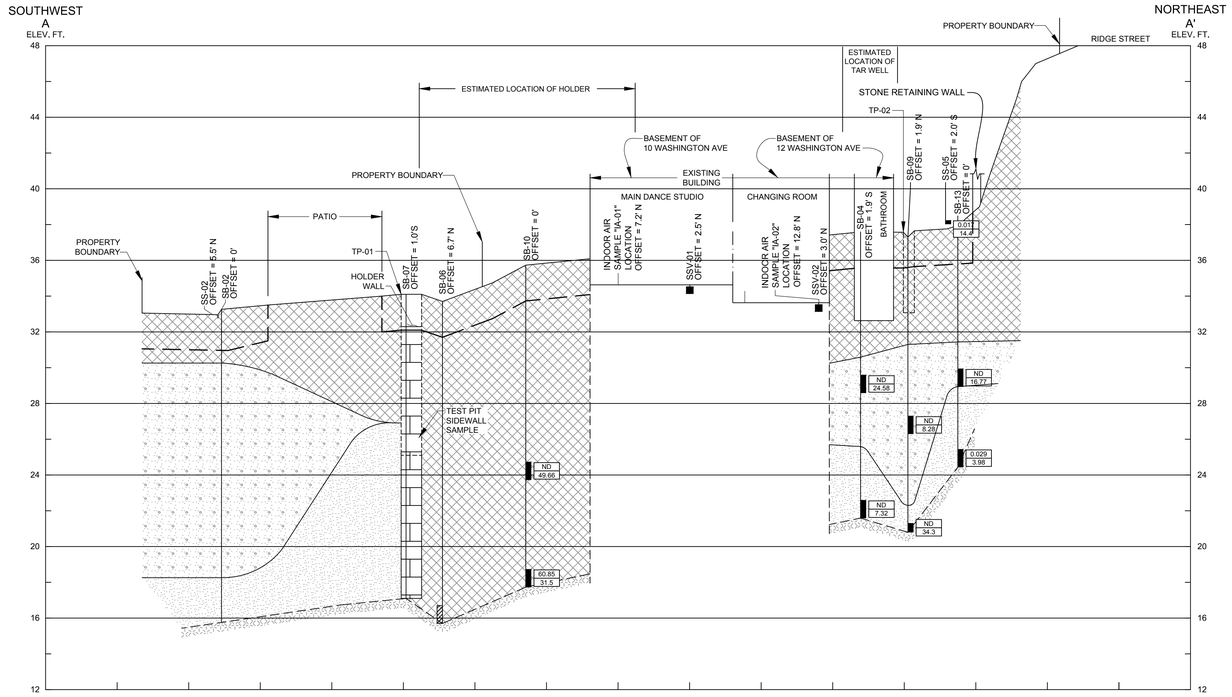
Consolidated Edison Company of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

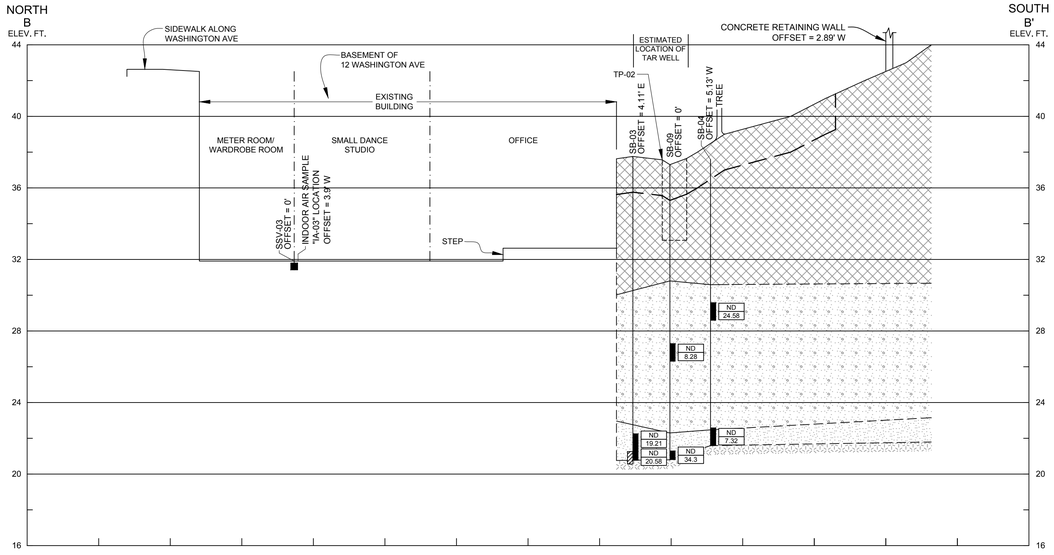
EXISTING CONDITIONS AND EXPLORATIONS PLAN

DRAWING NO.
C01

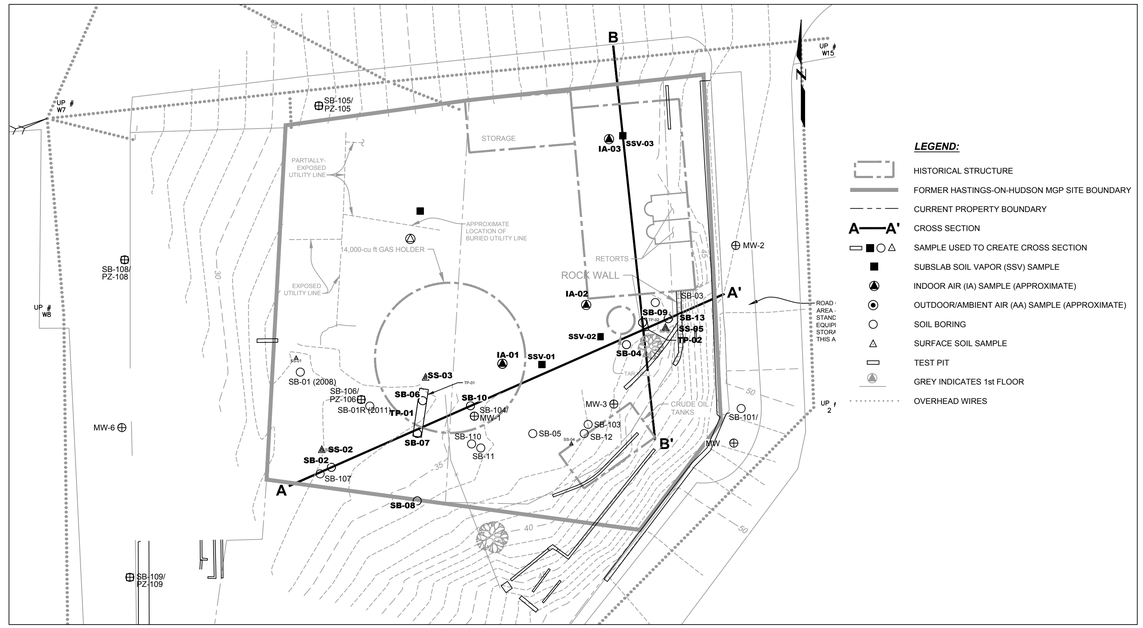
I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg



CROSS SECTION A-A'



CROSS SECTION B-B'



CROSS SECTION LOCATION MAP

0 20 40
SCALE, FEET

NOTES:

1. INTERIOR BUILDING LAYOUT IS APPROXIMATE; SURVEY INFORMATION WAS OBTAINED FOR EXTERIOR BUILDING FEATURES AND SAMPLING LOCATIONS, SUB-SLAB SOIL VAPOR POINTS, AND INTERIOR WALL WITH MIRRORS. SURVEY INFORMATION FOR ENVIRONMENTAL PURPOSES ONLY.
2. GEOLOGICAL CHARACTERIZATION AND INFERENCES BASED ON FIELD OBSERVATIONS OF SOIL CORES FROM GEOPROBE BORINGS AND EXCAVATED TEST PIT MATERIALS; NO LABORATORY TESTING WAS CONDUCTED TO CONFIRM CHARACTERIZATIONS.
3. THE PREFIX "HOH" HAS BEEN OMITTED FROM SAMPLE LOCATION IDS FOR ILLUSTRATION PURPOSES.

SOURCES:

1. SURVEY CONDUCTED BY GEI ON 5/30/08.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

CROSS SECTION LEGEND

PHYSICAL OBSERVATIONS		GEOLOGY	
	PETROLEUM STAINING OR SHEEN		FILL
	CONTACT		WIDE AND NARROWLY GRADED SANDS
	INFERRED CONTACT		FINE SAND
	EXCAVATION LIMITS		WEATHERED ROCK
SB-03	SOIL BORING IDENTIFICATION	ND 19.21	TOTAL VOCs IN SOIL (VOLATILE ORGANIC COMPOUNDS) mg/kg
	ANALYTICAL SOIL SAMPLE INTERVAL		TOTAL SVOCs IN SOIL (SEMIVOLATILE ORGANIC COMPOUNDS) mg/kg
		ND	NOT DETECTED
		mg/kg	MILLIGRAMS/KILOGRAM OR PARTS PER MILLION (ppm)

0 10 20
HORIZONTAL SCALE, FEET

8 4 0
VERTICAL SCALE, FEET

VERTICAL EXAGGERATION: 2.5X

Not for Construction

DISCLAIMER:
IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS AND REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY:	-
DRAWN BY:	JM/SG
CHECKED BY:	-
APPROVED BY:	-
DATE:	10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

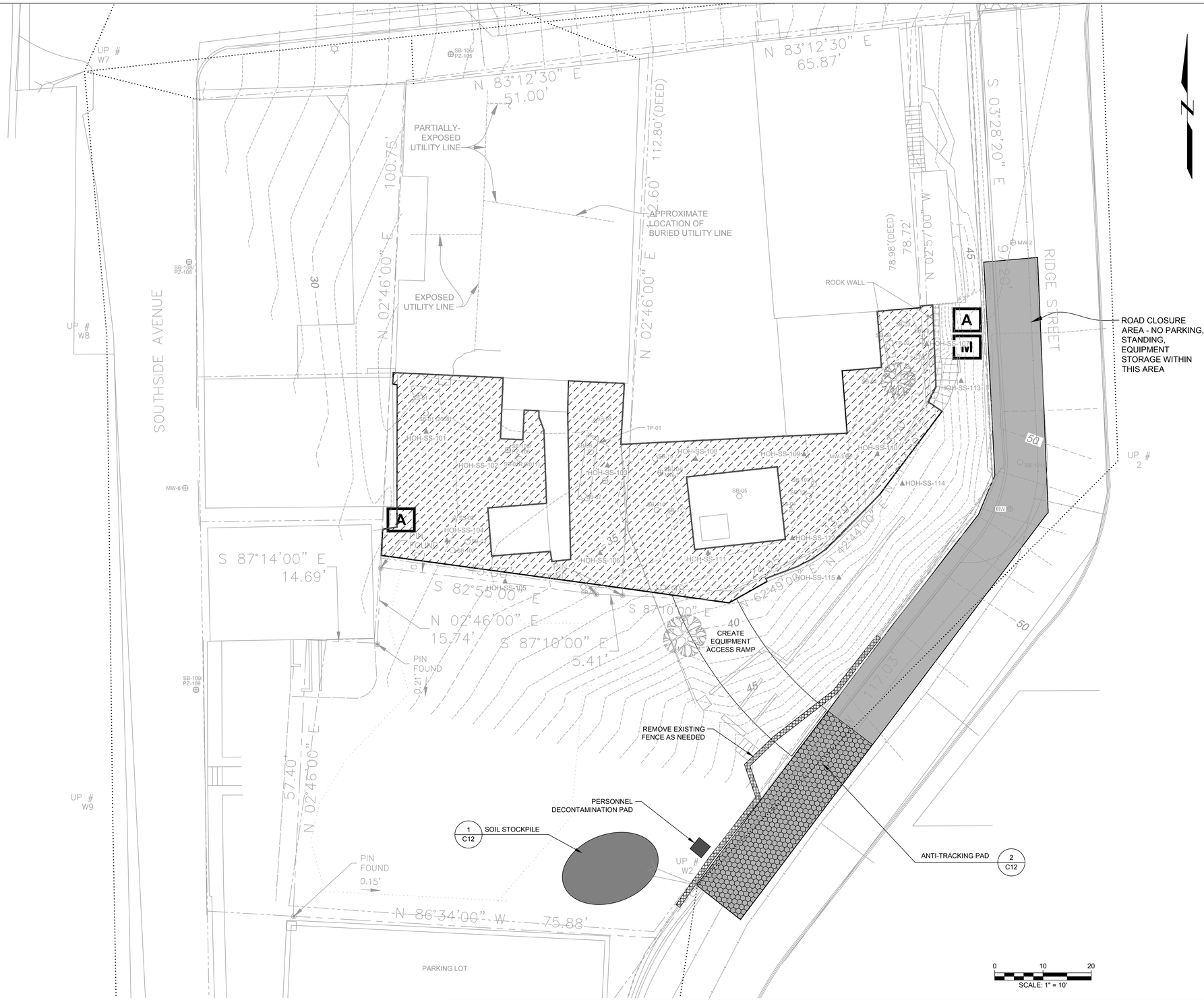
Consolidated Edison Company
of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

GEOLOGIC CROSS SECTIONS

DRAWING NO.
C02

I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg



LEGEND:

- CURRENT PROPERTY BOUNDARY
- 45 GROUND SURFACE CONTOUR (FT MSL)
- A AIR MONITORING STATION
- M METEOROLOGICAL MONITORING STATION
- ROAD CLOSURE AREA
- EXCLUSION AREA
- DEMO EXISTING FENCE
- PERSONNEL DECONTAMINATION PAD
- ANTI-TRACKING PAD
- SOIL STOCKPILE
- OVERHEAD WIRES

SITE OPERATIONS NOTES:

1. THE ROAD MUST BE SWEPT BEHIND EQUIPMENT AS IT IS TRANSPORTED FROM THE SOIL STOCKPILE TO THE TRUCK LOADING AREA.
2. PROVIDE FLAGGERS TO BACK TRUCKS IN TOWARDS THE LOADING AREA ON RIDGE AVE.
3. PROVIDE FLAGGERS TO DIRECT TRAFFIC AROUND TRUCKS STATIONED FOR LOADING.
4. SITE OPERATIONS PLAN IS CONCEPTUAL. CONTRACTOR WILL PROVIDE ANY REVISIONS TO THE WORK LAYOUT IN THE SITE OPERATIONS PLAN.
5. SITE ACCESS RAMP WILL BE INSTALLED AND SIZED TO ACCOMMODATE THE CONTRACTOR'S EQUIPMENT USED IN THE REAR OF THE PROPERTIES.
6. PROVIDE SUFFICIENT SUPPORT EQUIPMENT (WINCH, CABLES, ETC.) AND FLAGGERS DURING TRANSPORT OF EQUIPMENT UP OR DOWN ACCESS RAMP.

Not for Construction

SOURCES:

1. SURVEYS CONDUCTED BY GEI ON 5/30/08, 9/28/11, AND 6/25/12.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

DISCLAIMER:

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS AND REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY:	-
DRAWN BY:	JM/SG
CHECKED BY:	-
APPROVED BY:	-
DATE:	10/13/2017

OWNER:

Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

Consolidated Edison Company of New York, Inc.
New York, New York

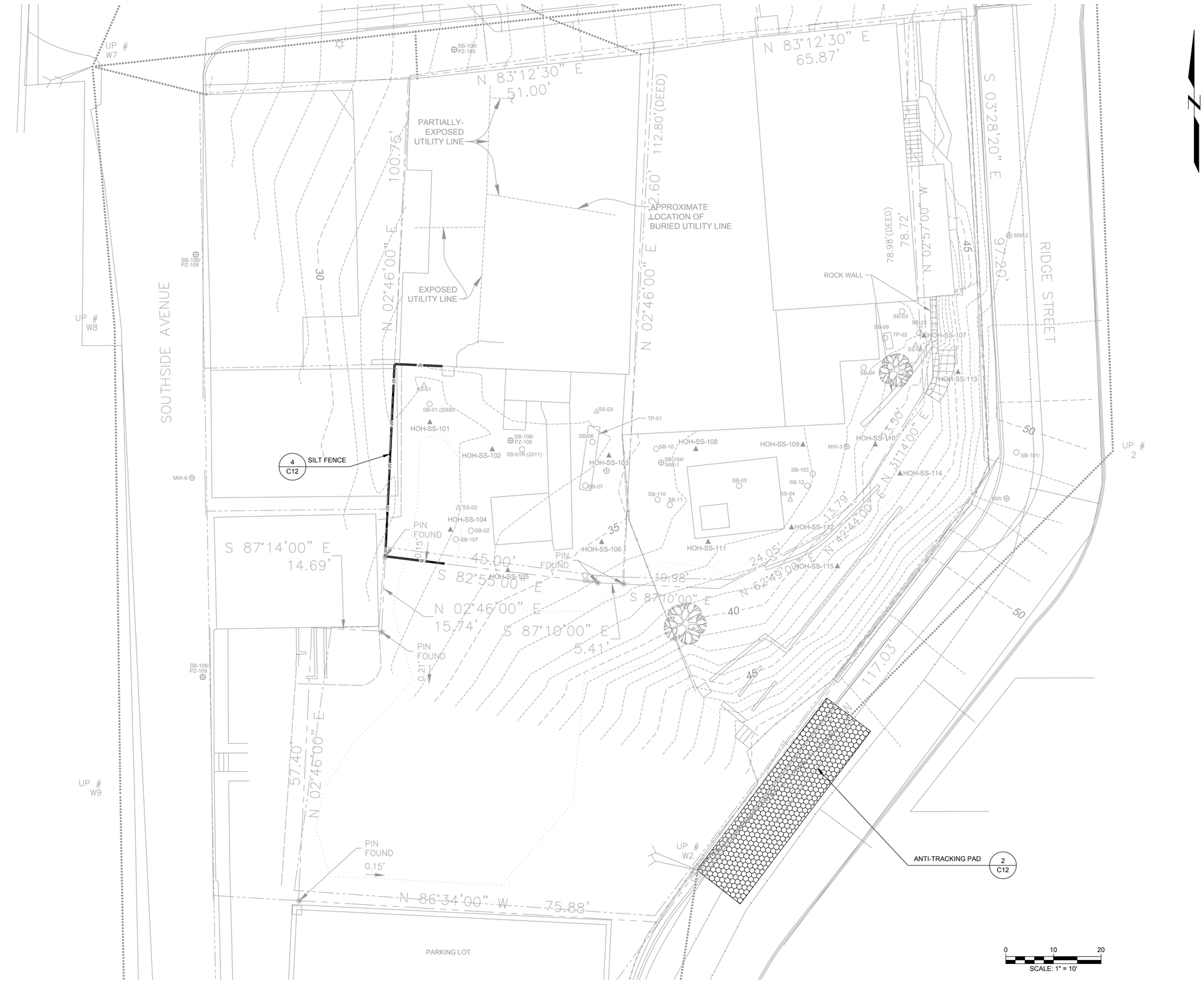
GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

SITE OPERATIONS AND AIR MONITORING PLAN

DRAWING NO.

C03

I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg



LEGEND:

- CURRENT PROPERTY BOUNDARY
- 45 — GROUND SURFACE CONTOUR (FT MSL)
- PATIO — GREY INDICATES 1st FLOOR
- ▲ — PRE-DESIGN INVESTIGATION SURFACE SOIL SAMPLE
- ⊕ — MONITORING WELL
- ⊞ — PIEZOMETER
- ○ — SOIL BORING
- △ — SURFACE SOIL SAMPLE
- (2008) — INDICATES SAMPLE FROM 2008
- (2011) — INDICATES SAMPLE FROM 2011 MOVED DUE TO NYSDEC REQUEST OR PROPERTY OWNER CONCERNS
- ANTI-TRACKING PAD
- OVERHEAD WIRES

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW YORK (NY STANDARDS), AND WILL BE INSTALLED IN PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT STABILIZATION IS ESTABLISHED.
2. THE SITE SHALL AT ALL TIMES BE GRADED AND MAINTAINED SUCH THAT ALL STORM WATER RUNOFF IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES TO ALLOW FOR PROPER DRAINAGE AND PREVENTION OF WATER ACCUMULATION.
3. SOIL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED AND MAINTAINED ON A REGULAR BASIS, INCLUDING AFTER EVERY STORM EVENT.
4. ALL SOIL WASHED, DROPPED, SPILLED OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHT-OF-WAYS, WILL BE REMOVED IMMEDIATELY. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
5. ALL WASTEWATER OR STORMWATER THAT COMES IN CONTACT WITH IMPACTED MATERIALS WILL BE COLLECTED AND CONTAINERIZED FOR OFF-SITE DISPOSAL.
6. DUST SHALL BE CONTROLLED VIA THE APPLICATION OF WATER OR OTHER APPROVED METHOD.

Not for Construction

SOURCES:

1. SURVEYS CONDUCTED BY GEI ON 5/30/08, 9/28/11, AND 6/25/12.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

DISCLAIMER:

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS AND REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY: -
DRAWN BY: JM/SG
CHECKED BY: -
APPROVED BY: -
DATE: 10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

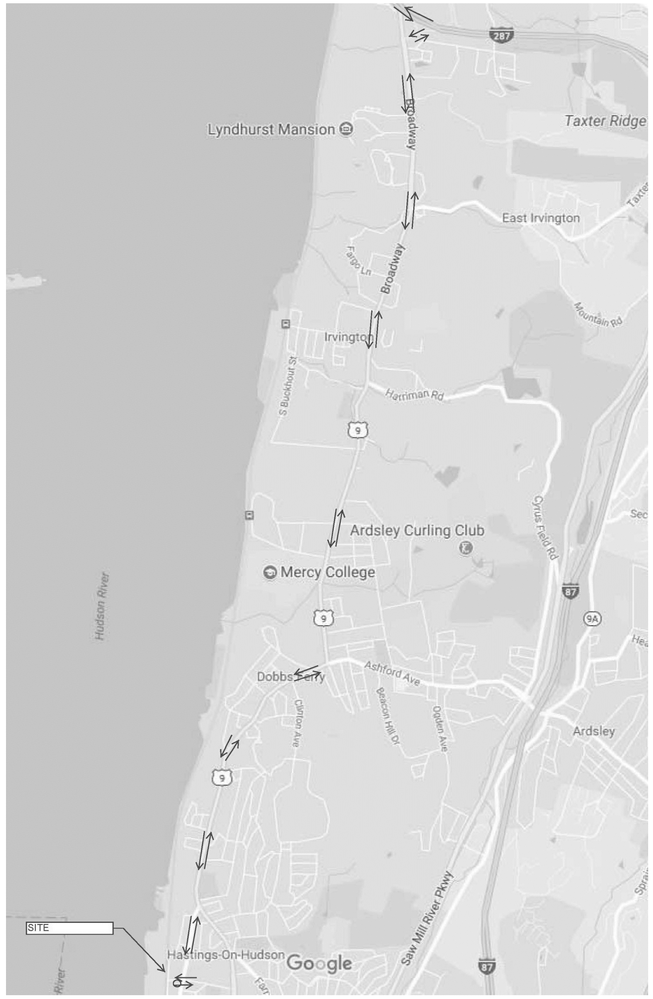
Consolidated Edison Company of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

EROSION AND SEDIMENT CONTROL PLAN

DRAWING NO.
C04

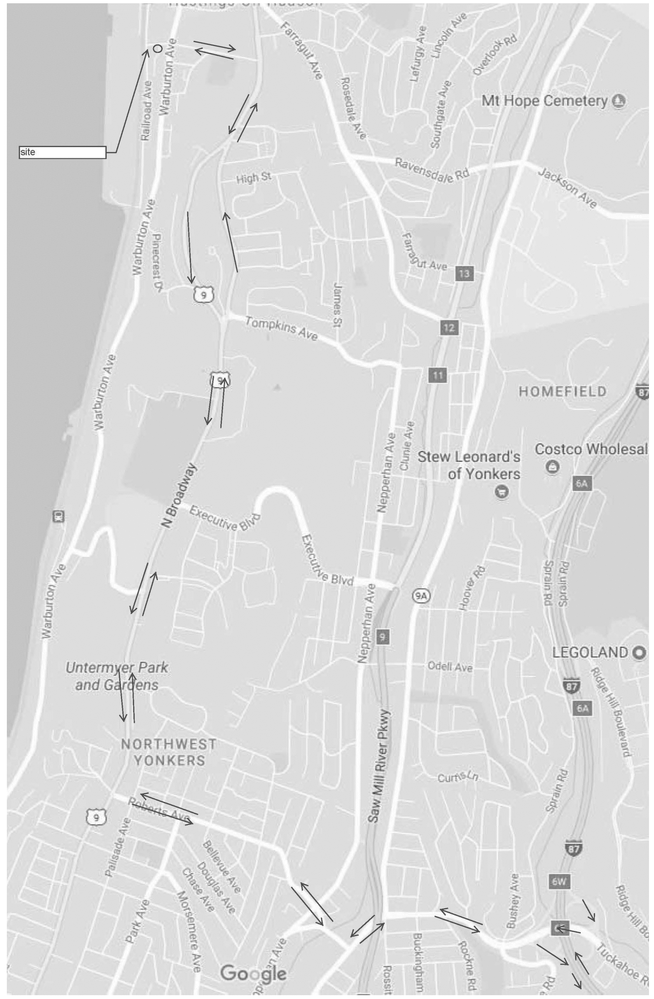
I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg



SOURCE: GOOGLE MAPS

NORTHBOUND TRAFFIC MANAGEMENT PLAN

NOT TO SCALE



SOURCE: GOOGLE MAPS

SOUTHBOUND TRAFFIC MANAGEMENT PLAN

NOT TO SCALE

TRUCK ROUTE NOTES:

1. DO NOT QUEUE TRUCKS AND EQUIPMENT IN LOCAL STREETS.
2. DO NOT IDLE TRUCKS DELIVERING MATERIALS OR AWAITIING LOADING ON SITE OR ON LOCAL STREETS.
3. PROVIDE ALL NECESSARY FLAGGING FOR TRUCKS ENTERING/EXITIING THE SITE.
4. INFORM ALL AUTHORITIES REQUIRED AS TO THE TRUCK TRAFFIC AND ROUTES.
5. FOLLOW APPROVED LOCAL ROUTE TO/FROM I-87.
6. USE ONLY NYCDOT APPROVED THROUGH TRUCK ROUTES TO ENTER AND EXIT NEW YORK CITY.

DIRECTIONS ENTERING THE SITE:

HEADING NORTH ON ROUTE 87:

1. TAKE EXIT 6 FOR TUCKAHOE RD (0.2 MI)
2. KEEP A RIGHT AT THE FORK, FOLLOW SIGNS FOR TUCKAHOE RD W AND MERGE ONTO TUCKAHOE RD (0.6 MI)
3. CONTINUE ONTO SAW MILL RIVER ROAD (0.2 MI)
4. TURN RIGHT ONTO OLD NEPPERHAN AVE (0.1 MI)
5. TURN RIGHT ONTO ROBERTS AVE (0.8 MI)
6. TURN RIGHT ONTO N BROADWAY (2.2 MI)
7. TURN LEFT ONTO WASHINGTON AVE (0.3 MI)
8. TURN LEFT ONTO RIDGE STREET.

HEADING SOUTH ON ROUTE 87:

1. TAKE EXIT 9 FOR US-9 TOWARD TARRYTOWN/SLEEPY HOLLOW (0.2 MI)
2. TURN LEFT ONTO U.S. 9 S/S BROADWAY (3.2 MI)
3. TURN RIGHT ONTO BROADWAY (1.5 MI)
4. TURN RIGHT ONTO WARBURTON AVE (0.4 MI)
5. TURN RIGHT ONTO WASHINGTON AVE (280 FT)
6. TURN LEFT ONTO RIDGE STREET.

DIRECTIONS LEAVING THE SITE:

TO POINTS NORTH:

1. TURN RIGHT ONTO WASHINGTON AVE
2. TURN LEFT ONTO WARBURTON AVE (0.4 MI)
3. TURN LEFT ONTO BROADWAY (1.5 MI)
4. TURN LEFT TO STAY ON BROADWAY (3.4 MI)
5. TURN RIGHT ONTO WHITE PLAINS RD (0.2)
6. TURN RIGHT TO MERGE ONTO THE I-287/I-87 RAMP

TO POINTS SOUTH:

1. TURN RIGHT ONTO WASHINGTON AVE
2. TURN RIGHT ONTO BROADWAY (2.3 MI)
3. TURN LEFT ONTO ROBERTS AVE (0.8 MI)
4. TURN LEFT ONTO OLD NEPPERHAN AVE (0.1 MI)
5. TURN LEFT ONTO SAW MILL RIVER RD (0.1 MI)
6. CONTINUE STRAIGHT ONTO TUCKAHOE ROAD (0.4 MI)
7. TURN RIGHT TO MERGE ONTO I-87 S

Not for Construction

DISCLAIMER:

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS AND REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY: -
DRAWN BY: JM/SG
CHECKED BY: -
APPROVED BY: -
DATE: 10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

Consolidated Edison Company
of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

TRAFFIC MANAGEMENT PLAN

DRAWING NO.
C05

I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg

LEGEND:

- CURRENT PROPERTY BOUNDARY
- 45 — GROUND SURFACE CONTOUR (FT MSL)
- PATIO — GREY INDICATES 1st FLOOR
- ▲ PRE-DESIGN INVESTIGATION SURFACE SOIL SAMPLE
- ⊕ MONITORING WELL
- ⊞ PIEZOMETER
- ○ SOIL BORING
- △ SURFACE SOIL SAMPLE
- (2008) INDICATES SAMPLE FROM 2008
- (2011) INDICATES SAMPLE FROM 2011 MOVED DUE TO NYSDEC REQUEST OR PROPERTY OWNER CONCERNS
- 2-FOOT SURFACE SOIL EXCAVATION AREA
- PROTECTION AREA
- OVERHEAD WIRES

NOTES:

1. INTERIOR BUILDING LAYOUT IS APPROXIMATE; SURVEY INFORMATION WAS OBTAINED FOR EXTERIOR BUILDING FEATURES AND SAMPLING LOCATIONS, AND INTERIOR WALL WITH MIRRORS. SURVEY INFORMATION FOR ENVIRONMENTAL PURPOSES ONLY.
2. REFER TO TEST PIT LOGS INCLUDED WITH THE CONTRACT PACKAGE FOR ADDITIONAL INFORMATION ON HOLDER CONSTRUCTION AND KNOWN OBSTRUCTIONS.

0 10 20
SCALE: 1" = 10'

Not for Construction

SOURCES:

1. SURVEYS CONDUCTED BY GEI ON 5/30/08, 9/28/11, AND 6/25/12.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

DISCLAIMER:

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS AND REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY: -
DRAWN BY: JM/SG
CHECKED BY: -
APPROVED BY: -
DATE: 10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

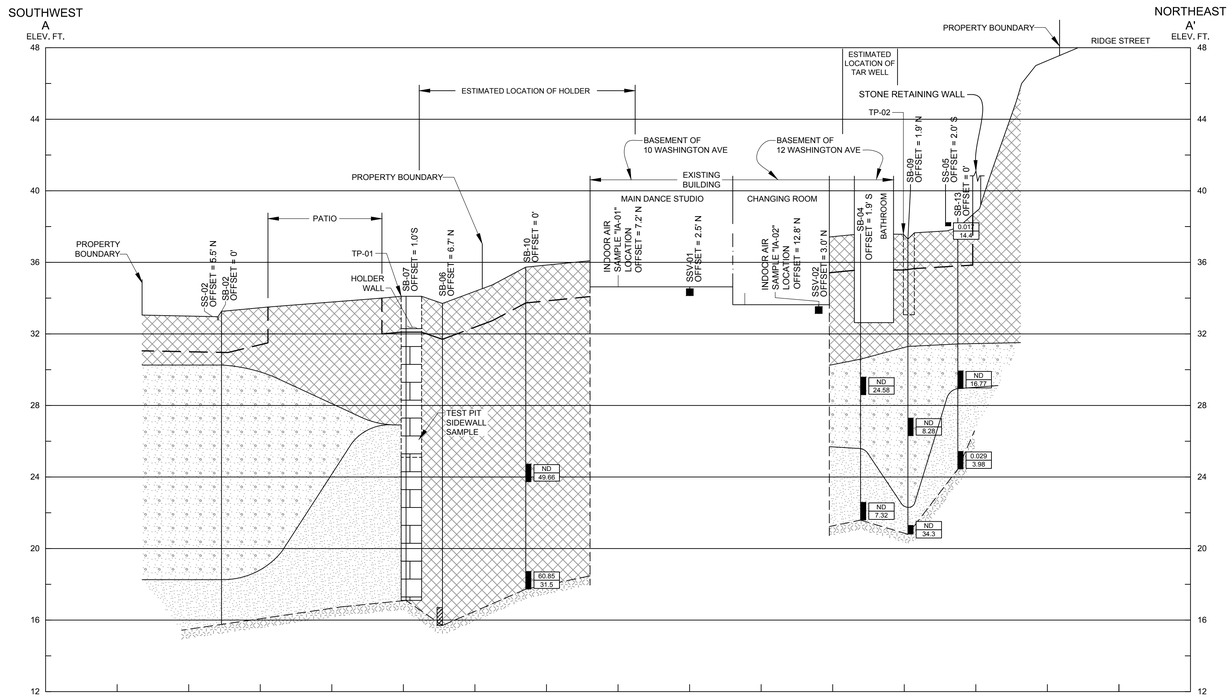
Consolidated Edison Company of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

EXCAVATION PLAN

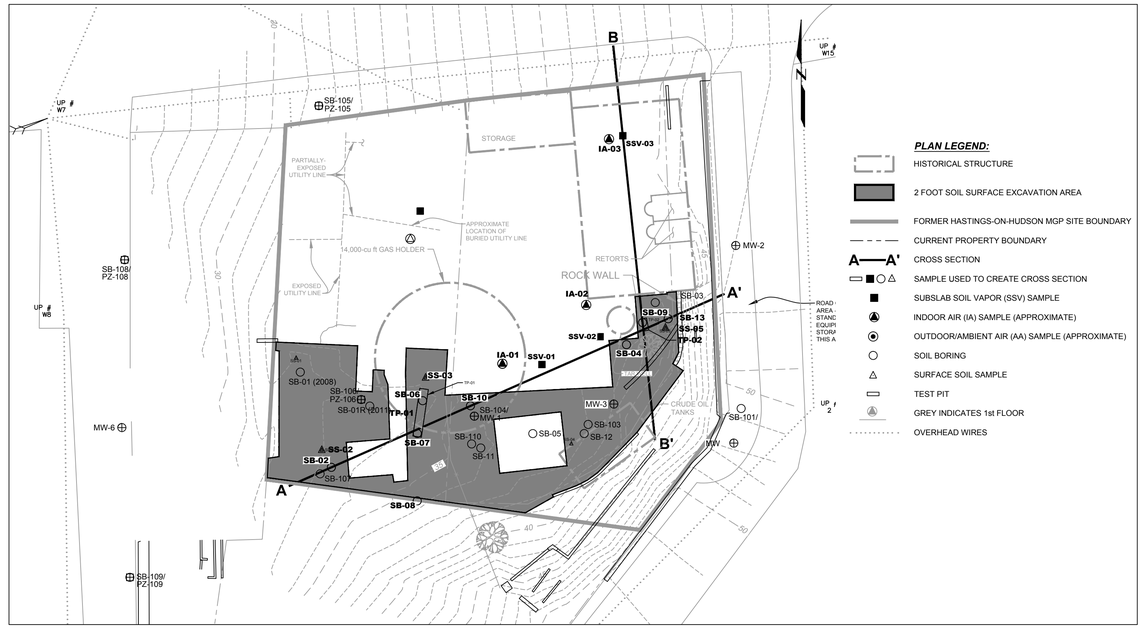
DRAWING NO.
C06

I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg



CROSS SECTION A-A'

CROSS SECTION B-B'



CROSS SECTION LOCATION MAP

0 20 40
SCALE, FEET

0 10 20
HORIZONTAL SCALE, FEET

8 4 0
VERTICAL SCALE, FEET

VERTICAL EXAGGERATION: 2.5X

NOTES:

1. INTERIOR BUILDING LAYOUT IS APPROXIMATE; SURVEY INFORMATION WAS OBTAINED FOR EXTERIOR BUILDING FEATURES AND SAMPLING LOCATIONS, SUB-SLAB SOIL VAPOR POINTS, AND INTERIOR WALL WITH MIRRORS. SURVEY INFORMATION FOR ENVIRONMENTAL PURPOSES ONLY.
2. GEOLOGICAL CHARACTERIZATION AND INFERENCES BASED ON FIELD OBSERVATIONS OF SOIL CORES FROM GEOPROBE BORINGS AND EXCAVATED TEST PIT MATERIALS; NO LABORATORY TESTING WAS CONDUCTED TO CONFIRM CHARACTERIZATIONS.
3. THE PREFIX "HOH" HAS BEEN OMITTED FROM SAMPLE LOCATION IDS FOR ILLUSTRATION PURPOSES.
4. WATER TABLE WAS NOT ENCOUNTERED ABOVE THE BEDROCK SURFACE WITHIN THE REMEDIAL AREA.

SOURCES:

1. SURVEY CONDUCTED BY GEI ON 5/30/08.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

CROSS SECTION LEGEND

PHYSICAL OBSERVATIONS		GEOLOGY	
	PETROLEUM STAINING OR SHEEN		FILL
	CONTACT		WIDE AND NARROWLY GRADED SANDS
	INFERRED CONTACT		FINE SAND
	EXCAVATION LIMITS		WEATHERED ROCK
SB-03	SOIL BORING IDENTIFICATION	ND 19.21	TOTAL VOCs IN SOIL (VOLATILE ORGANIC COMPOUNDS) mg/kg
	ANALYTICAL SOIL SAMPLE INTERVAL		TOTAL SVOCs IN SOIL (SEMIVOLATILE ORGANIC COMPOUNDS) mg/kg
		ND	NOT DETECTED
		mg/kg	MILLIGRAMS/KILOGRAM OR PARTS PER MILLION (ppm)

DISCLAIMER:
IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS AND REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

Not for Construction

DESIGNED BY: -
DRAWN BY: JM/SG
CHECKED BY: -
APPROVED BY: -
DATE: 10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

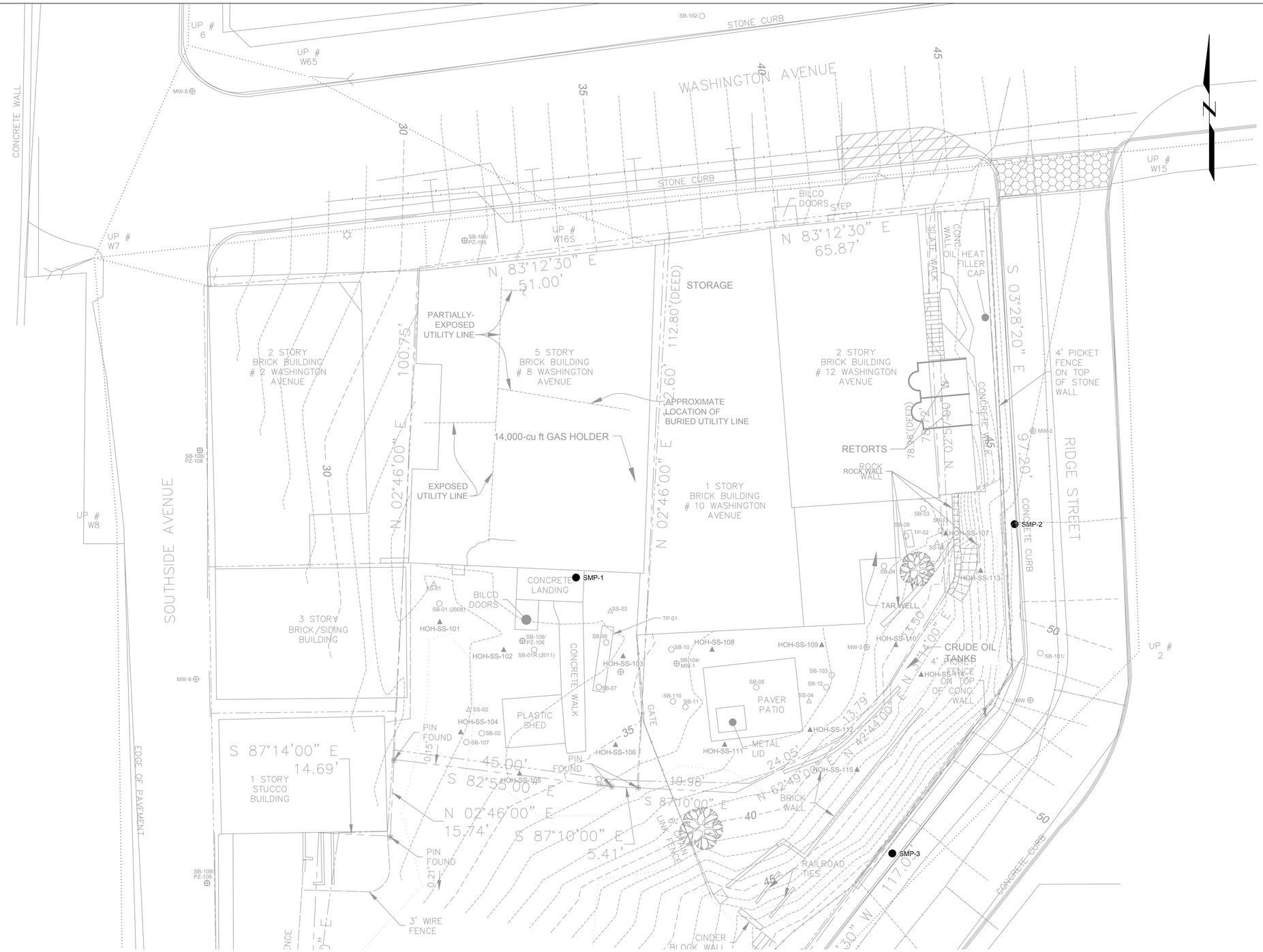
Consolidated Edison Company
of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

EXCAVATION CROSS SECTIONS

DRAWING NO.
C07

I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg



LEGEND:

——– – ——–	CURRENT PROPERTY BOUNDARY
– – 45 – –	GROUND SURFACE CONTOUR (FT MSL)
PATIO	GREY INDICATES 1st FLOOR
▲	PRE-DESIGN INVESTIGATION SURFACE SOIL SAMPLE
⊕	MONITORING WELL
⊞	PIEZOMETER
○	SOIL BORING
△	SURFACE SOIL SAMPLE
(2008)	INDICATES SAMPLE FROM 2008
(2011)	INDICATES SAMPLE FROM 2011 MOVED DUE TO NYSDEC REQUEST OR PROPERTY OWNER CONCERNS
● SMP	SETTLEMENT MONITORING POINT
.....	OVERHEAD WIRES

NOTE:
INTERIOR BUILDING LAYOUT IS APPROXIMATE; SURVEY INFORMATION WAS OBTAINED FOR EXTERIOR BUILDING FEATURES AND SAMPLING LOCATIONS, AND INTERIOR WALL WITH MIRRORS. SURVEY INFORMATION FOR ENVIRONMENTAL PURPOSES ONLY.

Not for Construction

SOURCES:
1. SURVEYS CONDUCTED BY GEI ON 5/30/08, 9/28/11, AND 6/25/12.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY: -
DRAWN BY: JM/SG
CHECKED BY: -
APPROVED BY: -
DATE: 10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

Consolidated Edison Company of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

GEOTECHNICAL MONITORING PLAN

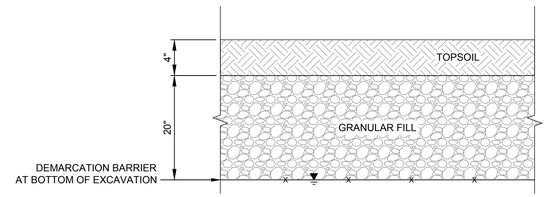
DRAWING NO.
C08

I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg

LEGEND:

- FORMER HASTINGS-ON-HUDSON MGP SITE BOUNDARY
- CURRENT PROPERTY BOUNDARY
- 45 — GROUND SURFACE CONTOUR (FT MSL)
- PATIO — GREY INDICATES 1st FLOOR
- ▲ — PRE-DESIGN INVESTIGATION SURFACE SOIL SAMPLE
- ⊕ — MONITORING WELL
- ⊞ — PIEZOMETER
- ○ — SOIL BORING
- △ — SURFACE SOIL SAMPLE
- (2008) — INDICATES SAMPLE FROM 2008
- (2011) — INDICATES SAMPLE FROM 2011 MOVED DUE TO NYSDEC REQUEST OR PROPERTY OWNER CONCERNS
- BACKFILL AREA
- OVERHEAD WIRES

NOTE:
INTERIOR BUILDING LAYOUT IS APPROXIMATE; SURVEY INFORMATION WAS OBTAINED FOR EXTERIOR BUILDING FEATURES AND SAMPLING LOCATIONS, AND INTERIOR WALL WITH MIRRORS. SURVEY INFORMATION FOR ENVIRONMENTAL PURPOSES ONLY.



1 - DETAIL
BACKFILL SECTION

SCALE: N.T.S.

BACKFILL SECTION NOTES:

1. BACKFILL WITH GRAVEL TO THE TOP OF THE WATER TABLE, IF NEEDED. LEVEL AND TAMP BACKFILL PRIOR TO PLACING DEMARCATION BARRIER.
2. PLACE DEMARCATION BARRIER AT VERTICAL LIMITS OF EXCAVATION OR OVER THE GRAVEL FILL, IF USED.
3. SPECIFIC DEPTH OF GRANULAR FILL WILL BE BASED ON FINAL RESTORATION AS DETERMINED BY THE PROPERTY OWNER.

Not for Construction

SOURCES:

1. SURVEYS CONDUCTED BY GEI ON 5/30/08, 9/28/11, AND 6/25/12.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY: -
DRAWN BY: JM/SG
CHECKED BY: -
APPROVED BY: -
DATE: 10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

Consolidated Edison Company
of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

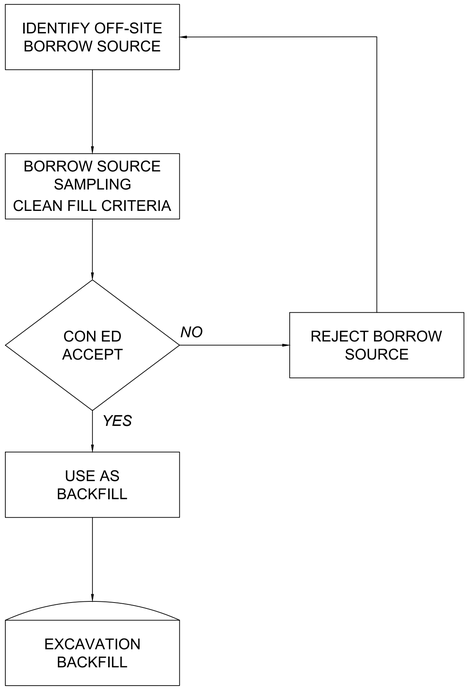
BACKFILL PLAN

DRAWING NO.
C09

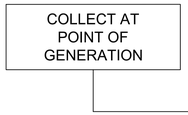
I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg

MATERIAL MANAGEMENT FLOW CHARTS

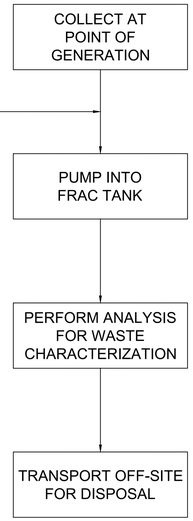
BORROW SOURCE EVALUATION



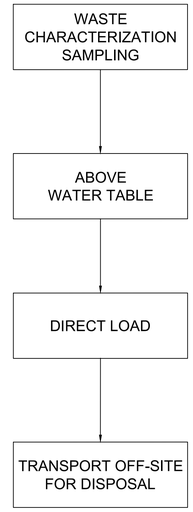
LOCALIZED DEWATERING WATER



DECONTAMINATION WASTEWATER



EXCAVATED MATERIAL MANAGEMENT



BORROW SOURCE EVALUATION NOTES:

1. CLEAN FILL MATERIAL MUST MEET THE FOLLOWING CRITERIA:

   ANALYTICAL = UNRESTRICTED USE

   GEOTECHNICAL = GRADATION AND MATERIAL REQUIREMENTS LISTED IN THE CONTRACT DOCUMENTS.

MATERIAL MANAGEMENT NOTES:

1. ALL WASTE FACILITIES MUST BE APPROVED BY CONSOLIDATED EDISON FOR THE WASTES THAT ARE BEING TRANSPORTED TO THEM.
2. ALL WASTE STREAMS MUST BE SHIPPED USING PROPERLY LICENSED CONSOLIDATED EDISON APPROVED TRANSPORTERS.

WASTE CHARACTERIZATION NOTES:

1. PRE-CHARACTERIZATION MUST BE COMPLETE AND FACILITY ACCEPTANCE LETTERS RECEIVED BEFORE BEGINNING THE EXCAVATION WORK.
2. SCHEDULE PRE-CHARACTERIZATION WORK WITH CONSOLIDATED EDISON.
3. PERFORM LABORATORY ANALYSIS AS REQUIRED BY THE DISPOSAL FACILITY FOR ACCEPTANCE.

Not for Construction

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY: -
DRAWN BY: JM/SG
CHECKED BY: -
APPROVED BY: -
DATE: 10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

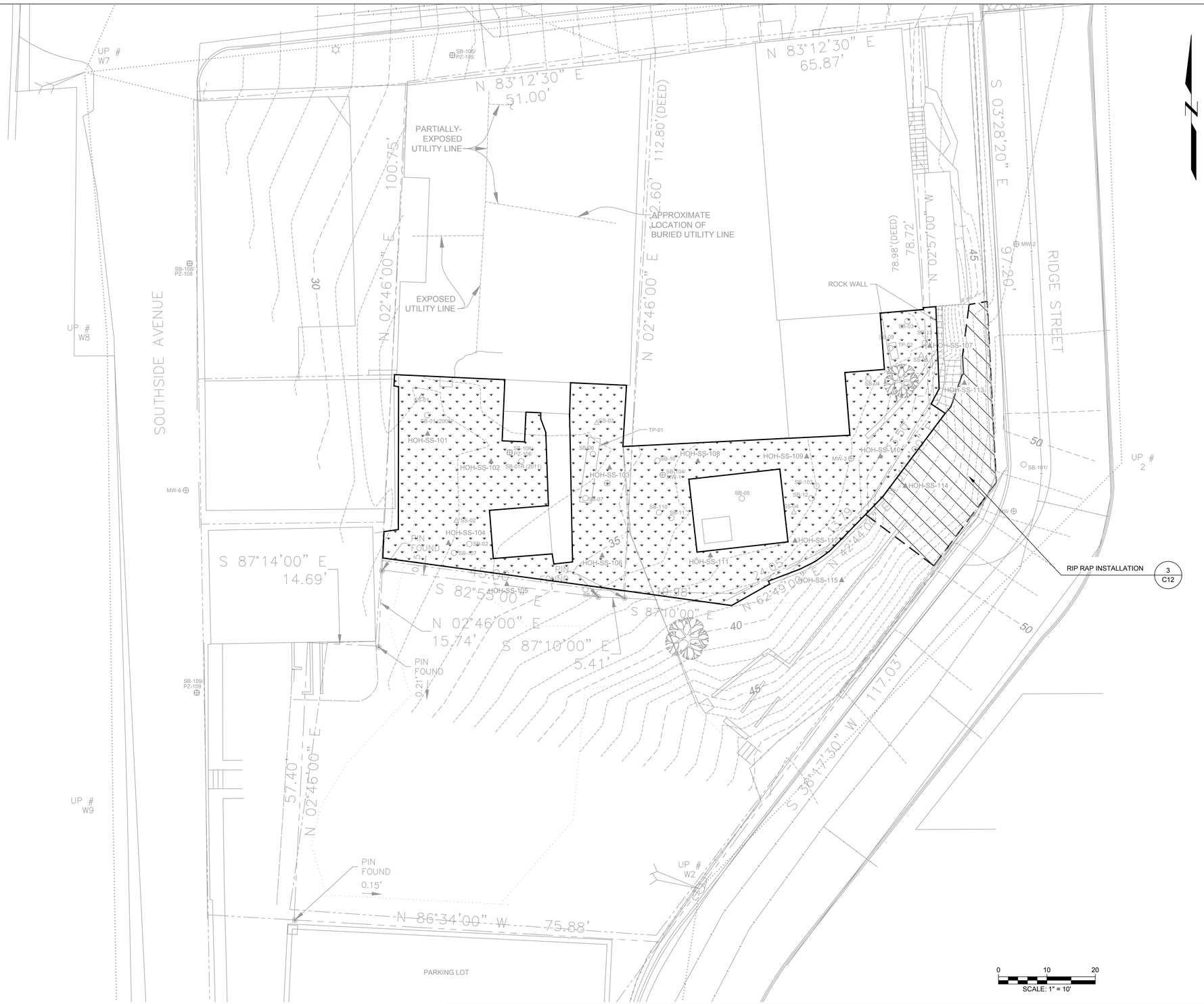
Consolidated Edison Company
of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

MATERIALS MANAGEMENT PLAN

DRAWING NO.
C10

I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg



LEGEND:

- CURRENT PROPERTY BOUNDARY
- 45 — GROUND SURFACE CONTOUR (FT MSL)
- PATIO — GREY INDICATES 1st FLOOR
- ▲ — PRE-DESIGN INVESTIGATION SURFACE SOIL SAMPLE
- ⊕ — MONITORING WELL
- ⊞ — PIEZOMETER
- ○ — SOIL BORING
- △ — SURFACE SOIL SAMPLE
- (2008) — INDICATES SAMPLE FROM 2008
- (2011) — INDICATES SAMPLE FROM 2011 MOVED DUE TO NYSDEC REQUEST OR PROPERTY OWNER CONCERNS
- GRASS
- RIP-RAP SLOPE INSTALLATION AREA
- OVERHEAD WIRES

NOTE:
INTERIOR BUILDING LAYOUT IS APPROXIMATE; SURVEY INFORMATION WAS OBTAINED FOR EXTERIOR BUILDING FEATURES AND SAMPLING LOCATIONS, AND INTERIOR WALL WITH MIRRORS. SURVEY INFORMATION FOR ENVIRONMENTAL PURPOSES ONLY.

Not for Construction

SOURCES:

1. SURVEYS CONDUCTED BY GEI ON 5/30/08, 9/28/11, AND 6/25/12.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY; SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

DISCLAIMER:
IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS AND REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY:	-
DRAWN BY:	JM/SG
CHECKED BY:	-
APPROVED BY:	-
DATE:	10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

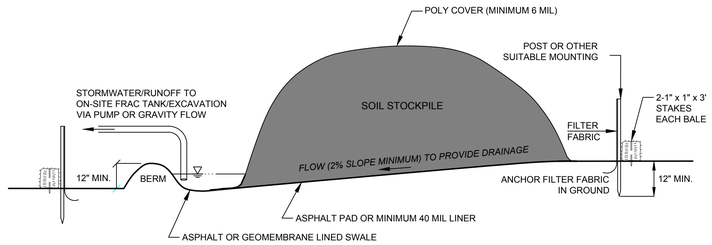
Consolidated Edison Company
of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

RESTORATION PLAN

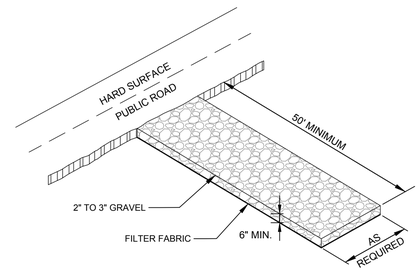
DRAWING NO.
C11

I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg



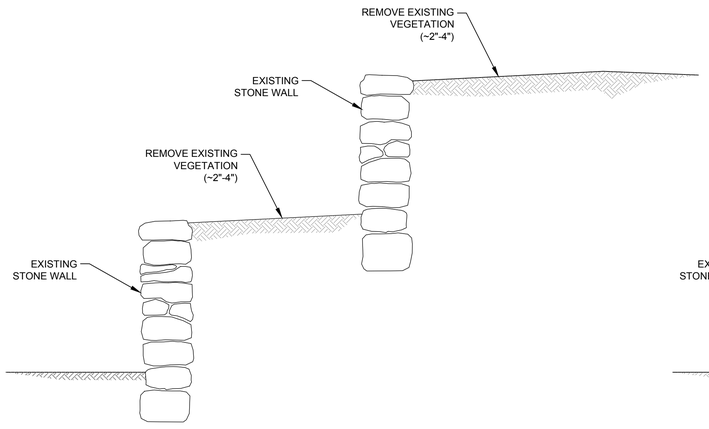
1 C03 SOIL/ DEBRIS STOCK PILE PAD
SCALE: N.T.S

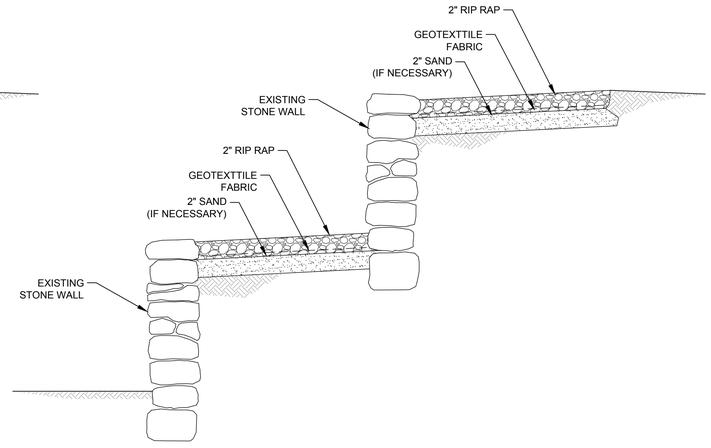
SCALE: N.T.S.



2 C03 DETAIL
ANTI-TRACKING PAD

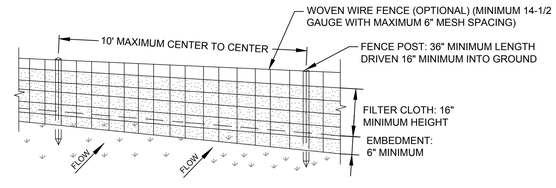
SCALE: N.T.S.



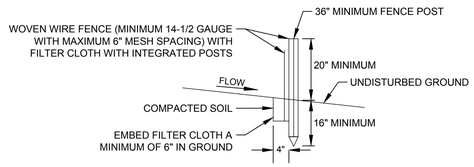


3 C11 DETAIL (TYPICAL)
RIP RAP INSTALLATION

SCALE: N.T.S.



PERSPECTIVE VIEW



SECTION VIEW

4 C04 DETAIL
WOVEN SILT FENCE

SCALE: N.T.S.

WOVEN SILT FENCE NOTES:

1. FASTEN WOVEN WIRE FENCE SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FASTEN FILTER CLOTH SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24-INCHES AT TOP AND MID-SECTION. FENCE SHALL BE WOVEN WIRE, 14 1/2 GAUGE, 6-INCH MAXIMUM MESH OPENING.
3. OVERLAP ADJACENT FILTER CLOTH SIX INCHES AND FOLD. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. PERFORM MAINTENANCE AS NEEDED AND REMOVE MATERIAL WHEN "BULGES" DEVELOP.
6. FILTER FABRIC WITH INTEGRATED STAKES MAY BE USED INSTEAD OF WIRE FENCE.

Not for Construction

DATE	REVISION	BY
10/13/17	FOR REVIEW	-

DRAFT

DESIGNED BY: -
DRAWN BY: JM/SG
CHECKED BY: -
APPROVED BY: -
DATE: 10/13/2017

OWNER:
Remedial Action Work Plan
Hastings-On-Hudson Former MGP
Hastings-On-Hudson, New York

Consolidated Edison Company
of New York, Inc.
New York, New York

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CT 06033
(860)368-5300

DETAILS

DRAWING NO.
C12

I:\Project\CON_ED\HASTINGS-ON-HUDSON\070251\CAD\Design\Working\070251-1.dwg

Appendix C

Community Air Monitoring Plan

GEI Consultants

Consulting
Engineers and
Scientists

Community Air Monitoring Plan
Hastings-on-Hudson Former MGP Site

Hastings-on-Hudson, New York
VCA Index 02-0003-02-08
Site ID: V00728

Prepared for:
Consolidated Edison Company of New York
31-01 20th Avenue
Long Island City, NY 11105

Prepared by:
GEI Consultants, Inc., P.C.
400 Unicorn Park Drive
Woburn, MA 01801
781-721-4000

October 2017
Project 07250-17.1701

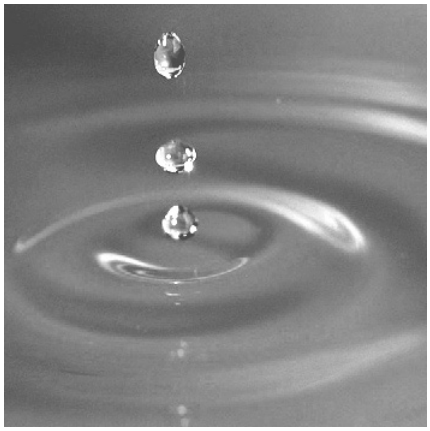


Table of Contents

Tables

Figures

Attachment 1

JT:MO:JG/amm

H:\WPROC\Project\CON-ED\HastingsOnHudsonSChar070251\RAWP\Draft-to-ConEd-101317\Appendix C - CAMP\CAMP.V00728.2017-11-01.docx

Abbreviations and Acronyms

CAMP	Community Air-Monitoring Plan
Con Edison	The Consolidated Edison Company of New York, Inc.
DER-10	[Division of Environmental Remediation]-10, Technical Guidance for Site Investigation and Remediation
GEI	GEI Consultants, Inc., P.C.
MGP	Manufactured Gas Plant
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PID	Photoionization Detector
PM-10	Particulate Matter Less than 10 Micrometers in Size
TVOC	Total Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

MEASUREMENTS

$\mu g/m^3$	micrograms per meter cubed
ppm	parts per million

Executive Summary

This Community Air Monitoring Plan (CAMP) Work Plan has been developed to provide procedures for measuring, documenting, and responding to potential airborne contaminants during intrusive activities below the clean soil cover associated with the Hastings-on-Hudson Manufactured Gas Plant (MGP). The procedures in this CAMP focus on air monitoring techniques and contingency measures designed to mitigate potential airborne contaminants. This CAMP Work Plan is based on the CAMP guidelines established by the New York State Department of Health (NYSDOH) in the New York State Department of Environmental Conservation (NYSDEC) *DER-10 Technical Guidance for Site Investigation and Remediation* (DER-10) (NYSDEC, 2010).

The CAMP provides Air Monitoring Procedures, Alert Levels, Response Levels, Action Levels, and Contingency Measures if Action Levels are approached. Alert Levels are internally established concentration levels for volatile organic compounds only and are not established by the NYSDOH or NYSDEC. Alert Levels are set below the levels established by the NYSDOH so that actions can be taken prior to exceeding a NYSDOH threshold. An Alert Level serves as a screening tool to trigger contingent measures if necessary, to assist in minimizing off-site transport of contaminants during remedial activities. A Response Level is a contaminant concentration level that triggers a temporary work stoppage, continued monitoring, and potential contingent measures. An Action Level is a contaminant concentration that triggers work stoppage and implementation of contingent measures to mitigate potential airborne contaminants prior to resuming work activities. Response Levels and Action Levels are NYSDOH threshold levels established in the May 2010 NYSDOH Generic CAMP presented in Appendix 1A of DER-10. Exceedances of either Response Levels or Actions Levels will be reported to NYSDEC and NYSDOH.

During times of ground intrusive perimeter air monitoring will be conducted using a combination of fixed-station, moveable tripod-mounted, and "walk-around" air monitoring equipment (as appropriate). Monitoring will be performed for total volatile organic compounds and dust along the Site perimeter 24 hours a day when fixed stations are used or during working hours if the movable tripod-mounted units are used. The Contingency Plan defines Alert Levels, Response Levels, Action Levels, and specific contingency measures to be implemented. The response actions, potentially including work stoppage and work area controls by various methods, are intended to prevent or significantly reduce the migration of airborne contaminants from the Site.

GEI Consultants, Inc., P.C. (GEI) will implement the CAMP and will report any exceedance of Response Levels and Action Levels to the Contractor, Consolidated

Edison Company of New York, Inc. (Con Edison), NYSDOH, and NYSDEC. As specified in the DER-10, all 15-minute readings will be recorded and be available for State (NYSDEC and NYSDOH) personnel to review. The contractor conducting intrusive activities below the clean soil cover will be responsible for enacting contingency measures to respond to Alert Levels, if necessary, and to the exceedances of Alert and Action Levels as they may occur. GEI will provide data summary reports to the Contractor, Con Edison, and NYSDEC each week during ground intrusive activity.

1. Introduction

The New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP), as presented in New York State Department of Environmental Conservation's (NYSDEC) document *DER-10 Technical Guidance for Site Investigation and Remediation* (DER-10), recommends that real-time monitoring for total volatile organic compounds (TVOC) and particulates (i.e., dust) be conducted at the downwind perimeter of each designated work area during ground intrusive activities at contaminated sites. As such, this work plan describes the proposed air monitoring means and methods that will be implemented during intrusive activities at the Hastings-on-Hudson Former Manufactured Gas Plant (MGP). A site location map is shown in Figure 1.

The purpose of the CAMP is to provide early detection in the field of potential short-term emissions and will be conducted in accordance with the generic NYSDOH CAMP.

The objectives of the CAMP are as follows:

- Provide an early warning system to alert the Contractor, Consolidated Edison Company of New York, Inc. (Con Edison), and NYSDEC that concentrations of TVOC or dust in ambient air are approaching Action Levels due to Site activities.

- Provide potential contingency measures to be enacted by the contractor conducting intrusive activities and related contractors that are designed to reduce the off-site migration of contaminants if established Action Levels are approached or exceeded.

- Determine whether construction controls are effective in reducing ambient air concentrations to below Action Levels and make appropriate and necessary adjustments.

- Develop a permanent record that includes a database of perimeter air monitoring results, equipment maintenance, calibration records, and other pertinent information.

1.1 Roles and Responsibilities

GEI Consultants, Inc., P.C. (GEI) will implement the monitoring and reporting components of this CAMP under contract with Con Edison. The contractor performing intrusive activities is responsible for the selection and implementation of appropriate

contingency measures that will mitigate the off-site migration of contaminants in response to Action Levels being approached or exceeded. The remainder of this section specifies the roles and responsibilities of each entity relative to the CAMP. A communication flowchart is shown in Figure 2 with each entity and lines of communication for the CAMP.

1.1.1 GEI Consultants, Inc., P.C.

The scope of GEI's activities will be limited to CAMP monitoring and reporting used for the CAMP. GEI is responsible for the Health and Safety of their employees. GEI's CAMP roles and responsibilities are as follows:

- GEI will monitor and record TVOCs and dust at various locations around the Site as described in the following sections of this CAMP.
- On a daily basis, GEI will communicate to the following entities whether TVOC or dust exceeded Response Levels or Action Levels specified in Section 2.1, and suggest corrective actions required to address the situation. GEI will convey the CAMP results to the entities listed below and inform them if the Alert or Response Levels have been exceeded. GEI will direct contractors at the Site to take action if warranted.

    - **Contractor – TBD**

    - **New York State Department of Environmental Conservation**
      Douglas MacNeal, P.E.
      New York State Department of Environmental Conservation
      MGP Remedial Section, Division of Environmental Remediation
      Bureau of Western Remedial Action, 11th Floor
      625 Broadway
      Albany, New York 12233-7017
      (518) 402-9662

    - **New York State Department of Health**
      Fay Navratil
      Bureau of Environmental Exposure Investigation
      New York State Department of Health
      547 River Street
      Troy, New York 12180
      1-800-458-1158 ext. 27880

- **Con Edison**
  Yelena Skorobogatov
  Project Manager
  Consolidated Edison Company of New York, Inc.
  31-01 20th Avenue-Building 138
  Astoria, NY 11105
  (718) 204-4288

- GEI will provide, maintain, and operate the equipment used to implement the CAMP.

  - GEI will provide data summary reports to the Contractor, Con Edison, and NYSDEC each week during intrusive activity. The reports will identify Response Level and Action Level exceedances and will include data summary reports for all TVOC and dust data collected.

1.1.2 Contractor

The Contractor is the lead contractor responsible for site activities pertaining to the intrusive activities. The Contractor will be responsible for taking contingent actions in conjunction with Con Edison in response to Response Level and Action Level exceedances. The Contractor will be responsible for taking contingent actions for Alert Levels, if required by GEI and/or Con Edison. The Contractor is responsible for the Health and Safety of their employees.

1.1.3 Con Edison

Con Edison has the responsibility to provide mitigation services related to the release of MGP-related vapors in excess of CAMP Response Level and Action Levels. Con Edison is also ultimately responsible for the remediation of the Site under an approved work plan with NYSDEC. Con Edison will be responsible for directing the Contractor to take contingent actions in conjunction with Con Edison in response to Alert Level (TVOC only), Response Level, and/or Action Level exceedances.

1.1.4 New York State Department of Environmental Protection

NYSDEC is responsible for the environmental regulatory enforcement for all activities conducted at the site including compliance with this CAMP, storm water runoff mitigation (erosion and sediment control), and all environmental and remediation regulations, policies, and guidance applicable to the Site. NYSDEC may provide on-site oversight personnel for the work being conducted.

2. Sampling and Analytical Procedures

This section of the CAMP presents a detailed description of the air monitoring, air sampling, and analytical procedures, including data management that will be used during ground intrusive site activities. The intent of the real-time monitoring program is to provide early detection in the field of short-term emissions and off-site migration of site-related TVOC and dust.

Real-time monitoring methods will be utilized to measure ambient air concentrations during the project. Monitoring for TVOC and respirable particulate matter (particulate matter less than 10 micrometers in size [PM-10]) will occur at a minimum of two locations and wind direction will be monitored in real-time if an automated monitoring system is utilized. Supplemental monitoring for TVOC and PM-10 will occur along the perimeter of the project site on an as-needed basis. In the event of a possible exceedance of a Response Level or Action Level for TVOC or PM-10, GEI will compare upwind (background) concentrations to downwind concentrations within 60 minutes of the possible exceedance to determine if site activity is causing the Response Level or Action Level exceedance. The air monitoring procedures and equipment are detailed below.

2.1 Alert Level, Response Level, and Action Levels

Alert Levels are not established by the NYSDOH or NYSDEC. An Alert Level is an internally established concentration levels for TVOC only. An Alert Level is set below the levels established by the NYSDOH so that action can be taken prior to exceeding a NYSDOH threshold. An Alert Level serves as a preemptive screening tool for TVOC to trigger contingent measures if necessary, to assist in minimizing off-site transport of contaminants during remedial ground intrusive activities.

Response Levels are NYSDOH thresholds levels established in the May 2010 NYSDOH Generic CAMP presented in Appendix 1A of DER-10. A Response Level is a contaminant concentration that triggers a temporary work stoppage, continued monitoring, reporting, and/or potential contingent measures. A Response Level serves as a preemptive tool for PM-10 to trigger contingent measures if necessary, to assist in minimizing off-site transport of contaminants during remedial ground intrusive activities.

Action Levels are NYSDOH threshold levels established in the May 2010 NYSDOH Generic CAMP presented in Appendix 1A of DER-10. An Action Level is a contaminant concentration that triggers work stoppage, continued monitoring, reporting, and

implementation of contingent measures to mitigate potential airborne contaminants prior to resuming ground intrusive activities.

For example, if high concentrations of dust are detected on the Site, contingent measures such as spraying water on dry soils may be required to reduce the concentrations and keep them below the Response Level.

The following target parameters and corresponding Alert Levels, Response Levels, and Action Levels were developed in accordance with the NYSDOH Generic CAMP.

Target Parameter	**Alert Level**
TVOC (15-minute average concentration)	3.7 ppm greater than background*
Target Parameter	**Response Level**
Respirable Particulate Matter (PM-10)	100 $\mu g/m^3$ greater than background*
Target Parameters	**Action Level (**)**
TVOC (15-minute average concentration)	5.0 ppm greater than background*
TVOC (1-minute average concentration)	25 ppm
Respirable Particulate Matter (PM-10)	150 $\mu g/m^3$ greater than background*

ppm - parts per million
$\mu g/m^3$ - micrograms per meter cubed
TVOC – total Volatile Organic Compounds
* Background is defined as the current upwind fifteen-minute average concentration.
** Action Level Exceedance Requires Work Stoppage and Mitigation of the condition causing the Exceedance

2.2 Air Monitoring Procedures

During times of intrusive activities, perimeter air monitoring will be conducted using a combination of fixed-station, moveable tripod-mounted, and/or hand-held air monitoring equipment. Monitoring will be performed for TVOC and PM-10 along the Site perimeter 24 hours a day when fixed station equipment is used or during working hours if movable tripod-mounted or hand-held air monitoring equipment is used.

Monitoring for TVOC and PM-10 will occur at a minimum of two locations using real-time monitoring equipment. Readings will be checked manually on a predetermined periodic basis if tripod-mounted equipment is used. Readings will be recorded once per minute and transmitted to a centralized data logger system if fixed-station equipment is used. Supplemental hand-held perimeter monitoring for TVOC and PM-10 will occur along the perimeter of the project site on an as-needed basis. Each approach is detailed below.

It is anticipated that tripod-mounted equipment will be used for minimally intrusive work such as installation of soil borings or monitoring wells. It is anticipated that fixed station

equipment will be used for the remedial excavation work at the Site. Supplemental hand-held equipment will be used on an as-needed basis. This may include monitoring directed by Con Edison or NYSDEC, or to supplement fixed monitoring station data in response to visible dust.

2.2.1 Fixed-Station Monitoring Procedures

Real-time fixed-station monitoring equipment will be positioned at a minimum of two locations upwind and downwind of the designated work area. The real-time fixed air monitoring stations will be positioned between the work zone and the largest number of potential off-site receptors. Therefore, the placement of the fixed air monitoring stations is based on the need to document all potential off-site migration on the perimeter, but also recognizes the potential off-site receptors and the location of the proposed construction activities. Figure 3 displays a typical arrangement of fixed air monitoring stations around the site. Real-time monitors will continuously gather data 24 hours a day 7 days a week.

The air monitoring stations will be supplemented with a meteorological station and a system of transmitting the real-time data to a central data storage location accessible by the project team in the project trailer or similar work area.

Each real-time fixed-station air monitoring station contains the following:

- Station enclosure
- A photoionization detector (PID)
- A particulate aerosol monitor equipped with a PM-10 impactor
- A data telemetry device

Air monitoring equipment will be housed in a protective weather-tight enclosure. Each monitoring station will continuously measure and record TVOC and PM-10 at a rate of one sample per minute and record 15-minute averages. Figure 4A shows an example of a fixed air monitoring station.

In addition to the air monitoring stations, a meteorological monitoring station will be established on site to continuously monitor and record temperature, relative humidity, wind speed, and wind direction. Fifteen-minute averages for each meteorological parameter will be transmitted to the central data storage location to determine upwind and downwind stations for assessing Alert, Response, and Action Levels.

All TVOC, PM-10, and meteorological data will be stored in data loggers located within each monitoring/meteorological station. Stored analytical data along with system performance data from each station will be sent in real-time, via telemetry, to the Site central computer system for monitoring and analysis. In the event of severe weather or power loss at the site, data recording and/or recovery may be affected.

2.2.2 Tripod Mounted Monitoring Procedures

Tripod-mounted monitoring equipment will be positioned along the Site perimeter to monitor the air based on a particular day's ground intrusive activities. At a minimum, one tripod-mounted station will be positioned upwind and one tripod-mounted station will be positioned downwind of the designated work area. Real-time monitors will continuously gather data during periods of ground intrusive activity during working hours. The equipment will be manually read on a predetermined periodic basis during the work activities.

The readings will be collected at a minimum of 15-minute intervals during periods of intrusive activities. Wind direction will be determined by using a wind sock or flagging placed on a pole at the Site.

Each tripod-mounted air monitoring station would include the following:

- Station enclosure and Tripod
- A PID
- A particulate aerosol monitor equipped with a PM-10 impactor

Air monitoring equipment will be housed in a protective weather-tight enclosure. Each monitoring station will continuously measure and record TVOC and PM-10 at a rate of one sample per minute and record 15-minute averages. Figure 4B shows an example of a typical tripod-mounted air monitoring station.

All TVOC and PM-10 will be stored in data loggers located within each monitoring station. Data from each piece of equipment will be downloaded daily and stored on a central storage location. The location of each station, the work zone, and the wind direction will be recorded daily.

2.2.3 Supplemental Hand-held Monitoring

Supplemental hand-held monitoring equipment will be recorded downwind of the designated work area on an as-needed basis. Specific site conditions that may trigger supplemental hand-held monitoring include:

- Visible dust
- Detection of TVOC and/or PM-10 at an air monitoring station at concentrations exceeding an Alert Level, Response Level, and Action Levels
- Direction by the Con Edison, or NYSDEC

Fifteen-minute average TVOC and PM-10 readings will be recorded at a downwind location between the work area and the nearest receptors.

When a triggering condition is observed during ground intrusive activity, the supplemental downwind perimeter monitoring will occur until the conditions that triggered the monitoring have subsided. TVOC concentrations will be monitored and recorded using a PID. PM-10 will be measured and recorded using a particulate aerosol monitor equipped with a PM-10 impactor.

At each monitoring point, the 15-minute average value of TVOC and PM-10, sample time, and sample location will be collected and recorded. Additional temporary monitoring points may be established due to changing site or meteorological conditions.

2.2.4 Equipment Calibration

Equipment calibration will be performed according to manufacturer's instructions. Each PID will be calibrated once daily using an isobutylene gas mixture. Particulate monitors will be purged and zeroed daily. Other hand-held portable equipment will be calibrated before each use, or a minimum of once per week when not in use.

2.3 Pre-Construction Baseline Sampling

Pre-construction monitoring will be completed to establish baseline ambient air concentrations prior to the start of excavation activities. Baseline conditions will be developed for TVOC and PM-10 in ambient air using real-time fixed station sampling methods. Monitoring methods will follow those described in subsection 2.2.1. TVOC and PM-10 data will be recorded 24 hours per day for a minimum of three days. In addition, air samples will be collected for time-weighted average VOC analysis.

2.4 Data Management Procedures

This section of the Plan discusses the data management procedures that will be used during the remedy. Data may be generated from a variety of sources, including real-time fixed station monitoring, supplemental walk-around monitoring, tripod-mounted monitoring stations, and meteorological monitoring.

These data must be reduced, evaluated, verified, and presented to related parties in a timely manner to facilitate decision-making. The data management process for each source of data is discussed below.

Monitoring data generated at each fixed-station are sent to the central computer system via radio telemetry or will be manually downloaded daily. The monitoring data will also be downloaded to the project database for data evaluation. The following daily charts, tables, or figures will be prepared:

- Instantaneous and averaged TVOC concentrations compared to the TVOC Action Level
- Instantaneous and averaged PM-10 concentrations compared to the PM-10 Action Level
- Supplemental Hand-Held PM-10 concentrations compared to the Action Level (if any)
- Supplemental Hand-Held TVOC concentrations compared to the TVOC Action Level (if any)
- Air monitoring station locations

The following weekly charts, tables, or figures will be prepared:

- Maximum 15-minute average concentrations of TVOC and PM-10
- Upwind and downwind comparison of Response Level and Action Levels reached during the week if the daily maximum 15-minute average concentrations of TVOC and PM-10 exceeded a Response Level or Action Levels
- Summary of site activities
- Air monitoring station locations

GEI will review all real-time data in a timely manner following collection and prepare a final summary report for Con Edison.

3. Response Plan

The purpose of this section is to identify the procedures to be followed in response to elevated levels of target compounds measured during intrusive activities. Response actions will be enacted by the Contractor and Con Edison. GEI will report any occurrences where a Response Level or Action Level is exceeded, which would require response measures to be enacted. The NYSDEC will be notified of any occurrence where a Response Level and/or Action Level (NYSDOH threshold) is exceeded. If there is a verified exceedance, GEI will inform Con Edison and NYSDEC within 60 minutes of the exceedance via e-mail at a minimum. In general, a tiered approach to site conditions with corresponding response actions will be implemented during the air monitoring program. The four tiers of site conditions are defined as follows.

- **Site Condition 1.** Normal or ambient air-conditions where TVOC and PM-10 are less than the Alert and Response Levels.

- **Preliminary Site Condition 2.** Concentration of TVOC only is equal to or greater than the Alert Level, but less than the Action Level.

- **Site Condition 2.** Concentration of PM-10 is equal to or greater than Response Level, but less than the Action Level.

- **Site Condition 3.** Concentration of TVOC or PM-10 is equal to or greater than the Action Level.

The response plan will rely on real-time data generated from the fixed-station equipment and tripod-mounted equipment, and meteorological equipment. These data sources will be evaluated together in order to make appropriate decisions concerning site conditions and potential control measures.

An explanation of the notification system, specific conditions, and response actions for TVOC and PM-10 is presented below.

TVOC and PM-10 concentrations in air will be measured and recorded by station monitors. PM-10 may be temporarily suspended during periods of rain. Figure 5 presents the TVOC decision diagram that will be used to determine the appropriate site condition based on contaminant concentrations. Figure 6 presents the PM-10 decision diagram.

Specific TVOC target concentrations for Site Condition 1, Preliminary Site Condition 2, Site Condition 2, and Site Condition 3 are summarized in Table 1.

3.1 Site Condition 1

Site Condition 1 represents normal site conditions and will be in effect when the TVOC concentration is less than the Alert Level of 3.7 ppm and PM-10 is less than the Response Level of 100 $\mu g/m^3$. Under a Site Condition 1, each PID and particulate monitor located at the monitoring stations will collect and analyze TVOC and PM-10 at a frequency of one sample per minute.

3.2 Preliminary Site Condition 2

Preliminary Site Condition 2 will be in effect if the TVOC concentration is greater than or equal to the Alert Level of 3.7 ppm but less than the Action Level of 5.0 ppm.

At this time, the upwind and downwind concentrations will be compared to determine if the Preliminary Site Condition 2 is due to site activities. If downwind TVOC concentrations are greater than upwind concentrations, then it will be assumed that the Preliminary Site Condition 2 is due to site activities.

If the above condition is true, then a Preliminary Site Condition 2 will be verified. Under a verified Preliminary Site Condition 2, GEI will inform Con Edison and the Contractor. The contractor will implement mitigation control measures to abate the emissions and reduce levels back below the Alert Level. Possible Preliminary Site Condition 2 response actions are listed in Table 2. The site will remain in Preliminary Site Condition 2 as long as the TVOC concentration is between 3.7 ppm (Alert Level) and 5.0 ppm (Action Level), based on 15-minute averages.

The site will return to Site Condition 1 if the 15-minute average concentration of TVOC is less than the Alert Level of 3.7 ppm.

3.3 Site Condition 2

Site Condition 2 will be in effect if the average 15-minute PM-10 concentration at a station is greater than 100 $\mu g/m^3$ and related to site activities.

The upwind and downwind PM-10 concentrations will be compared to determine if the elevated PM-10 concentrations are due to site activities. If downwind PM-10 concentrations are 100 $\mu g/m^3$ greater than upwind concentrations (Response Level), then it will be assumed that the Site Condition 2 is due to site activities.

Under Site Condition 2, GEI will inform Con Edison, the Contractor, NYSDEC, and NYSDOH. The Site Condition 2 will remain in effect as long as the average PM-10 concentration is greater than or equal to 100 $\mu g/m^3$ above upwind conditions (Response Level), and less than or equal to 150 $\mu g/m^3$ (Action Level). Under a verified Site Condition 2, dust suppression techniques must be implemented by the Contractor. At this point, routine monitoring continues and 15-minute averages continue to be evaluated. Work may continue with dust suppression techniques if downwind PM-10 levels do not exceed 150 $\mu g/m^3$ above the upwind level (Action Level) and if no visible dust is migrating off site from the work area.

A contingency meeting/conference call attended by GEI, the Contractor, Con Edison, and NYSDEC will be held within 60 minutes of the verified Site Condition 2 if the condition is not mitigated by dust suppression techniques. Possible response actions for dust control are listed in Table 2.

3.4 Site Condition 3

Site Condition 3 will be in effect if the TVOC concentrations increase to greater than the Action Level of 25.0 ppm or the average 15-minute PM-10 concentration exceeds 150 $\mu g/m^3$ above the current average upwind concentration (Action Level). Site Condition 3 will remain in effect if one of the following conditions is true.

- The TVOC concentration is greater than 25 ppm (Action Level).
- The average 15-minute PM-10 concentration exceeds 150 $\mu g/m^3$ above the current average upwind concentration (Action Level)

Under Site Condition 3, GEI will inform Con Edison, the Contractor, NYSDEC, and NYSDOH. All construction activities will be halted. The contractor will implement mitigation control measures to abate the emissions and reduce levels back below the Action Levels. Possible Site Condition 3 corrective measures/actions are listed in Table 2. After appropriate corrective measures/actions are taken, work activities may resume if the following conditions are met:

- TVOC concentration at the Site perimeter is no more than 5.0 ppm above background for the 15-minute average; and
- Dust suppression measures and other controls are successful in reducing the downwind PM-10 concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

3.5 Visible Dust

In addition to measured PM-10 levels, the CAMP requires monitoring of visible dust conditions. If visible airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques if downwind PM-10 levels do not exceed the Action Level concentration of 150 $\mu g/m^3$ above the upwind level and if no visible dust is migrating from the work area.

4. Reporting

GEI will prepare and submit weekly reports to the Contractor, Con Edison, and NYSDEC summarizing the CAMP monitoring data. Each report will consist of a letter-style report and charts/tables summarizing the following:

- Maximum 15-minute average concentrations of TVOC, and PM-10
- Upwind and downwind comparison of Response Levels and Action Level reached during the weekly period
- Summary of site activities
- Air monitoring station locations
- Meteorological conditions

Following the completion of all work, a Final Engineering Report will be prepared for the site. As part of the report, the CAMP activities will be documented.

5. References

New York State Department of Environmental Conservation. 2010. DER-10/Technical Guidance for Site Investigation and Remediation. Division of Environmental Remediation. May 3, 2010. Appendix 1A. pp. 204-206.

Tables

Table 1. Target Concentrations for Site Conditions
Community Air Monitoring Plan
Hastings-on-Hudson Former MGP
Hastings-on-Hudson, New York

Target Parameter	Internal Requirement[1]	DER-10 generic CAMP requirements[2]	
	Alert Level	Response Level	Action Level
TVOC (15-minute Average Concentration)	3.7 ppm	NA	5.0 ppm
TVOC (1-minute Measured Concentration)	NA	NA	25 ppm
PM-10 (15-minute Average Concentration)	NA	100 µg/m^3	150 µg/m^3

Site Condition	TVOC	PM-10	Notification Required
Site Condition 1	Less than Alert Level (<3.7 ppm)	Less than Response Level (<100 µg/m^3)	NA
Preliminary Site Condition 2	Greater than or equal to Alert Level less than Action Level (≥3.7 ppm and <5 ppm)	NA	National Grid, Construction manager (if applicable), Contractor
Site Condition 2	NA	Greater than or equal to Response Level and less than Action Level (≥100 µg/m^3 and <150 µg/m^3)	National Grid, Construction manager (if applicable), Contractor, NYSDEC, and NYSDOH
Site Condition 3	Greater than or equal to Action Level (≥5 ppm or ≥25 ppm)	Greater than or equal to Action Level (≥150 µg/m^3)	

Notes:

[1] Alert Levels are not established by the NYSDOH or NYSDEC and are internally established concentration levels for total volatile organic compounds. Alert Levels are set below the levels established by the NYSDOH so that actions can be taken prior to exceeding a NYSDOH threshold. An Alert Level serves as a preemptive tool to trigger contingent measures, if necessary, to assist in minimizing off-site transport of contaminants during remedial activities.

[2] Response Levels and Action Levels are defined in Appendix 1A of the New York State Department of Environmental Conservation *DER-10 / Technical Guidance for Site Investigation and Remediation* (NYSDEC, 2010).

µg/m^3 - micrograms per cubic meter

ppm - parts per million by volume

TVOC - total volatile organic compounds

PM-10 - particulate matter (i.e. dust) less than 10 microns in diameter

NA - not applicable

Table 2. Site Conditions and Response Actions
Community Air Monitoring Plan
Hastings-on-Hudson Former MGP
Hastings-on-Hudson, New York

Site Condition	Control Measure
Site Condition 1	Normal site activities - No control measures required
Site Condition 2	Establish trend of data and determine if evaluation/wait period is warranted
	Temporarily stop work
	Temporarily relocate work to an area with potentially lower emission levels
	Apply water to area of activity or haul roads to minimize dust levels
	Reschedule work activities
	Cover all or part of the excavation area
	Apply VOC emission suppressant foam over open excavation areas
	Slow the pace of construction activities
	Change construction process or equipment that minimize air emissions
	Install a perimeter barrier fence
	Apply water on haul roads*
	Wet equipment and excavation faces*
	Spray water on buckets during excavation and dumping*
	Haul materials in properly tarped or watertight containers*
	Restrict vehicle speeds to 10 mph*
	Cover excavated areas and material after excavation ceases*
	Reduce the excavation size and/or number of excavations*
Site Condition 3	Halt work
	Encapsulate construction area and treat air exhaust
	Perform work during cold weather
	Cease construction activities
	Re-evaluate air monitoring work plan

Notes:

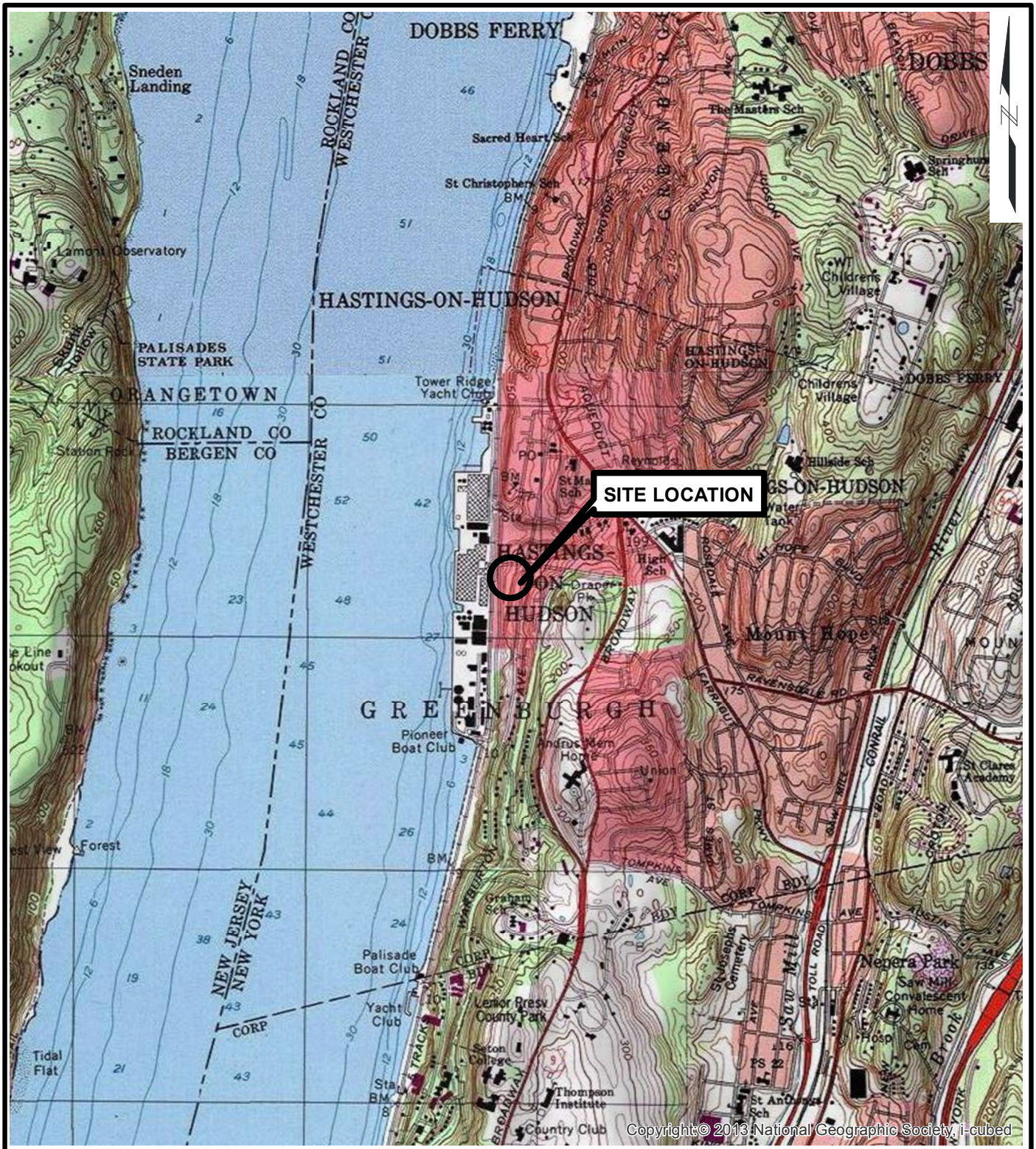
The control measures specified under each site condition can be implemented in any order that is most appropriate under the existing site conditions.

* Control measures suggested in the New York State Department of Environmental Conservation *DER-10 / Technical Guidance for Site Investigation and Remediation* (NYSDEC, 2010)

VOC - volatile organic compound

mph - miles per hour

Figures



SOURCE:

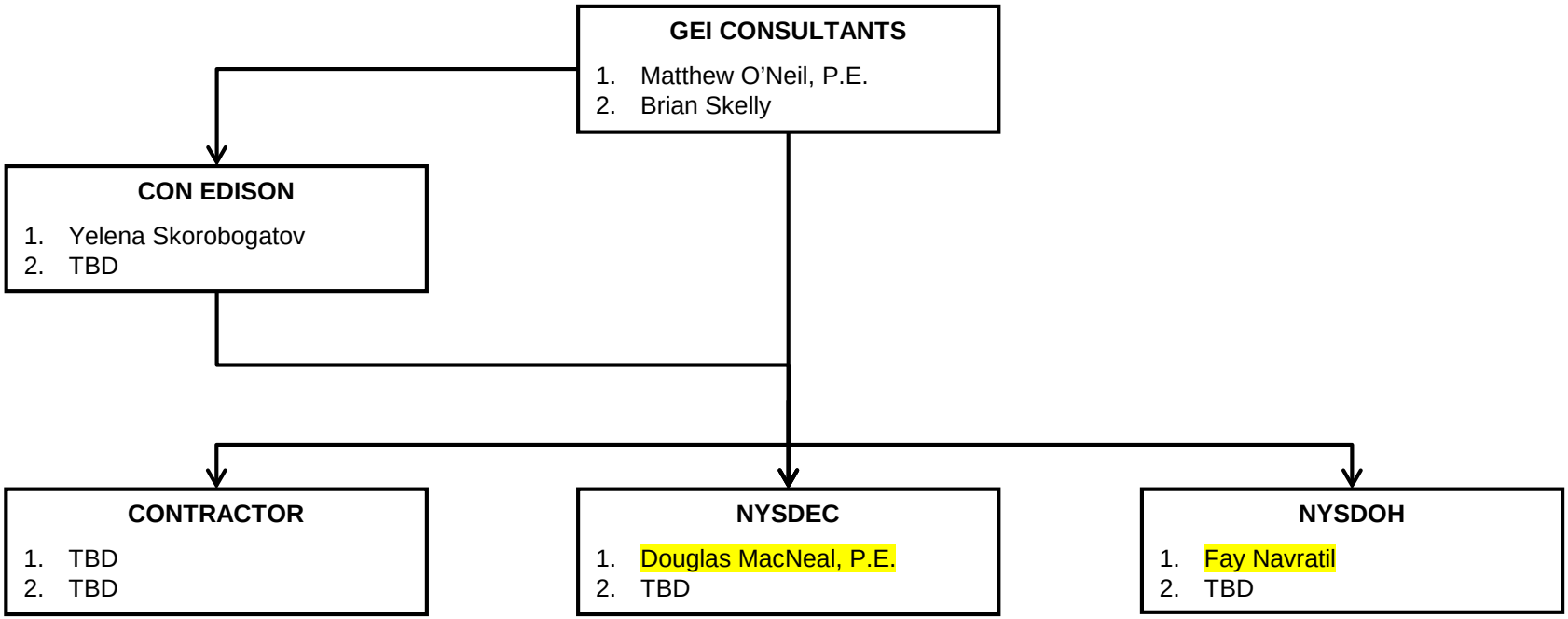
1. USGS TOPOGRAPHIC QUADRANGLE NYACK 1979, WHITE PLAINS 1994, MT VERNON 1995 AND YONKERS 1998 MAP ACCESSED VIA ARCGIS ONLINE SERVICES.

0 2,000 4,000

SCALE: 1" = 2000'

Community Air Monitoring Plan Hastings-On-Hudson Former MGP Site Hasting-On-Hudson, New York	GEI Consultants	SITE LOCATION MAP
Consolidated Edison Co. of New York	Project 070251	October 2017 Fig. 1

J:\Projects\Con Ed\Hastings-on-Hudson Former MGP\Site Location.mxd



If the primary contact is unavailable, contact alternatives in the order shown

All applicable parties will be notified within 60 minutes of an exceedance of a Response Level or Action Level at the site perimeter.

NOTE:
TBD = To Be Determined

Community Air Monitoring Plan
Hastings-on-Hudson Former MGP Site
Hastings-on-Hudson, New York

Consolidated Edison Company Of New York, Inc.
New York, New York

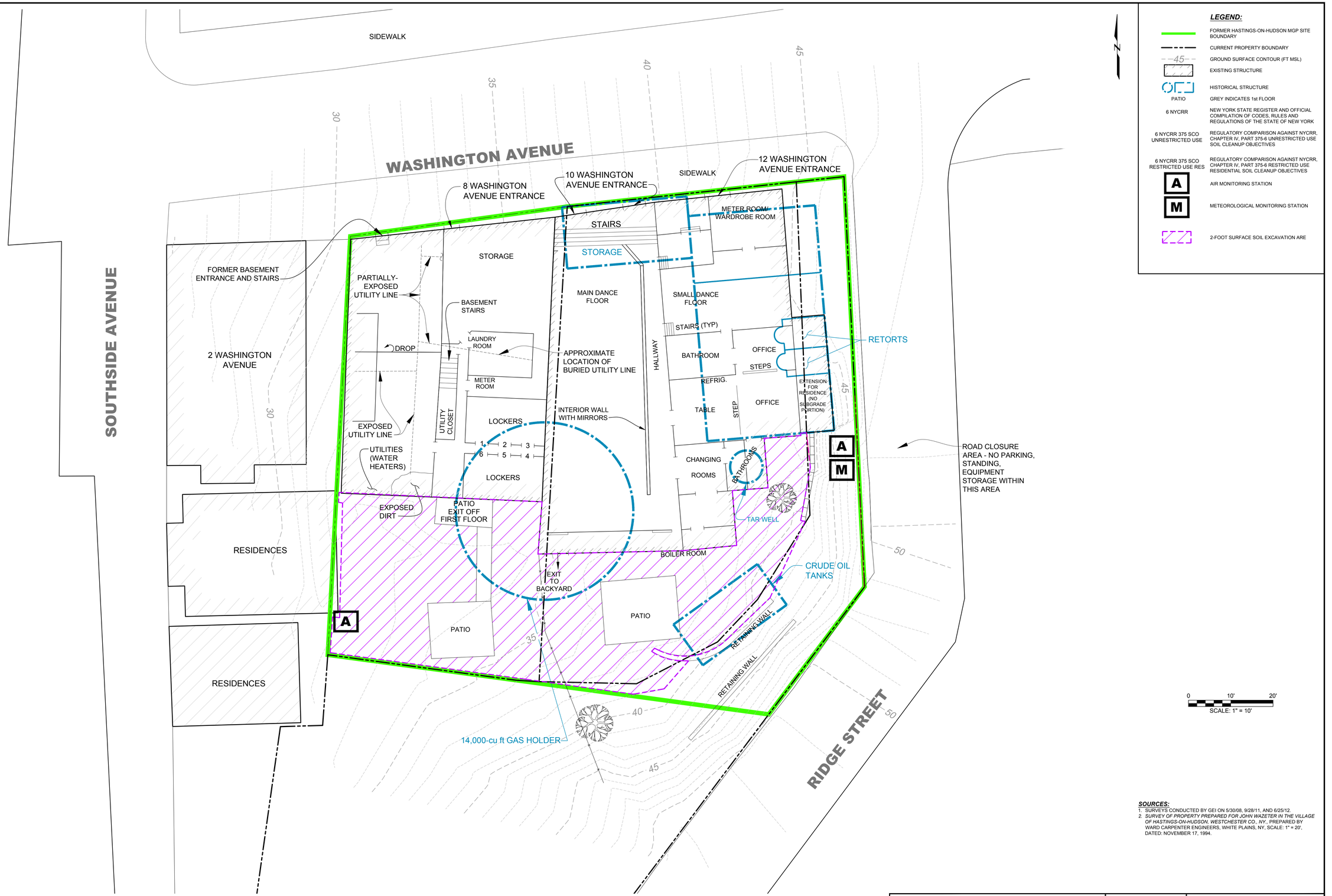
GEI Consultants

COMMUNICATION FLOWCHART

Project 1501000

October 2017 Figure 2

H:\TECH\project\Con Ed\Rye MGP\Remedial Design\Remedial Design Report\AppC-CAMP\Fig 2-4-5-6.pptx



LEGEND:

- FORMER HASTINGS-ON-HUDSON MGP SITE BOUNDARY
- CURRENT PROPERTY BOUNDARY
- 45 — GROUND SURFACE CONTOUR (FT MSL)
- EXISTING STRUCTURE
- HISTORICAL STRUCTURE
- PATIO — GREY INDICATES 1st FLOOR
- 6 NYCRR — NEW YORK STATE REGISTER AND OFFICIAL COMPILATION OF CODES, RULES AND REGULATIONS OF THE STATE OF NEW YORK
- 6 NYCRR 375 SCO UNRESTRICTED USE — REGULATORY COMPARISON AGAINST NYCRR, CHAPTER IV, PART 375-6 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES
- 6 NYCRR 375 SCO RESTRICTED USE RES — REGULATORY COMPARISON AGAINST NYCRR, CHAPTER IV, PART 375-6 RESTRICTED USE RESIDENTIAL SOIL CLEANUP OBJECTIVES
- A — AIR MONITORING STATION
- M — METEOROLOGICAL MONITORING STATION
- 2-FOOT SURFACE SOIL EXCAVATION ARE

N

0 10' 20'
SCALE: 1" = 10'

SOURCES:

1. SURVEYS CONDUCTED BY GEI ON 5/30/08, 9/28/11, AND 6/25/12.
2. *SURVEY OF PROPERTY PREPARED FOR JOHN WAZETER IN THE VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER CO., NY.*, PREPARED BY WARD CARPENTER ENGINEERS, WHITE PLAINS, NY, SCALE: 1" = 20', DATED: NOVEMBER 17, 1994.

Community Air Monitoring Plan
Hastings-On-Hudson Former MGP Site
Village of Hastings-On-Hudson, New York

Consolidated Edison Co. of New York, Inc.
Astoria, New York

GEI Consultants

PN: 070251-17.1701

TYPICAL AIR MONITORING STATION LOCATION PLAN

October 2017 Fig. 3

1. Solar Panel
2. Particulate aerosol monitor sample tubing with in-line condenser
3. Particulate aerosol monitor sample inlet with PM-10 impactor
4. Station enclosure
5. Particulate Aerosol Monitor
6. Photoionization detector (PID)
7. PID sample inlet
8. PID sample inlet tubing
9. Data communications device

NOTE:
Figure depicts an AirLogics™, LLC Light air monitoring station as an example and may not be representative of the actual system or components that will be employed at the site

Community Air Monitoring Plan
Hastings-on-Hudson Former MGP Site
Hastings-on-Hudson, New York

Consolidated Edison Company Of New York, Inc.
New York, New York

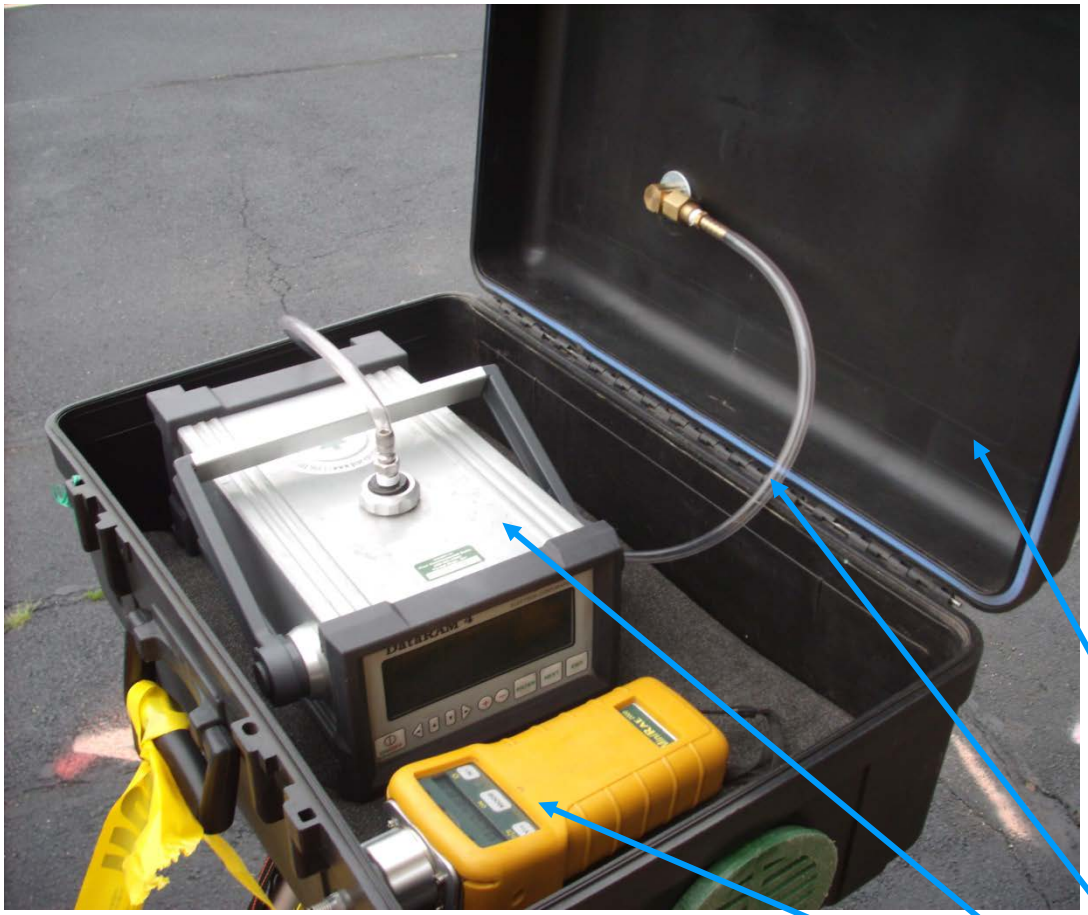
GEI Consultants

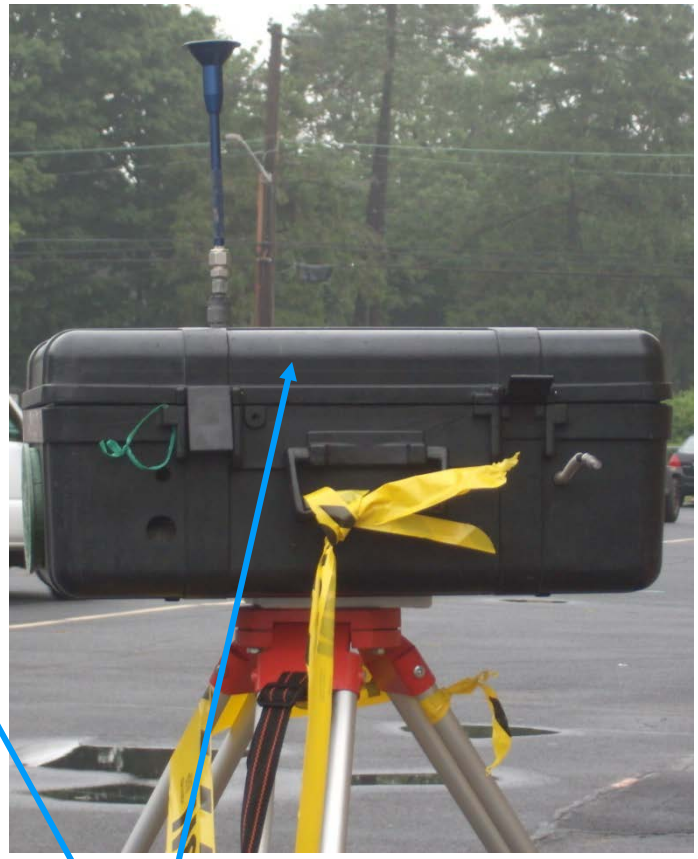
Project 1501000

EXAMPLE FIXED STATION
INTERNAL COMPONENTS

October 2017 Figure 4A

H:\TECH\project\Con Ed\Rye MGP\Remedial Design\Remedial Design Report\AppC-CAMP\Fig 2-4-5-6.pptx





(1) (2) (3) (4)

1. Photoionization detector (PID)
2. Particulate aerosol monitor
3. Particulate aerosol monitor sample tubing
4. Station enclosure

NOTE:
Figure depicts a Pine Environmental air monitoring station as an example and may not be representative of the actual system or components that will be employed at the site

Community Air Monitoring Plan
Hastings-on-Hudson Former MGP Site
Hastings-on-Hudson, New York

Consolidated Edison Company Of New York, Inc.
New York, New York

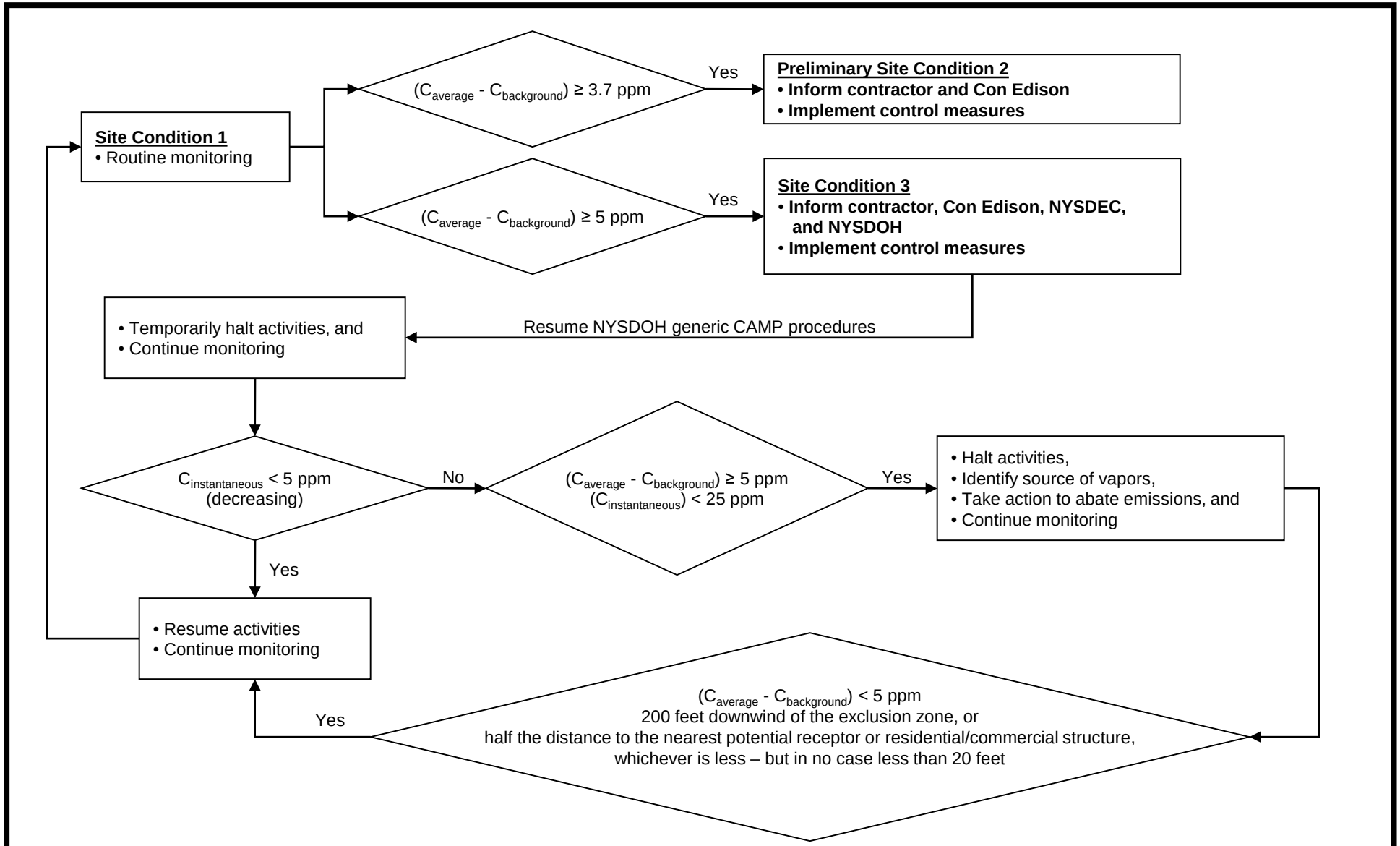
GEI Consultants

Project 1501000

EXAMPLE TRIPOD MOUNTED STATION INTERNAL COMPONENTS

October 2017 Figure 4B

H:\TECH\project\Con Ed\Rye MGP\Remedial Design\Remedial Design Report\AppC-CAMP\Fig 2-4-5-6.pptx



NOTES:

1. TVOC – Total Volatile Organic Compound
2. ppm – parts per million
3. $C_{average}$ = 15-minute average concentration
4. $C_{background}$ = 15-minute average concentration upwind
5. $C_{instantaneous}$ = 1-minute measured concentration

Community Air Monitoring Plan
Hastings-on-Hudson Former MGP Site
Hastings-on-Hudson, New York

Consolidated Edison Company Of New York, Inc.
New York, New York

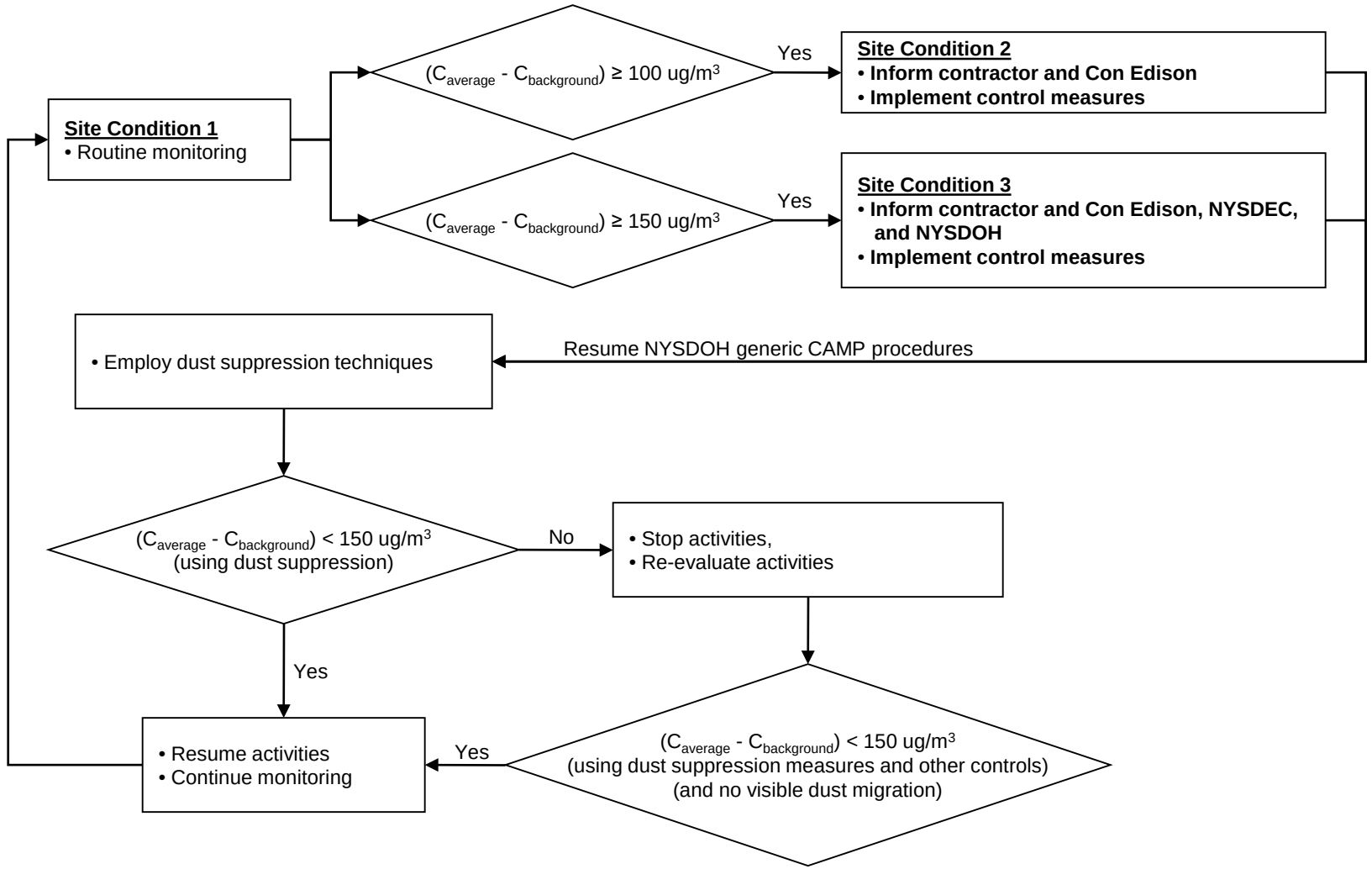
GEI Consultants

Project 1501000

TVOC
DECISION DIAGRAM

October 2017 Figure 5

H:\TECH\project\Con Ed\Rye MGP\Remedial Design\Remedial Design Report\AppC-CAMP\Fig 2-4-5-6.pptx



NOTES:

1. PM-10 – particulate matter
2. µg/m^3 – micrograms per cubic meter
3. $C_{average}$ = 15-minute average concentration
4. $C_{background}$ = 15-minute average concentration upwind

Community Air Monitoring Plan
Hastings-on-Hudson Former MGP Site
Hastings-on-Hudson, New York

Consolidated Edison Company Of New York, Inc.
New York, New York

GEI Consultants

PARTICULATE MATTER DECISION DIAGRAM

Project 1501000

October 2017

Figure 6

H:\TECH\project\Con Ed\Rye MGP\Remedial Design\Remedial Design Report\AppC-CAMP\Fig 2-4-5-6.pptx

Attachment 1

NYSDOH Generic CAMP from DER-10 Appendix 1A

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP 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 specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

VOCs must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically, thereafter, to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, 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.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

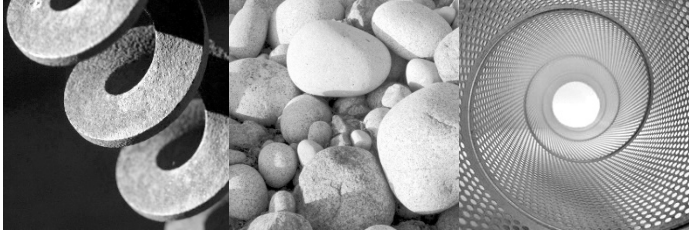
1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/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 PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

Appendix D

Health and Safety Plan



GEI Consultants

Consulting
Engineers and
Scientists

Health and Safety Plan

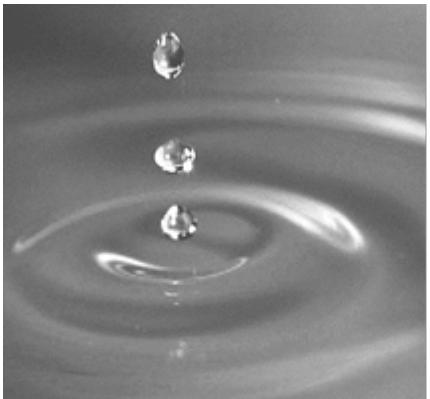
Hastings-on-Hudson Former MGP Site
10-12 Washington Avenue
Hastings-on-Hudson, New York

Prepared For:
Consolidated Edison Company of New York, Inc.
31-01 20th Avenue
Astoria, NY 11105

Submitted by:
GEI Consultants, Inc., P.C.
4486 Post Road, Suite 1
East Greenwich, RI 02818
401.533.5152

October 2017

Project No. 070251-17-1701



Matthew O'Neil, P.E.
Project Manager

Jeena Sheppard
Regional Health and Safety Officer

Table of Contents

Tables

Appendices

MO/ah H:\WPROC\Project\CON-ED\HastingsOnHudsonSChar070251\RAWP\Draft-to-ConEd-101317\Appendix D - HASP\070251.17.1701_HOH HASP 2017.docx

1. Emergency Contact Information

Table 1. Emergency Contact Information

Important Phone Numbers	
Local Police:	911
Fire Department:	911
Ambulance:	911
Hospital and Occupational Clinic Information *(See Attached Maps and Directions in Appendix A)*	
St. John's Riverside Hospital: 967 N Broadway Yonkers, NY 10701	(914) 964-4444
Northwell Health Urgent Care: 30 Livingstone Ave Dobbs Ferry, NY 10522	(914) 202-2944
Contacts	
Project Manager: Matt O'Neil	(401) 533-5152 office (860) 608-9725 cell
Corporate Health and Safety Officer: Steve Hawkins	(860) 368-5348 office (860) 916-4167 cell
Regional Health and Safety Officer: Jeena Sheppard	(856) 291-5663 office (856) 298-7138 cell
GEI People Team:	(781) 721-4117 Boston (916) 631-4596 Sacramento
Medcor Triage	1-800-775-5866
Client Contact: Yelena Skorobogatov	(718) 204-4205 office (917) 658-6715 cell
Other Information	
Nearest Telephone Location (or alternate means of communication)	On-site Cellular

2. Background

Project Name: Hastings-on-Hudson Former MGP

Project Location: Hastings-on-Hudson, NY

GEI Project No: 070251-17-1701

This Health and Safety Plan (HASP) establishes policies and procedures to protect GEI personnel from the potential hazards posed by the activities at the Hastings-on-Hudson Former MGP Site, 10-12 Washington Avenue, Hastings-on-Hudson, New York. Reading of the HASP is required of on-site GEI personnel and will be reviewed by GEI subcontractors. Subcontractors will prepare their own Site-specific HASP and may use this as a guide. The plan identifies measures to minimize accidents and injuries, which may result from project activities or during adverse weather conditions. A copy of this HASP will be maintained on site for the duration of the work. GEI will verify that its subcontractor's HASP includes Con Edison's site-specific requirements, as outlined in this HASP. Additionally, federal, state and local representatives, as well as Con Edison employees may be required to sign and adhere to this HASP, depending on the nature of their presence onsite during activities conducted by GEI.

Included in Section 1 and Appendix A is a route to the nearest medical facility from the Site with directions and contact information. Safety data sheets (formerly known as Material Safety Data Sheets [MSDS]), specific to chemicals that may be encountered while working at the Site, are in Appendix B. Appendix C details the signs, symptoms, care and procedures to both heat and cold stress. Appendix D includes the Tailgate Safety Briefing form, the Project Safety Briefing form, the Accident/Incident Report Form and the Near Miss Reporting Form. Appendix E contains the GEI Health and Safety (H&S) Standard Operating Procedures (SOPs) that apply to this project. Appendix F contains the Con Edison Corporate Environmental, Health, and Safety Procedures that apply to this project.

2.1 Scope of Field Work

GEI will perform oversight of remedial activites and community air monitoring. Remedial activites will include excavation of MGP-impacted soils, off-site transport of impacted soils, backfill, and site restoration.

2.2 Site Description

The HOH former MGP Site is located on the south side of Washington Avenue on the corner of Ridge Street (formerly High Street) in the Village of Hastings-on-Hudson, Town of Greenburgh, County of Westchester, State of New York.

The HOH former MGP Site was relatively small and compact, occupying approximately 0.25 acres of land. The former MGP faced Washington Avenue to the north, which slopes down toward the Hudson River to the west. A moderate slope of land comprises the back portion of the Site and most likely dictated the compact nature of the gas works. The associated plant property appears to have comprised the parcels currently identified as Lots 3 and 3A of Block 619 on the HOH/Town of Greenburgh tax map. In addition, it is probable that the eastern portion of the current Lot 7 may have briefly been part of, or used by, the MGP as well. However, it should be noted that elements of a retaining wall structure occupy the majority of this portion of Lot 7 and most likely did so since development of the property.

There are three buildings currently present where the MGP once stood. From west to east, the buildings are as follows: 6-8 Washington Avenue (Lot 3A) is a residential apartment building; 10 Washington Avenue (Lot 3) is a theatrical training studio; and 12 Washington Avenue (Lot 3) is an antique and book shop at street level, with one residence above.

Ridge Street, which runs along the east side of the property, is elevated by approximately 15 feet over the elevation of the yard behind the buildings. The property slopes uphill away from the backyards toward Ridge Street. The slope behind the property is reinforced with masonry and timbers.

2.3 Con Edison Corporate Environmental, Health and Safety Procedures

GEI and GEI's Subcontractors agree to abide by the conditions of the Con Edison Corporate Environmental, Health, and Safety Procedures (CEHSPs) included in Appendix F of this HASP while conducting work at the Site. Specifically, the applicable CEHSPs included are:

- CEHSP E08.02 – Noise Construction and Utility Activities
- CEHSP S05.03 – Personal Protective Equipment – Protective Clothing
- CEHSP S12.00 – Lockout Tagout Procedures
- CEHSP S17.01 – Electrical Enclosed Spaces
- CEHSP A28.00 – Calling a Time Out

- CEHSP A32.00.01 – Rules We Live By, with 2016 (January 31, 2016) 'Rules' Table*
- Utility Clearance Process for Intrusive Activities – Corporate EH&S Remediation Program, Revision 1A, December 31, 2007
- Work Area Protection Field Manual

*Work at this Site will comply with the Central Operations Column of the Rules We Live By table.

3. Statement of Safety and Health Policy

3.1 GEI

GEI is committed to providing a safe and healthy work environment for its employees. To maintain a safe work environment, GEI has established an organizational structure and a Corporate Health and Safety Program to promote the following objectives:

- Reduce the risk of injury, illness, and loss of life to GEI employees.
- Maintain compliance with federal, state, and other applicable safety regulations; and minimize GEI employees' work exposure to potential physical, chemical, biological, and radiological hazards.

Safety policy and procedure on any one project cannot be administered, implemented, monitored, and enforced by any one individual. The total objective of a safe, accident free work environment can only be accomplished by a dedicated, concerted effort by every individual involved with the project from management down to all employees.

Each GEI employee must understand their value to the company; the costs of accidents, both monetary, physical, and emotional; the objective of the safety policy and procedures; the safety rules that apply to the safety policy and procedures; and what their individual role is in administering, implementing, monitoring, and compliance of their safety policy and procedures. This allows for a more personal approach to compliance through planning, training, understanding, and cooperative effort, rather than by strict enforcement. If for any reason an unsafe act persists, strict enforcement will be implemented.

3.2 Con Edison

Con Edison will have final responsibility and authority for all aspects of the project, and is also responsible for approving all changes to this HASP. GEI provides general health and safety oversight as Con Edison's Agent. The Consultant also conducts perimeter air monitoring and work zone monitoring for GEI employees. The Consultant will monitor daily operations and will serve as the Contractor's primary point of contact with Con Edison and regulatory agencies for health-and-safety related matters.

4. Hazard/Risk Analysis

The potential hazards associated with site conditions and activity hazards related to GEI on-site activities have been identified in this section.

4.1 Special Site Conditions or Concerns

- Traffic – The majority of traffic on the project site will be construction traffic and logging traffic.
- Construction Equipment –Contractor will use construction equipment for excavation and backfill. Specific attention given to rotating equipment, pinch points, and overhead equipment.
- Difficult or remote site access – Site access is moderate to difficult due to limited access points and changes in site elevation.

Safety equipment will include: First aid kit, fire extinguisher, eye wash bottles, adequate supply of drinking water and electrolyte fluids, hand cleaner, insect repellent, sunscreen, and cell phone. Enter additional site-specific on-site safety equipment.

4.2 Activity Hazard Analysis

The potential hazards for this project associated with site conditions and activity hazards associated with GEI on-site activities have been identified in Table 2. General hazards and control measures that are applicable to all site activities are identified in the General Hazards section. The site-specific tasks, potential hazards, and control measures established to reduce the risk of injury or illness are identified in the Activity Hazard section of Table 2. Health and Safety SOPs for routine hazards and common site conditions are referenced in the table below and included in Appendix E.

Table 2. Activity Hazard Analysis

General Hazards **These Hazards Apply to All Site Activities**	**Control Measure**
Chemical / Contaminant Exposure – Skin and eye injury/irritation	• Wear protective coveralls (e.g. Tyvek ®) with shoe covers, safety glasses, face shield, Nitrile gloves. • Dispose of gloves after use and wash hands. • Avoid contact with pooled liquids and limit contact with contaminated soils/groundwater. • See SOP HS-009

General Hazards **These Hazards Apply to All Site Activities**	**Control Measure**
Cold Stress – Hypothermia, Frostbite	• Take breaks in heated shelters when working in extremely cold temperatures. • Drink warm liquids to reduce the susceptibility to cold stress. • Wear protective clothing (recommended three layers: an outside layer to break the wind, a middle layer to provide insulation, and an inner layer of cotton of synthetic weave to allow ventilation). • Wear a hat and insulated boots. • Keep a change of dry clothing available in case clothes become wet. • Do heavy work during the warmer parts of the day and take breaks from the cold. • If possible shield work areas from drafts of wind and use insulating material on equipment handles when temperatures are below 30°F • Watch for symptoms of cold stress. (see Appendix C in HASP)
Driving	• Employees must wear their safety belt while in a moving vehicle. • Vehicle accidents will be reported in accordance with GEI's accident reporting procedures. • Vehicles will be properly maintained and safely operated (refer to GEI's Fleet Maintenance Program). • Employees will follow safe driving behaviors, which include limiting distractions such as manipulating radios or other equipment that may cause a distraction. Employees should not exceed the posted speed limit and should maintain a safe distance between other vehicles. • Use defensive driving techniques. • Driving distance and time after a 12-hour shift should not exceed 30 miles or 30 minutes (whichever is greater). • See SOP HS-004
Dusty Conditions – Eye and respiratory irritation	• Avoid travel at extreme times • Wear protective gear – dust masks, safety glasses • Establish controls to limit dust.
Heat stress – Fainting, Fatigue, Heat Stroke	• Increase water intake while working. • Increase number of rest breaks and/or rotate workers in shorter work shifts. Rest in cool, dry areas. • Watch for signs and symptoms of heat exhaustion and fatigue. • Plan work for early morning or evening during hot months. • Use ice vests when necessary. • In the event of heat stroke, bring the victim to a cool environment and initiate first aid procedures. • See Appendix C of the HASP

General Hazards **These Hazards Apply to All Site Activities**	**Control Measure**
Inclement Weather	• Listen to local forecasts for warnings about specific weather hazards such as tornados, thunder storms, and flash floods. • If the storms produce thunder and/or lightning, leave the work area immediately and move to a safe area. • Discuss an action plan prior to the severe weather. • Wear appropriate PPE for the type of weather that could be encountered. • Stop work until conditions are suitable. Take cover in vehicles or shelter as appropriate. • See SOP HS-010
Insects – Bites, Stings, Allergic Reactions	• Apply insect repellent prior to performing field work and as often as needed throughout the work shift • Wear proper protective clothing (work boots, socks and light colored clothing) • Wear shoes, long pants with bottoms tucked into boots or socks, and a long-sleeved shirt when outdoors for long periods of time, or when many insects are most active (between dawn and dusk). • When walking in wooded areas, avoid contact with bushes, tall grass, or brush as much as possible • Field personnel who may have insect allergies should have bee sting allergy medication on site and should provide this information to the SSO and the CHSO prior to commencing work. • Field personnel should perform a self-check at the end of the day for ticks. • See SOP HS-001
Physical Injury – Slips, Trips and Falls	• Wear PPE that properly fits, is in good condition and appropriate for the activities and hazards. • Maintain good visibility of the work area. • Avoid walking on uneven, steeply sloped or debris ridden ground surfaces. • Plan tasks prior to preforming them including an activity hazard analysis. • Keep trafficked areas free from slip/trip/fall hazards. • Maintain weed growth in sampling areas, especially on slopes. • Wear shoes with traction. • Avoid traversing steep areas in slippery conditions. • Do not carry heavy objects to sampling areas, on steeply sloped areas, or where steep areas must be traversed to arrive at sample points.

General Hazards **These Hazards Apply to All Site Activities**	**Control Measure**
Poisonous Plants - Poison Ivy, Poison Oak, and Poison Sumac	• Avoid areas infested with poisonous plants. • Use a barrier cream to provide some protection. • Wash exposed clothing separately in hot water with detergent. • After use, clean tools, and soles of boots with rubbing alcohol or soap and lots of water. • Immediately wash with soap and water any areas that come into contact with poisonous plants. • If exposed to a poisonous plant, wash with soap and water or a product such as TechnuTM. First aid kits are available in the company vehicles. • See SOP HS-001
Repetitive Motion Injury - Standing, Squatting, and Bending Over	• Take regular breaks and do not work in unusual positions for long periods of time. • Walk and stretch between tasks. • See SOP HS-025
Utilities – Shock, Electrocution, Fire, Explosion	• A thorough underground utility survey must be conducted prior to intrusive activities. Coordination with utility locating services, property owner(s) or utility companies must be conducted. • Utilities are to be considered live or active until documented otherwise. • For overhead utilities within 50 feet, determine with the utility company the appropriate distance. Minimum distance for clearance is based on voltage of the line. • If exposing a utility, proper support and protection must be provided so that the utility will not be damaged. • If a gas line is contacted, the contractor must notify police, fire, and emergency personnel, and evacuate employees according to the site evacuation procedures. No attempt should be made to tamper with or correct the damaged utility. • See SOP HS-014
Vehicular Traffic – Struck by injury, crushing	• Increase visibility of the work area to others by using cones, flags, barricades, proper lighting and caution tape to define work area. • Use a "spotter" to locate oncoming vehicles. • Use vehicle to block work area. • Engage police detail for all work conducted in appropriate areas. • Wear high-visibility, reflective vest at all times. • Maintain minimum DOT defined distances to other traffic lanes. • See SOP HS-016.

Activity	Potential Hazard	Control Measures
Carrying Equipment	Heavy lifting, strains/sprains, slips/trips/falls, pinch points	• Use proper lifting techniques as defined in the heavy lifting activity analysis below • Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries • Wear appropriate footwear • Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions and cause disorders like tendinitis or carpal tunnel syndrome • Take breaks when carrying items frequently and/or for long distances • Do not over reach when picking up or placing items. • Use the buddy system when necessary • When climbing ladders, maintain three points of contact at all times. DO NOT carry equipment up or down ladders unless it is in a secure backpack or similar hands-free shoulder-strap bag or case. Lower or raise larger equipment by crane or rope
Construction Site Entry	Struck-by, caught-in-between equipment, crushing, pinch points	• Wear hardhat; high visibility reflective safety vest; steel-toed, steel-shank boots or (electrical hazard) EH-rated safety boots with composite toe and shank; safety glasses; nitrile/neoprene gloves; and earplugs. • Identify yourself and your work location to heavy equipment operators, so they may incorporate you into their operations. • Coordinate hand signals with operators. • Stay Alert! Pay attention to equipment backup alarms and swing radii. • Wear a high-visibility, reflective vest when working near equipment or motor vehicle traffic. • Position yourself in a safe location when filling out logs talking with the contractor. • Notify the contractor immediately if any problems arise. • Do not stand or sit under suspended loads or near any pressurized equipment lines. • Do not operate cellular telephones in the vicinity of heavy equipment operation. • See HS-018
Drum Handling	Contaminant Contact • Wear proper PPE during sampling including nitrile gloves and safety glasses. Cuts or Abrasions Heavy Lifting , Slips/Trips/Falls	• Wear proper PPE during sampling including nitrile gloves and safety glasses and face shield as appropriate. • Use proper dollies or drum moving tools. • Use applicable tools to open/close drum lids. • Do not handle drums with bulging sides. • Dispose of gloves after use and wash hands. • Wear work gloves over nitrile gloves. • Use proper lifting techniques. • Ask fellow worker for help. • Keep trafficked areas free from slip/trip/fall hazards. • See SOP HS-003

Activity	Potential Hazard	Control Measures
Excavation and Trenching Oversight	Crushing, entrapment, falls, fire/explosion	• Prior to excavating, determine utility locations and have locations marked by utility companies and the property owner. • Utilities shall be properly supported and barriers should be erected around excavations in remote areas. • Backfill temporary excavations when work is completed. • Personnel must remain 2 feet from the face of the excavation. • Sides, slopes, and faces shall meet OSHA requirements. • Excavation entry will be allowed only with proper sloping or shoring. • See SOP HS-006
Heavy Lifting	Back injury, knee injury	• Use proper lifting techniques. • Ask fellow worker for help. • Use a mechanical lifting device or a lifting aid where appropriate. • If you must lift, plan the lift before doing it. • Check your route for clearance. • Bend at the knees and use leg muscles when lifting. • Use the buddy system when lifting heavy or awkward objects. • Do not twist your body while lifting. • See SOP HS-025
Heavy Equipment – Working Near	Struck-by, caught-in-between equipment, crushing, pinch points	• Wear hardhat; high visibility reflective safety vest; steel-toed, steel-shank boots or (electrical hazard) EH-rated safety boots with composite toe and shank; safety glasses; nitrile/neoprene gloves; and earplugs. • Identify yourself and your work location to heavy equipment operators, so they may incorporate you into their operations. • Coordinate hand signals with operators. • Stay Alert! Pay attention to equipment backup alarms and swing radii. • Wear a high-visibility, reflective vest when working near equipment or motor vehicle traffic. • Position yourself in a safe location when filling out logs talking with the contractor. • Notify the contractor immediately if any problems arise. • Do not stand or sit under suspended loads or near any pressurized equipment lines. • Do not operate cellular telephones in the vicinity of heavy equipment operation. • See SOP HS-018

Personal Protective Equipment (PPE) is the initial level of protection based on the activity hazards and Site conditions which have been identified. Upgrades to respiratory protection may be required based on the designated Action Levels found in Section 9. General on-site provisions will include: extra nitrile, leather, and/or Kevlar gloves, extra protective coveralls (e.g. Tyvek®) with boot covers, drinking water and electrolyte fluids, reflective vest, first aid kit, fire extinguisher, hearing protection, and washing facilities.

If Site conditions suggest the existence of a situation more hazardous than anticipated, the Site personnel will evacuate the immediate area. The hazard, the level of precautions, and the PPE will then be reevaluated with the assistance and approval of the CHSO and the Project Manager (PM).

4.3 Personal Safety

Field activities have the potential to take employees into areas which may pose a risk to personal safety. The following websites (sources) have been researched to identify potential crime activity in the area of the project:

- www.crimereports.com: No crimes identified in the past 30 days within a mile of the Site.
- www.cityrating.com/crimestatistics.asp: Crime in Hastings-on-Hudson is significantly less than the New York and national averages.

To protect yourself, take the following precautions:

- If deemed necessary by the PM, use the buddy system (teams of a minimum of two persons present);
- Let the Site Safety Officer (SSO) know when you begin work in these areas and when you leave;
- Call in regularly;
- Pay attention to what is going on around you; and
- If you arrive in an area and it does not look safe to get out of your vehicle, lock the doors and drive off quickly but safely.

Employees must not knowingly enter into a situation where there is the potential for physical and violent behaviors to occur. If employees encounter hostile individuals or a confrontation develops in the work area, suspend work activities, immediately leave the area of concern, and contact local 911 for assistance. Notify the SSO and Safety Team (Corporate Health and Safety Officer and Regional Health and Safety Officers – SafetyTeam@geiconsultants.com) of any incidents once you are out of potential danger.

In the event of an emergency, prompt communications with local emergency responders is essential. At least one charged and otherwise functioning cell phone to facilitate emergency communications will be on-site. Confirmation of cellular phone operation will be confirmed at the start of each working day.

4.4 Handling Drums and Containers

Regulations for handling drums and containers are specified by Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.120(j). Potential hazards associated with handling drums include vapor generation, fire, explosions, and possible physical injury. Handling of drums/containers during the Site investigation and remediation activities may be necessary. If drum/container handling is necessary, it will be performed in accordance with applicable regulations.

4.5 Electrical Hazards

Utilities

The Site may have shallow, buried utilities and also overhead utilities in certain areas. It will be necessary for parties disturbing the existing ground surface and conducting operations with heavy equipment having high clearances to exercise caution in performing project-related work with respect to the presence of utilities. Utility companies with active, buried lines in the Site area will be asked by the Contractor performing intrusive activities to mark their facilities. Employees will use these data to choose work locations.

Underground Utilities

No excavating, drilling, boring, or other intrusive activities will be performed until an underground utility survey, conducted by knowledgeable persons or agencies, has been made. This survey will identify underground and in-workplace utilities such as the following:

- Electrical lines and appliances;
- Telephone lines;
- Cable television lines;
- Gas lines;
- Pipelines;
- Steam lines;
- Water lines;
- Sewer lines; and/or
- Pressurized air lines.

Please refer to GEI's SOP HS-014 Utility Mark Out (Appendix E) and Con Edison's – Utility Clearance Process for Intrusive Activities – Corporate EH&S Remediation Program (Appendix F). Dig Safely New York (Call 811) will be contacted to mark out utilities at the

Site address prior to start of any intrusive activities. Be sure to have receipt of a utility mark out across the entire work area. Look for visible evidence of utility markings on the ground in the form of painted identifications for sewer, water, gas, communications, storm water, oil or petroleum, etc. It is required that prior to drilling, hand excavation occur, to minimally, 5 feet below ground surface, to pre-clear locations from utilities.

The location of utilities will be discussed with GEI employees and subcontractors during a Site Safety Briefing. Identified utilities should be marked or access otherwise restricted to avoid chance of accidental contact.

Even when a utility search has been completed, drilling, boring, and excavation should commence with caution until advanced beyond the depth at which such utilities are usually located. Utilities will be considered "live" or active until reliable sources demonstrate otherwise.

Overhead Utilities

Overhead transmission and distribution lines will be carried on towers and poles which provide adequate safety clearance over roadways and structures. Clearances will be adequate for the safe movement of vehicles and for the operation of construction equipment.

Overhead or above-ground electric lines should be considered active until a reliable source has documented them to be otherwise. Elevated work platforms, ladders, scaffolding, man-lifts, and drill or vehicle superstructures will be erected a minimum of 20 feet (the actual distance is dependent upon the voltage of the line) from overhead electrical lines until the line is de-energized, grounded, or shielded so arcing cannot occur between the work location or superstructure.

4.6 Excavations and Trenches

The safety requirements for excavations and trenches must be determined by a competent person who is capable of identifying existing and predictable hazards and work conditions that are unsanitary, hazardous, or dangerous to GEI employees. The competent person must also have the authorization to take prompt corrective measures to eliminate unsatisfactory conditions. GEI employees will not enter trenches.

The following are general requirements for work activities in and around excavations:

- Prior to initiation of excavation activity (or ground intrusive activity, such as drilling), the location of underground installations will be determined. The <One-Call/Dig-Safe> center will be contacted by the Contractor/Subcontractor a minimum of 72 hours prior to excavation activities. It may also be necessary to temporarily support underground utilities during excavation. When excavations approach the estimated

location of underground installations, the exact location of the underground installations will be determined by means that are safe for GEI employees, i.e., hand dig, test pits, etc.

- Excavations should be inspected daily by the excavating company's competent person prior to commencement of work activities. Evidence of cave-ins, slides, sloughing, or surface cracks or excavations will be cause for work to cease until necessary precautions are taken to safeguard employees.
- Excavated and other materials or equipment that could fall or roll into the excavation, and vehicular traffic and heavy equipment will be placed at least 5 feet from the edge of the excavation.
- Excavation operations will cease immediately during hazardous weather conditions such as high winds, heavy rain, lightning, and heavy snow.

Employees will refer to GEI's Excavation Safety SOP for further information.

4.7 Fire and Explosion

When conducting excavating activities, the opportunity for encountering fire and explosion hazards exists from contamination in soil and the possibility of free product in underground structures and pipelines. Additionally, the use of diesel-powered excavating equipment could present the possibility of encountering fire and explosion hazards.

4.8 Heat Stress

Employees may be exposed to the hazards associated with heat stress when ambient temperatures exceed 70ºF. Employees should increase water intake while working in conditions of high heat. Enough water should be available so that each employee can consume 1 quart of water per hour. In addition, they should increase number of rest breaks and/or rotate employees in shorter work shifts. Employees should rest in cool, dry, shaded areas for at least 5 minutes. Employees should not wait until they feel sick to cool down. Watch for signs and symptoms of heat exhaustion and fatigue. In the event of heat stroke, bring the victim to a cool environment, call for help, and initiate first aid procedures

The procedures to be followed regarding avoiding heat stress are provided in Appendix C – Heat Stress Guidelines and in GEI's Heat Stress program.

4.9 Cold Stress

Employees may be exposed to the hazards of working in cold environments. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia, as well as slippery surfaces, brittle equipment, and poor judgment. The procedures to be

followed regarding avoiding cold stress are provided in Appendix C – Cold Stress Guidelines and in GEI's Cold Stress program.

4.10 Noise

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps, and generators. Employees who will perform suspected or established high noise tasks and operations will wear hearing protection. If deemed necessary by the SSO, the CHSO will be consulted on the need for additional hearing protection and the need to monitor sound levels for Site activities. Other employees who do not need to be in proximity of the noise should distance themselves from the equipment generating the noise.

4.11 Hand and Power Tools

In order to complete the various tasks for the project, personnel may use hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Work gloves, safety glasses, and hard hats will be worn by the operating personnel when using hand and power tools and Ground Fault Circuit Interrupter (GFCI)-equipped circuits will be used for power tools.

4.12 Slips, Trips, and Falls

Working in and around the Site may pose slip, trip, and fall hazards due to slippery and uneven surfaces. Excavation at the Site may cause uneven footing in trenches and around the soil piles. Steep slope and uneven terrain conditions at the Site are also a primary concern. GEI employees will wear proper foot gear and will employ good work practice and housekeeping procedures to minimize the potential for slips, trips, and falls.

4.13 Manual Lifting

Manual lifting of objects and equipment may be required. Failure to follow proper lifting technique can result in back injuries and strains. Employees should use a buddy system and/or power equipment to lift heavy loads whenever possible and should evaluate loads before trying to lift them (i.e., they should be able to easily tip the load and then return it to its original position). Carrying heavy loads with a buddy and proper lifting techniques include: 1) make sure footing is solid; 2) make back straight with no curving or slouching; 3) center body over feet; 4) grasp the object firmly and as close to your body as possible; 5) lift with legs; and 6) turn with your feet, don't twist.

4.14 Projectile Objects and Overhead Dangers

Overhead dangers, including but not limited to falling debris and equipment, can occur while operating drill rigs. GEI employees will maintain a minimum distance from large overhead operations and to maintain proper communication with heavy equipment operators and their handlers, should work necessitate their presence beyond the minimum safety distance. Proper PPE will be worn during these types of activities including steel-toed/shank boots, safety vests, and hard hats.

4.15 Cuts and Lacerations

The core sampling program may require employees to use powered cutting tools (circular saw or shears) or a hooked knife to cut open the sample liner. Safety box cutters will be utilized for routine operations such as opening boxes of supplies or cutting rope or string. When using cutting tools, follow the safety precautions listed below:

- Keep free hand out of the way.
- Secure work if cutting through thick material.
- Use only sharp blades; dull blades require more force that results in less knife control.
- Pull the knife through the object and away from your body; pulling motions are easier to manage.
- Do not put the knife in your pocket.
- Wear leather or Kevlar® gloves when using knives or blades, or when removing sharp objects caught or dangling in sampling gear.

4.16 Chemical Hazards

The characteristics of compounds at the Site are discussed below for information purposes. Adherence to the safety and health guidelines in this HASP should reduce the potential for exposure to the compounds discussed below.

4.17 Coal Tar and Coal Tar Products

Coal tar products, which are semi-volatile organic compounds (SVOCs) consist of a mixture of acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluorethene, benz(a)pyrene, benzo(e)pyrene, benzo(g,h,i)peryline, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3cd)pyrene, 2-methyl naphthalene, naphththalene, phenanthrene, phenols, pyrene.

Coal tar products such as those listed above may cause contact dermatitis. Direct contact can be irritating to the skin and produce itching, burning, swelling, and redness. Direct contact or exposure to the vapors may be irritating to the eyes. Conjunctivitis may result from prolonged exposure. Coal tar is considered to be very toxic, if ingested. High levels of exposure to coal tar, though not anticipated during work activities conducted during this project, may increase the risk of cancer including lung, kidney, and skin cancer. Naphthalene is also an eye and skin irritant and can cause nausea, headache, fever, anemia, liver damage, vomiting, convulsions, and coma. Poisoning may occur by ingestion of large doses, inhalation, or skin absorption.

The major route of entry for the work activities to be conducted at this Site is through direct contact. Exposure is most likely when handling soil and water samples. Inhalation may occur when the soil is disturbed causing respirable and nuisance dust particles to become airborne.

4.18 Cyanide

Cyanide compounds are common by-products of manufactured gas production. Hydrogen cyanide is toxic because it is a chemical asphyxiate. It replaces the oxygen in the blood and thereby suffocates the cells. Ferro cyanides are not considered toxic because the hydrogen cyanide ion is bound too tightly to the iron and cannot therefore replace the oxygen. It takes a great amount of heat and/or acid to release cyanide gas from the ferro cyanide molecule; therefore, hydrogen cyanide is not a concern at this Site. However, it is Con Edison policy to monitor for hydrogen cyanide during earth-disturbing activities at sites where MGP-related contaminants have been found.

4.19 Heavy Metals

Exposure to high concentrations of arsenic can cause dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, and hyper pigmentation of skin. Chronic exposure to arsenic has resulted in lung cancer in humans.

Exposure to high concentrations of beryllium can result in “beryllium sensitization”, which is an allergic response to beryllium. Symptoms of the disease include cough, shortness of breath, fatigue, fevers, skin rash, and night sweats. In the later stages, lung tissue becomes scarred. In severe cases, the right side of the heart may be strained due to increased pressure in the pulmonary artery from lung damage.

Exposure to high concentrations of cadmium can cause acute symptoms such as pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness and pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; loss of the sense of smell), mild anemia; and is considered a potential occupational carcinogen.

Exposure to chromium can cause acute symptoms such as irritation of the eyes, nose and throat as well as wheezing and coughing. Chronic effects include nosebleeds, nasal congestion, dermatitis, and loss of sight.

Exposure to high concentrations of copper through inhalation can cause irritation of the eyes, nose, pharynx, nasal septum. Ingestion may cause a metallic taste. Skin irritation may result from direct contact with skin. Damage to the liver and kidneys may occur.

Exposure to lead may cause acute symptoms such as eye irritation, weakness, weight loss, abdominal pain, and anemia. Chronic exposure to lead may result in kidney disease, effects to the reproductive system, blood forming organs, and CNS.

Lead and arsenic are regulated by specific OSHA standards. They are 29 CFR 1910.1025/1926.52 and 29 CFR 1910.1018/1926.1118, respectively. These standards include specific requirements for air monitoring, signs and labels, training and medical surveillance.

Exposure to high concentrations of nickel may cause sensitization dermatitis, allergic asthma, and pneumonitis. Exposure to mercury can cause dizziness, salivation nausea, vomiting, diarrhea, constipation, emotional disturbance, and kidney injury. Chronic exposure to mercury can cause CNS damage.

Exposure to high concentrations of selenium can cause mucous membrane irritation, coughing, sneezing, shortness of breath, chills, headaches, hypotension, and CNS depression. Chronic exposure to selenium could cause bronchial irritation, gastrointestinal distress, excessive fatigue, and skin discoloration.

Exposure to high concentrations of thallium can cause nausea, diarrhea, abdominal pain, vomiting; tremor; chest pain, pulmonary edema; convulsions, psychosis; liver, kidney damage; and alopecia.

Exposure to high concentrations of zinc through ingestion can cause abdominal pain, nausea, vomiting, and diarrhea. Chronic exposure can lead to low blood pressure, jaundice, and seizures.

These metals are at environmental concentrations and are not expected to be at concentrations that exposure symptoms would occur. As with SVOCs, the primary route of exposure is through inhalation of dust particles when soil is disturbed and becomes airborne.

4.20 Hydrogen Sulfide

Hydrogen sulfide is another common by-product of manufactured gas production. Exposure to lower concentrations can result in eye irritation, a sore throat and cough, shortness of breath, and fluid in the lungs. These symptoms usually go away in a few weeks. Long-term, low-level exposure may result in fatigue, loss of appetite, headaches, irritability, poor memory, and dizziness. Breathing very high levels (> 800 parts per million [ppm]) of hydrogen sulfide can cause death within just a few breaths. The primary route of exposure is through inhalation and therefore respiratory protection is the primary control against exposure to hydrogen sulfide.

4.21 Polychlorinated Biphenyls

It is unlikely that polychlorinated biphenyls (PCBs) will be encountered during MGP site investigations at the Site. PCBs have historically been used from a number of sources including, but not limited to; electrical systems, hydraulic oils, lubricants, cutting oils, printer's ink, and asphalt. Exposure to PCBs can occur through unbroken skin without immediate pain or irritation. PCBs detected at the site are at environmental concentrations and are not expected to be at concentrations that exposure symptoms would occur. Acute effects of exposure to high concentrations of PCB can include eye, skin, nose, and throat irritation. Chronic effects of PCB exposure can include skin swelling and redness, gastro-intestinal disturbances, and neurological effects such as headache, dizziness, nervousness, and numbness of extremities. PCBs are suspected human carcinogens that can cause liver cancer. PCBs can accumulate in fatty tissues and result in health effects after the initial exposure has occurred. The primary route of exposure for PCBs is inhalation, dermal contact, and ingestion.

4.22 Evaluation of Organic Vapor Exposure

Air monitoring reduces the risk of overexposure by indicating when action levels have been exceeded and when PPE must be upgraded or changed. Action Levels for VOCs and associated contingency plans for the work zone are discussed within Section 9 of this HASP.

Exposure to organic vapors will be evaluated and/or controlled by:

- Monitoring air concentrations for organic vapors in the breathing zone with a photoionization detector (PID) or a flame ionization detector (FID).
- When possible, engineering control measures will be utilized to suppress the volatile organic vapors. Engineering methods can include utilizing a fan to promote air circulation, utilizing volatile suppressant foam, providing artificial ground cover, or covering up the impacted material with a tarp to mitigate volatile odors.

- When volatile suppression engineering controls are not effective and organic vapor meters indicate concentrations above the action levels, then appropriate respiratory protection (i.e., air purifying respirator with organic vapor cartridge) will be employed.

4.23 Evaluation of Skin Contact and Absorption

Skin contact by contaminants may be controlled by use of proper hygiene practices, PPE, and good housekeeping procedures. The proper PPE (e.g., Tyvek®, gloves, safety glasses) as described in Section 5 will be worn for activities where contact with potential contaminated media or materials are expected.

SDSs for decontamination chemicals and laboratory reagents that may be used on Site are included in Appendix B. Specific chemical hazards information from the occupational health sources are summarized in Table 3.

Table 3. Chemical Data

Click the link below and add the applicable site-specific chemicals.

Compound	CAS #	ACGIH TLV	OSHA PEL	Route of Exposure	Symptoms of Exposure	Target Organs	Physical Data
Arsenic	7440-38-2	0.01 mg/m^3	0.01 mg/m^3 A.L. .005mg/m3	Inhalation Skin Absorption Ingestion Skin Contact	Ulceration of nasal septum, dermatitis, GI disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, potential carcinogen	Liver, kidneys, skin, lungs, lymphatic system	Metal: Silver-gray or tin-white, brittle, odorless solid FP: NA IP: NA LEL: NA UEL: NA VP: 0 mm
Beryllium	7440-41-7	NIOSH REL: Ca C 0.0005 mg/m3	TWA 0.002 mg/m3 C 0.005 mg/m3 (30 minutes), with a maximum peak of 0.025 mg/m3	Inhalation, skin and/or eye contact	Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen]	Eyes, skin, respiratory system	A hard, brittle, gray-white solid.. FP: none LEL:N/A UEL: N/A VP: 0 mm

Table 3. Chemical Data

Click the link below and add the applicable site-specific chemicals.

Compound	CAS #	ACGIH TLV	OSHA PEL	Route of Exposure	Symptoms of Exposure	Target Organs	Physical Data
Cadmium	7440-43-9 (metal)	CA	TWA 0.005 mg/m^3	Inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	Respiratory system, kidneys, prostate, blood; **Cancer Site** [prostatic & lung cancer]	Silver-white, blue-tinged lustrous, odorless solid. FP: NA IP: NA LEL: NA UEL: NA VP: 0 mm
Chromium (Chromic Acid and Chromates)	1333-82-0	0.05 mg/m^3	0.1 mg/m^3	Inhalation Ingestion Skin Contact	Irritates respiratory system, nasal, septum perforation, liver and kidney damage, leucocytosis (increased blood leucocytes), leukopenis (reduced blood leucocytes), moncytosis (increased monocytes), Eosinophilia, eye injury, conjunctivitis, skin ulcer, sensitivity dermatitis, potential carcinongen	Blood, respiratory system, liver, kidney, eyes, skin, lung cancer	FP:NA IP:NA VP: Very Low LEL: NA UEL: NA

Table 3. Chemical Data

Click the link below and add the applicable site-specific chemicals.

Compound	CAS #	ACGIH TLV	OSHA PEL	Route of Exposure	Symptoms of Exposure	Target Organs	Physical Data
Copper (as a fume)	1317-38-0	NIOSH REL: TWA 0.1 mg/m3	TWA 0.1 mg/m3	Inhalation, skin and/or eye contact	Irritation eyes, upper respiratory system; metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough, lassitude (weakness, exhaustion); metallic or sweet taste; discoloration skin, hair	Eyes, skin, respiratory system (increased risk with Wilson's disease)	Finely divided black particulate dispersed in air FP: NA IP: NA LEL: NA UEL: NA VP: 0 mm
Hydrogen sulfide	7783-06-4	10 ppm TWA, 15 ppm STEL	20 ppm C, 50 ppm [10-min. Maximum peak]	Inhalation Skin/Eye Contact	Irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, fatigue, irritability, insomnia; gastrointestinal disturbance; liquid: frostbite	Eyes, respiratory system, CNS	Colorless gas with a strong odor of rotten eggs. VP: 17.6 atm IP: 10.46 eV
Lead	7439-92-1	0.050 mg/m^3	0.05 mg/m^3 A.L. 0.03 mg/m3	Inhalation Ingestion Skin Contact	Weakness, insomnia; facial pallor; pal eye, anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis of wrist and ankles; irritates eyes, hypo tension	Eyes, GI tract, CNS, kidneys, blood, gingival tissue	A heavy, ductile, soft, gray solid. FP: NA IP: NA LEL: NA UEL: NA VP: 0 mm

Table 3. Chemical Data

Click the link below and add the applicable site-specific chemicals.

Compound	CAS #	ACGIH TLV	OSHA PEL	Route of Exposure	Symptoms of Exposure	Target Organs	Physical Data
Nickel	7440-02-0 (Metal)	NIOSH REL*: Ca TWA 0.015 mg/m3 [*Note: The REL does not apply to Nickel carbonyl.]	TWA 1 mg/m3 [*Note: The PEL does not apply to Nickel carbonyl.]	Inhalation, ingestion, skin and/or eye contact	Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Nasal cavities, lungs, skin Cancer Site: [lung and nasal cancer]	Metal: Lustrous, silvery, odorless solid FP: none LEL:N/A UEL: N/A VP: 0 mm
PCBs	11097-69-1	0.5 mg/m^3 (Skin)	0.5 mg/m^3 (Skin)	Inhalation Skin Absorption Ingestion Skin Contact	Irritate eyes; chloracne; liver damage;	Skin, eyes, liver, reproductive system	Colorless liquid or solid with a mild, hydro-carbon odor VP = 0.00006 mm
Selenium	7782-49-2	0.2 mg/m^3	0.2 mg/m^3	Inhalation Ingestion Skin Contact	Irritant to eyes, skin, nose and throat, visual disturbance, headache, chills, fever, breathing difficulty, bronchitis, metallic taste, garlic breath, GI disturbance, dermatitis, eye and skin burns,	Eyes, skin, respiratory system, liver, kidneys, blood spleen	Amphorous or crystalline, red to gray solid FP: NA IP: NA LEL: NA UEL: NA VP: 0 mm
Thallium		NIOSH REL: TWA 0.1 mg/m3 [skin]	OSHA PEL: TWA 0.1 mg/m3 [skin]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs	Eyes, respiratory system, central nervous system, liver, kidneys, gastrointestinal tract, body hair	Properties vary depending upon the specific soluble thallium compound.

Table 3. Chemical Data

Click the link below and add the applicable site-specific chemicals.

Compound	CAS #	ACGIH TLV	OSHA PEL	Route of Exposure	Symptoms of Exposure	Target Organs	Physical Data
VOCs1	NA	0.5 ppm (Skin)	0.5 ppm TWA 2.5 ppm STEL	Inhalation, Skin Absorption, Ingestion, Skin Contact	Irritate eyes and skin; headaches; dizziness; nausea; kidney; liver damage; depress CNS	Skin, eyes, liver, kidney, CNS	Colorless volatile liquid, sometimes with a sweet or solvent odor

Abbreviations:

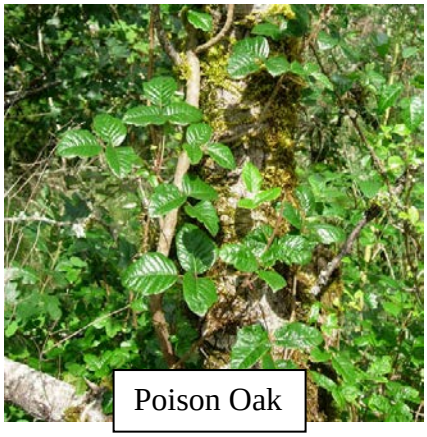
°F = degrees Fahrenheit
ACGIH = American Conference of Industrial Hygienists
A.L. = Action Level
atm = atmosphere
C = ceiling limit, not to be exceeded
CAS # = chemical abstract services number
CNS = Central Nervous System
CTPV = Coal Tar Pitch Volatiles
CVS = Cardiovascular System
eV = electron volt
f/cc = fibers per cubic centimeter
FP = Flash point
GI = Gastro-intestinal
H2S = Hydrogen Sulfide
HCN = Hydrogen Cyanide
hr = hour
IP = Ionization Potential
LEL = Lower explosive limit
mg/m^3 = micrograms per cubic meter
min = minute
mm = millimeter
mmHg = millimeters of mercury
N/A = not applicable
OSHA = Occupational Safety and Health Administration
PAH = Polycyclic Aromatic Hydrocarbons
PCB = Polychlorinated Biphenyls
PEL = Permissible exposure limit
ppm = parts per million
Skin = significant route of exposure
STEL = Short-term exposure limit (15 minutes)
TWA = Time-weighted average (8 hours)
VP = vapor pressure approximately 68°F in mm Hg

4.24 Biological Hazards

Areas of the Site may be wooded, surrounded with brush, or landscaped. Therefore, employees working on this project should be aware of the potential biological hazards at this Site. Each is discussed in detail below:

4.25 Poisonous Plants

Persons working on the Site 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 to 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 to 13 smooth-edged leaflets and drooping clusters of ivory-white berries that appear in August and last through spring.



Poison Oak

Poison Ivy

Poison Sumac

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 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.

4.26 Ticks

4.26.1 Lyme Disease

Ticks are bloodsuckers, attaching themselves to warm-blooded vertebrates to feed. Deer ticks are associated with the transmission the bacteria that causes Lyme disease. Female deer ticks are about ¼-inch in length and are black and brick red in color. Males are smaller and all black. 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.

The early stages of Lyme disease, which can develop within a week to a few weeks of the tick bite, are 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)

4.26.2 Rocky Mountain Spotted Fever

Rocky Mountain spotted fever is spread by the American dog tick, the lone-star tick, and the wood tick, all of which like to live in wooded areas and tall, grassy fields. The disease is most common in the spring and summer when these ticks are active, but it can occur anytime during the year when the weather is warm.

Initial signs and symptoms of the disease include sudden onset of fever, headache, and muscle pain, followed by development of a rash. Initial symptoms may include fever, nausea, vomiting, severe headache, muscle pain, and/or lack of appetite.

The rash first appears 2 to 5 days after the onset of fever and is often not present or may be very subtle. Most often it begins as small, flat, pink, non-itchy spots on the wrists, forearms, and ankles. These spots turn pale when pressure is applied and eventually become raised on the skin. Later signs and symptoms include rash, abdominal pain, joint pain, and/or diarrhea.

The characteristic red, spotted rash of Rocky Mountain spotted fever is usually not seen until the 6th day or later after onset of symptoms, and this type of rash occurs in only 35% to 60% of patients with Rocky Mountain spotted fever. The rash involves the palms or soles in as many as 50% to 80% of patients; however, this distribution may not occur until later in the course of the disease.

4.26.2.1 Prevention

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 n,n-diethyl-meta-toluamide (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. Keep ticks in a zip-lock baggie in case testing needs to be performed.
- Report any of the above symptoms and all tick bites to the PM and Safety Team for evaluation.

4.27 Mosquito - Borne Disease – 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 CNS 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.

4.28 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. 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 sting when they feel threatened. By remaining calm and not annoying wasps by swatting, you lessen the chance of being stung.

Wasps and bees inject a venomous fluid under the skin when they sting. The venom causes a painful swelling that may last for several days. If the stinger is still present, carefully remove it with tweezers. Some people may develop an allergic reaction (i.e. anaphylactic shock) to a wasp or bee sting. If such a reaction develops, seek medical attention at once. If a GEI employee is allergic to bees or wasps notify the SSO and if, needed, the location of the epi pen.

4.29 Sun Exposure

Employees are encouraged to liberally apply sunscreen, with a minimum sun protection factor (SPF) of 15, when working outdoors to avoid sunburn and potential skin cancer, which is associated with excessive sun exposure to unprotected skin. Additionally, employees should wear safety glasses that offer protection from ultraviolet A and B (UVA/UVB) rays.

5. Personal Protective Equipment

The PPE specified in Table 4 represents PPE selection required by 29 CFR 1910.132, and is based on the Activity Hazard Analysis of Section 4 (Table 2). Specific information on the selection rationale activity can be found in the GEI Health and Safety Manual.

The PPE program addresses elements, such as PPE selection based on Site hazards, use and limitations, donning and doffing procedures, maintenance and storage, decontamination and disposal, training and proper fitting, inspection procedures prior to / during / and after use, evaluation of the effectiveness of the PPE program, and limitations during temperature extremes, heat stress, and other appropriate medical considerations. A summary of PPE for each level of protection is in Table 4.

Table 4. Site-Specific PPE

Task	PPE Level	Site-Specific Requirements	Respirator
Mobilization/Demobilization			
Reconnaissance	D	Hard hat, safety glasses, steel toe/shank safety boot, reflective vest, leather work gloves, hearing protection as needed	D - None
Mobilization/Demobilization of Equipment and Supplies	D	Hard hat, safety glasses, steel toe/shank safety boot, reflective vest, leather work gloves, hearing protection as needed	D – None
Establishment of Site Security, Work Zones, and Staging Area	D	Hard hat, safety glasses, steel toe/shank safety boot, reflective vest, leather work gloves, hearing protection as needed	D - None
Construction			
Drilling, Groundwater Well Installation, Excavation, Digging Test Pits, Backfilling, Grading Observation, Sampling	D	Hard hat, safety glasses, steel toe/shank safety boot with overboot as needed, reflective vest, leather work gloves as needed, nitrile gloves, hearing protection as needed, Tyvek as needed	Level D initially, Level C-If action levels exceeded (see Section 9 of HASP)
Hazardous Materials Assessment			
Sampling: Caulking, Paint, Concrete, Brick, and Soil	D	Hard hat, safety glasses, steel toe/shank safety boot with overboot as needed, reflective vest, leather work gloves as needed, nitrile gloves, hearing protection as needed, Tyvek as needed	D - None
Remediation Observation			
Observe Contractor Activities	D	Hard hat, safety glasses, steel toe/shank safety boot with overboot as needed, reflective vest, leather work gloves as needed, nitrile gloves, hearing protection as needed, Tyvek as needed	D - None

Use of Level A or Level B PPE is not anticipated. If conditions indicating the need for Level A or Level B PPE are encountered, personnel will leave the Site and this HASP will be revised with oversight of the CHSO or GEI personnel will not re-enter the Site until conditions allow.

For most work conducted at the site, Level D PPE will include long pants, hard hats, safety glasses with side shields, and steel toe/shank or EH-rated safety boots.

5.1 OSHA Requirements for PPE

Personal protective equipment used during the course of this field investigation must meet the following OSHA standards:

Table 5. OSHA Standards for PPE

Type of Protection	Regulation	Source
Eye and Face	29 CFR 1910.133	ANSI Z87.1 1968
Respiratory	29 CFR 1910.134	ANSI Z88.1 1980
Head	29 CFR 1910.135	ANSI Z89.1 1969
Foot	29 CFR 1910.136	ANSI Z41.1 1999 or ASTM F-2412-2005, and ASTM F-2413-2005

CRF = Code of Federal Regulations
ANSI = American National Standards Institute
ASTM = American Society For Testing and Materials

On-site GEI personnel who have the potential to don a respirator must have a valid fit test certification and documentation of medical clearance. The CHSO will maintain such information on file for on-site personnel. The PM will obtain such information from the subcontractor's site supervisor prior to the initiation of such work. Both the respirator and cartridges specified for use in Level C protection must be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910.134). Air purifying respirators cannot be worn under the following conditions:

- Oxygen deficiency (less than 20.7%).
- Imminent Danger to Life and Health (IDLH) concentrations.
- If contaminant levels exceed designated use concentrations.

6. Key Project Personnel/Responsibilities and Lines of Authority

6.1 GEI Personnel

- Matt O'Neil, P.E. — Project Manager
- Eric Spazzarini — Site Safety Officer
- Chris Akudo — Field Personnel
- Steve Hawkins, CSP — Corporate Health and Safety Officer
- Jeena Sheppard — Regional Health and Safety Officer

The implementation of health and safety at this project location will be the shared responsibility of the PM, the CHSO, Regional Health and Safety Officer (RHSO), the SSO, other GEI personnel implementing the proposed scope of work.

6.2 GEI Project Manager

The PM, Matt O'Neil, is responsible for confirming that the requirements of this HASP are implemented. Some of the PM's specific responsibilities include:

- Conducting and documenting the Project Safety Briefing for GEI project employees and forwarding the signed form (Appendix D) to the Safety Team;
- Verifying that the GEI staff selected to work on this program are sufficiently trained for Site activities;
- Assuring that personnel to whom this HASP applies, including subcontractor personnel, have received a copy of it;
- Providing the CHSO with updated information regarding conditions at the Site and the scope of Site work;
- Providing adequate authority and resources to the on-site SSO to allow for the successful implementation of necessary safety procedures;
- Supporting the decisions made by the SSO and CHSO;
- Maintaining regular communications with the SSO and, if necessary, the CHSO;
- Verifying that the subcontractors selected by GEI to work on this program have completed GEI environmental, health and safety requirements and has been deemed acceptable for the proposed scope of work; and

- Coordinating the activities of GEI subcontractors and confirming that they are aware of the pertinent health and safety requirements for this project.

6.3 GEI Corporate Health and Safety Officer

The CHSO is the individual responsible for the review, interpretation, and modification of this HASP. Modifications to this HASP which may result in less stringent precautions cannot be undertaken by the PM or the SSO without the approval of the CHSO. Specific duties of the CHSO include:

- Writing, approving, and amending the HASP for this project;
- Advising the PM and SSO on matters relating to health and safety on this Site;
- Recommending appropriate PPE and safety equipment to protect personnel from potential Site hazards;
- Conducting accident investigations; and
- Maintaining regular contact with the PM and SSO to evaluate Site conditions and new information which might require modifications to the HASP.

6.4 GEI Site Safety Officer

GEI field staff are responsible for implementing the safety requirements specified in this HASP. However, one person will serve as the SSO. For this program, Eric Spazzarini, will serve as the SSO. 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 situations where noncompliance with this HASP is noted and to immediately stop work in cases where an immediate danger is perceived. Some of the SSO's specific responsibilities include:

- Conducting/attending the Project Safety Briefing prior to beginning work, and subsequent safety meetings as necessary;
- Conduct daily Safety Tailgate meeting in accordance with Con Edison requirements (can be combined with "pre-entry") briefing for Site-related work;
- Verifying that personnel to whom this HASP applies have attended and participated in the Project Safety Briefing and subsequent safety meetings that are conducted during the implementation of the program;
- Maintaining a high level of health and safety consciousness among employees implementing the proposed activities;

- Procuring the air monitoring instrumentation required and performing air monitoring for investigative activities;
- Procuring and distributing the PPE and safety equipment needed for this project for GEI employees;
- Verifying that PPE and health and safety equipment used by GEI is in good working order;
- Verifying that the selected contractors are prepared with the correct PPE and safety equipment and supplies;
- Notifying the PM of noncompliance situations and stopping work in the event that an immediate danger situation is perceived;
- Monitoring and controlling the safety performance of personnel within the established restricted areas to confirm that required safety and health procedures are being followed;
- Stopping work in the event that an immediate danger situation is perceived; and
- Reporting accident/incident and preparing accident/incident reports, if necessary.

6.5 GEI Field Personnel

GEI 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 and signing the HASP in its entirety prior to the start of on-site work;
- Attending and actively participating in the required Project Safety Briefing prior to beginning on-site work and any subsequent safety meetings that are conducted during the implementation of the program;
- Stopping work in the event that an immediate danger situation is perceived;
- 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 accidents, injuries, and illnesses, regardless of their severity, to the SSO, CHSO, and HR; and
- Complying with the requirements of this HASP and the requests of the SSO.

6.6 Lines of Authority will be as follows:

On Site – GEI will have responsibility for safety of its employees during the work performed at the Site Hastings-on-Hudson Former MGP. GEI's field representative will have a cell phone available to contact the appropriate local authorities, in the event of an emergency. GEI's field representative will be available for communication with the GEI PM and with the Con Edison representative.

GEI employees have the authority to stop work activities if an unanticipated hazard is encountered or a potential unsafe condition is observed. The GEI employee should contact the Corporate Health and Safety Officer and the Project Manager to discuss the stop work conditions and potential control methods that can be implemented.

6.7 Subcontractors

GEI has subcontracted the following firms to assist in performing work on this project:

Subcontractor Name	**Contact Name**
Enter Company Name and Address	Enter Contact Name
	Office: (XXX) XXX-XXXX
	Cell: (XXX) XXX-XXXX

GEI requires its subcontractors to work in a responsible and safe manner. Subcontractors hired by GEI are required to submit documentation of their safety practices as part of GEI's Subcontractor Management Program for evaluation and approval before the start of work. Subcontractors for this project will be required to develop their own HASP for the protection of their employees, but, at a minimum, must adhere to applicable requirements set forth in this HASP.

7. Training Program

7.1 HAZWOPER Training

In accordance with OSHA Standard 29 CFR 1910.120 "Hazardous Waste Operations and Emergency Response" (HAZWOPER) responders will, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations. At a minimum, the training will have consisted of instruction in the topics outlined in the standard. Personnel who have not met the requirements for initial training will not be allowed to work in any Site activities in which they may be exposed to hazards (chemical or physical). Proof of training will be submitted to the PM or his/her representative prior to the start of field activities.

7.2 Annual 8-Hour Refresher Training

Annual 8-hour refresher training will be required of hazardous waste site field personnel in order to maintain their qualifications for fieldwork. The training will cover a review of 29 CFR 1910.120 requirements and related company programs and procedures. Proof of current 8-hour refresher training will be submitted to the PM or his/her representative prior to the start of field activities.

7.3 Supervisor Training

Personnel acting in a supervisory capacity will have received 8 hours of instruction in addition to the initial 40-hour training. In addition supervisors will have 1 year of field experience and training specific to work activities (i.e., sampling, construction observation, etc.)

7.4 Site-Specific Training

Prior to commencement of field activities, the PM or the SSO will verify GEI field personnel assigned to the project will have completed training that will specifically address the activities, procedures, monitoring, and equipment used in the Site operations. It will include Site and facility layout, hazards, and emergency services at the Site, and will highlight the provisions contained within this HASP and applicable GEI H&S SOPs (Appendix E). This training will be documented on the Project Safety Briefing Form Appendix D). The signed form will be forwarded to the Safety Team at SafetyTeam@geiconsultants.com. In addition, GEI personnel will sign the plan to document that they understand the hazards and control measures presented and agree to comply with the procedures established in the HASP. Personnel that have not received project-specific training will not be allowed on-site.

Copies of documentation of GEI's full HASP review to all workers on Site shall be given to the Con Edison Construction Inspector on Site.

7.5 On-Site Safety Briefings

Other GEI personnel will be given health and safety briefings daily by the SSO or field representative to assist GEI personnel in safely conducting work activities. The briefing will include GEI subcontractors. The briefings can include information on new operations to be conducted, changes in work practices, or changes in the Site's environmental conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. Documentation of these briefings will be recorded in the GEI field book, if the project duration is less than 5 days. If the project is longer than 5 days, the Tailgate Safety Briefing Form (Appendix D) will be used to document briefings. The meetings will also be an opportunity to periodically update the employees on monitoring results.

Copies of documentation of each day's pre-job safety briefings shall be given to the Con Edison Construction Inspector on Site.

Additionally, should an incident occur on Site, Con Edison's Construction Environmental Health and Safety (EH&S) Representative must receive a copy of that day's pre-job safety briefing sheet along with the RCIR. Con Edison will look to see that appropriate topics were discussed during that day, as well as noting the person(s) involved in the incident were in attendance for that safety briefing (signatures).

7.6 First Aid and CPR

The PM will verify that GEI field staff has current certifications in first aid and Cardiopulmonary Resuscitation (CPR), so that emergency medical treatment is available during field activities. The training will be consistent with the requirements of the American Red Cross Association. GEI employees also attend annual Bloodborne Pathogens training in compliance with OSHA regulations.

8. Medical Surveillance Program

GEI maintains a continuous, corporate, medical surveillance program that includes a plan designed specifically for field personnel engaged in work at sites where hazardous or toxic materials may be present. GEI's CHSO and is responsible for the administration and coordination of medical evaluations conducted for GEI's employees at branch office locations. Comprehensive examinations are given to GEI field personnel on an annual or biennial basis (as determined to be appropriate by the CHSO) participating in hazardous waste operations. The medical results of the examinations aid in determining the overall fitness of employees participating in field activities.

Under the CHSO's supervision, field personnel undergo a complete initial physical examination, including a detailed medical and occupational history, before they participate in hazardous waste site investigations. Extensive annual/biennial reexaminations are also performed. Upon completion of these tests, personnel are certified by an occupational health physician as to whether they are fit for field work in general, and fit to use respiratory protection.

If a GEI employee or other project worker shows symptoms of exposure to a hazardous substance and wishes to be rechecked, he/she will be directed to the nearest area hospital or medical facility.

GEI subcontractor personnel that will enter any active waste handling or other active non-"clean" area must certify that they are participating in a medical surveillance program that complies with OSHA regulations for hazardous waste operations (i.e., 29 CFR 1910.120 and 29 CFR 1926.65). Proof of medical clearance will be submitted to the GEI PM or SSO prior to the start of field activities.

9. Atmospheric Monitoring

Air monitoring will be performed to identify and quantify airborne levels of hazardous substances and safety and health hazards in order to determine the appropriate level of worker protection needed on-site in the event that intrusive work is conducted.

GEI will conduct work zone monitoring for on-site GEI employees during intrusive activities only. GEI will monitor and document daily Site conditions and operations and inform field representatives of results. ***If Action Levels are exceeded, the SSO will immediately implement Site action(s) according to Table 6 below and notify the PM and Safety Team***.

The following air monitoring equipment will be on site:

- PID with 10.6 eV lamp or equivalent
- Particulate Meter (PM-10 capable)
- Multi-gas meter: lower explosive limit (LEL) / oxygen (O_2) / hydrogen sulfide (H_2S) / hydrogen cyanide (HCN) meter

9.1 Equipment Use

9.1.1 Calibration

Air monitoring equipment will be calibrated and maintained in accordance with manufacturer's requirements. Calibrations will be recorded in the project notes daily or on a daily calibration form.

9.2 Photoionization Detector

Organic vapor concentrations will be measured using a PID during intrusive activities. During intrusive operations, organic vapor concentrations will be measured continuously. Organic vapor concentrations will be measured upwind of the work site(s) to determine background concentrations at least twice a day, (once in the morning and once in the afternoon). The SSO will interpret monitoring results using professional judgment and according to the alert and Action Limits set forth in the associated Site Work Plan.

9.3 Particulate Meter

A particulate meter will be used to measure airborne particulate matter during intrusive activities. Monitoring will be continuous and readings will be averaged over a 15-minute period for comparison with the Action Levels. Monitoring personnel will make a best effort

to collect dust monitoring data from downwind of the intrusive activity. If off-site sources are considered to be the source of the measured dust, upwind readings will also be collected.

9.4 Multi-Gas Meter

A multi-gas meter will be used to monitor for combustible gases and O_2 content in the work zone during intrusive activities. The meter will also be equipped with an H_2Ssensor and an HCN sensor. H_2S monitoring will be completed every 15 minutes or, if a sulfur odor is present, monitoring will be continuous. HCN monitoring will be completed every 15 minutes or, if an almond odor is detected, monitoring will be continuous.

9.5 Action Levels

Table 6 provides a summary of real time air monitoring Action Levels and contingency plans for work zone activities. The below Action Levels are determined by halving the Permissible Exposure Limits (PELs) or Threshold Limit Values (TLVs) as set forth by OSHA and the American Conference of Government Industrial Hygienists (ACGIH). O_2 values are based on the maximum use limits of a full face respirator if oxygen were being displaced by a chemical.

The SSO will interpret monitoring results using professional judgment and according to the alert and Action Limits set forth in the associated Site Work Plan, including the determination of whether benzene or naphthalene is present at the site above Action Limits.

Table 6. Real-Time Work Zone Air Monitoring Action Levels

Air Monitoring Instrument	Action Level (above background)	Site Action
PID	1.0 ppm	Use detector tube for benzene or zNose® to verify if concentration is benzene. No respiratory protection is required if benzene is not present.
PID	1.0 - 10 ppm	Use Sensidyne detector tube for naphthalene or zNose® to verify if concentration is naphthalene. No respiratory protection is required if naphthalene is not present.
	10 – 50 ppm	No respiratory protection is required if benzene or naphthalene is not present.
	50 – 100 ppm	Stop work, withdrawal from work area, institute engineering controls, if levels persist, upgrade to Level C.
	> 100 ppm	Stop work, withdraw from work area, notify PM and Safety Team.
O_2 Meter	< 20.7%	Stop work, withdraw from work area, ventilate area, notify PM and Safety Team.
	> 21.1%	Stop work, withdraw from work area, notify PM and Safety Team.
H_2S Meter	< 5.0 ppm	No respiratory protection is required.
	> 5.0 ppm	Stop work, cover excavation, withdraw from work area, institute engineering controls, notify PM and Safety Team.
HCN Meter	< 1.0 ppm	Run CMS Drager tube. Continue monitoring with real-time meter, and continue work if CMS Drager tube reading is less than 2.0 ppm.
	> 1.0 ppm HCN Concentrations < 2.0 ppm	Run CMS Drager tube and confirm concentration is less than 2.0 ppm, notify PM and Safety Team. Run CMS tube for sulfur dioxide, hydrogen sulfide, and phosphine chip potential interferences. Continue to monitor with real-time meter.
	> 2.0 ppm	Stop work, and move (with continuous HCN monitoring meter) at lease 25 ppm upwind of the excavation until continuous meter reads less than 1 ppm, notify PM and Safety Team.Run CMS Drager hydrogen cyanide chip and re-evaluate activity, continue monitoring with a real-time meter, resume work if concentrations read less than 1.0 ppm.
Lower Exlplosive Limit	< 10% LEL	Investigate possible causes, allow excavation to ventilate, use caution during procedures.
	> 10% LEL	Stop work, allow excavation/borehole to ventilate to < 10% LEL, if ventilation does not result in a decrease to < 10% LEL, withdraw from work area, notify PM and Safety Team.
Carbon Monoxide	> 35 ppm	Stop work, withdraw from work area, ventilate area, notify PM and Safety Team.
Particulate Meter	150 µg/m^3	Implement work practices to reduce/minimize airborne dust generation, e.g., spray/misting of soil with water.

10. Site Control Measures

10.1 Site Zones

Site zones are intended to control the potential spread of contamination and to assure that only authorized individuals are permitted into potentially hazardous areas. A three-zone approach will be utilized. It will include an Exclusion Zone (EZ), Contamination Reduction Zone (CRZ) and a Support Zone (SZ). Specific zones will be established on the work site by the Contractor when operations begin for each task requiring such delineation. Maps depicting the zones will be available at the Site.

This project is being conducted under the requirements of 29 CFR 1910.120, and any personnel working in an area where the potential for exposure to Site contaminants exists, will only be allowed access after proper training and medical documentation.

The following will be used for guidance in revising these preliminary zone designations, if necessary.

Support Zone – The SZ is an uncontaminated area that will be the field support area for most operations. The SZ provides for field team communications and staging for medical emergency. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel/materials are not allowed in this zone.

Contamination Reduction Zone – The CRZ is established between the EZ and the SZ. The CRZ contains the contamination reduction corridor and provides an area for decontamination of personnel and portable hand-held equipment, tools and heavy equipment. A personnel decontamination area will be prepared at each exclusion zone. The CRZ will be used for EZ entry and egress in addition to access for heavy equipment and emergency support services.

Exclusion Zone – Activities which may involve exposure to Site contaminants, hazardous materials, and/or conditions should be considered an EZ. This zone will be clearly delineated by cones, tapes, or other means. The Contractor may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ will be determined by the Contractor allowing adequate space for the activity to be completed, field members, and emergency equipment.

The Contractor is responsible for constructing, maintaining, and enforcing the zones.

10.2 Buddy System

GEI personnel should be in line-of-site or communication contact with another on-site person. The other on-site person should be aware of his or her role as a "buddy" and be able to provide assistance in the event of an emergency. A copy of this plan will be given to any person acting as a GEI "buddy" for informational purposes.

10.3 Sanitation for Temporary Work Sites

Sanitation requirements identified in the OSHA Standard 29 CFR 1926.51 "Sanitation" specifies that employees working at temporary project sites have at least one sanitary facility available to them. Temporary sanitary facilities including toilets will be available on-site.

10.4 Illumination

Illumination requirements identified by OSHA are directed to work efforts inside buildings and/or during non-daylight hours. Activities planned for the Site are anticipated to occur outside during daylight hours. However, if work areas do not meet illumination requirements, they will be equipped with appropriate illumination that meets or exceeds requirements specified in OSHA Standard 29 CFR 1926.56 "Illumination." Employees will not work on sites that are not properly lighted.

10.5 Smoking

Smoking is prohibited at or in the vicinity of hazardous operations or materials. Where smoking is permitted, safe receptacles will be provided for smoking materials.

10.6 Alcohol and Drug Abuse Prevention

Alcohol and drugs will not be allowed on the Site. Project personnel under the influence of alcohol or drugs will not be allowed to enter the Site.

11. Incident Reporting

GEI will report incidents involving GEI personnel or subcontractor personnel, such as: lost time injuries, injuries requiring medical attention, near miss incidents, fires, fatalities, accidents involving the public, chemical spills, vehicle accidents, and property damage. The following steps must be followed when an incident occurs:

1. In life-threatening situations, immediately call 9-1-1.
2. Stop work activity to address any injury, illness, property damage, spill or other emergency.
3. **Immediately** report any incidents to your Supervisor/Project Manager and Regional Health & Safety Officer.
4. If your injury or illness is not life-threatening, call Medcor Triage at 1-800-775-5866 to speak with a medical professional.
5. Complete an Incident Report Form **immediately** after addressing the incident.

For vehicle accidents involving another vehicle or damage to property, the employee will take pictures of each vehicle or property involved in the incident and obtain a police report. In some municipalities police will not be dispatched to a non-injury accident, but every effort needs to be made to try and obtain the report.

The Incident Report Form and the Near Miss Reporting Form can be found in Appendix D, on the GEI Health and Safety smartphone app, or on the Safety page of the GEI Intranet. To report subcontractor injuries or incidents, follow the same verbal reporting procedures and submit an email describing the event to the PM and the Safety Team.

The Con Edison Construction Inspector shall be notified immediately of any incidents that occur on the project.

For any incident on Site, all work on the activity where the incident occurred shall cease. GEI will prepare a RCIR / PAP and submit it to Con Edison's Construction EH&S Representative for review/acceptance. Work on the activity where the incident occurred may only resume once Con Edison considers the RCIR / PAP acceptable, at which time it will become an Addendum to the HASP. Work on all other project activities may continue.

Should the incident be an injury or fatality, GEI shall submit, electronically, a completed Con Edison Contractor Injury Report Form within 1 business day of the incident.

11.1 Injury Triage Service

If a GEI employee experiences a work related injury that is not life-threatening, the employee will initiate a call to Medcor Triage at 1-800-775-5866. The injured employee will detail any medical symptoms or complaints which will be evaluated by a Registered Nurse (RN) specially trained to perform telephonic triage. The RN will recommend first aid self-treatment or refer the injured employee for an off-site medical evaluation by a health professional at a clinic within GEI's workers compensation provider network. GEI employees are still required to follow our Accident Reporting procedures as listed above.

12. Decontamination Procedures

12.1 Personnel Decontamination Station

A personnel decontamination station where employees can drop equipment and remove PPE will be set up at the decontamination pad by the Contractor. It will be equipped with basins for water and detergent, and trash bag(s), or cans for containing disposable PPE and discarded materials. Once personnel have decontaminated at this station and taken off their PPE, they will proceed to a sink where they will wash themselves wherever they have potentially been exposed to any contaminants (e.g., hands, face, etc.)

The following specific decontamination procedure will be used as necessary by GEI personnel or subcontractor personnel wearing PPE from Level D through Level C.

- ***Step 1 –*** Equipment drop (respirator, tools, monitoring equipment, etc.) Decontaminate as appropriate (per GEI's field representative's instructions).
- ***Step 2 –*** Boot wash/rinse (wash with non-foaming detergent, rinse with fresh water spray). Remove boots. If inner and outer gloves are worn, wash outer gloves, remove and save for later use, or remove and discard outer gloves and place in trash bag/can provided in the decontamination area.
- ***Step 3 –*** Hard hat removal; wash if visibly contaminated (use same wash as in Step 2).
- ***Step 4 –*** If Tyvek® (or equivalent) suit was worn and is visibly contaminated, remove and place in trash bag/can provided in the decontamination area or decontaminate (wash) and store for reuse. Contaminated washable coveralls should be removed and bagged for washing.
- ***Step 5 –*** Respirator and/or eye protection removal (as applicable). Wash (per Step 2) to remove visible contamination.
- ***Step 6 –*** Remove outer gloves.
- ***Step 7 –*** Wash potentially exposed skin (use water and soap at indoor sink).
- ***Step 8 –*** Disinfect respirator per manufacturer's recommendations.

Contaminated PPE (gloves, suits, etc.) will be decontaminated and stored for reuse or placed in plastic bags (or other appropriate containers) and disposed of in an approved facility.

Decontamination wastewater and used cleaning fluids will be collected and disposed of in accordance with applicable state and federal regulations.

12.2 Heavy Equipment Decontamination

Heavy equipment decontamination will be performed by the Contractor within the limits of the on-site decontamination pad in accordance with the contract specifications. A steam generator and brushes will be used to clean demolition equipment and other tools. No heavy equipment will be permitted to leave the Site unless it has been thoroughly decontaminated.

Wastewater from the heavy equipment and personnel decontamination areas will be collected and disposed of in accordance with applicable state and federal regulations. The Contractor will be responsible for ultimate disposal of investigation-derived wastes.

12.3 Decontamination Equipment Requirements

The following equipment, if required, should be in sufficient supply to implement decontamination procedures for GEI's equipment.

- Buckets
- Alconox™ detergent concentrate
- Hand pump sprayers
- Long handled soft bristle brushes
- Large sponges
- Cleaning wipes for respirators
- Bench or stool(s)
- Methanol and/or Nitric Acid
- Liquid detergent and paper towels
- Plastic trash bags

The Contractor performing decontamination procedures is responsible for verifying that the above materials, as required for their operation, are in sufficient supply.

13. Supplemental Contingency Plan Procedures

13.1 Hazard Communication Plan

GEI personnel have received hazard communication training as part of their annual health and safety training and new employee health and safety orientation training. Hazardous materials used on the Site will be properly labeled, stored, and handled. GEI will only use Con Edison and/or NYCDOE approved chemicals on Site. SDS will be available to potentially exposed employees.

13.2 Fire

In the event of a fire personnel will evacuate the area. GEI's field representative will contact the local fire department with jurisdiction and report the fire. Notification of evacuation will be made to the PM and the Safety Team. The field representative will account for GEI personnel and subcontractor personnel and report their status to the PM.

13.3 Medical Support

In case of minor injuries, on-site care will be administered with the Site first aid kit. For serious injuries, call 911 and request emergency medical assistance. Seriously injured persons should not be moved, unless they are in immediate danger. Notify the PM and the Safety Team of the emergency.

Section 1 and Table 1 of this HASP contain detailed emergency information, including directions to the nearest hospital, and a list of emergency services and their telephone numbers. In addition, Appendix A includes maps to the hospital and/or occupational health clinic. GEI field personnel will carry a cellular telephone.

13.4 Severe Weather

The contingency plan for severe weather includes reviewing the expected weather to determine if severe weather is in the forecast. Severe weather includes high winds over 30 miles per hour (mph), heavy rains or snow squalls, thunderstorms, tornados, and lightning storms. If severe weather is approaching, the decision to evacuate GEI personnel and subcontractor personnel from the Site will be the responsibility of GEI's field representative. Notification of evacuation will be made to the PM and the Safety Team. The field representative will account for GEI personnel and subcontractor personnel and report their status to the PM. If safe, work can resume 30 minutes after the last clap of thunder or flash of lightening.

13.5 Spills or Material Release

If a hazardous waste spill or material release occurs, if safe, the SSO or their representative will immediately assess the magnitude and potential seriousness of the spill or release based on the following:

- SDS for the material spilled or released;
- Source of the release or spillage of hazardous material;
- An estimate of the quantity released and the rate at which it is being released;
- The direction in which the spill or air release is moving;
- Personnel who may be or may have been in contact with the material, or air release, and possible injury or sickness as a result;
- Potential for fire and/or explosion resulting from the situation; and
- Estimates of area under influence of release.

If the spill or release is determined to be within the on-site emergency response capabilities, the SSO will verify implementation of the necessary remedial action. If the release is beyond the capabilities of the Site personnel, personnel will be evacuated from the immediate area and the local fire department will be contacted. The SSO will notify the PM and the Safety Team.

All small hazardous spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the SDS will be consulted to assist in determining the best means of containment and cleanup. For small spills, absorbent materials such as sand, sawdust, or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid or caustic spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. Drains or drainage areas shall be blocked. All spill-containment materials will be properly disposed. An exclusion zone of 50 to 100 feet around the spill area should be established depending on the size and type of the spill.

Refueling of sampling equipment will be done with National Fire Protection Association (NFPA)-approved safety cans and by approved United States Coast Guard (USCG) refueling methods. Fuel will be stored in containers meeting applicable fuel storage safety regulations. Refueling of any equipment will take place off Site. Fuel will not be stored on Site. Fuel present on Site will be contained in the fuel tanks of the vehicles or equipment required to perform the work tasks previously described.

The Emergency Coordinator should take the following steps:

1. Determine the nature, identity and amounts of major spill components;

2. Make sure all unnecessary persons are removed from the spill area;

3. Notify appropriate response teams and authorities;

4. Use proper PPE in consultation with the SSO and information provided on the SDS for the spilled material;

5. If a flammable liquid, gas or vapor is involved, remove all ignition sources and use non-sparking and/or explosive proof equipment to contain or clean up the spill (diesel only vehicles, air operated pumps, etc.);

6. If possible, try to stop the leak with appropriate material;

7. Remove all surrounding materials that can react or compound with the spill; and

8. Notify the Client Project Manager and the Con Edison Construction Representative immediately. Con Edison will make any and all notifications to the various required agencies via Con Edison spill reporting procedures.

14. Health and Safety Plan Sign-Off

GEI personnel conducting site activities will be familiar with the information in this HASP. After reviewing this plan, please sign the copy in the project files, and bring a copy of the plan with you to the Site. By signing this site-specific HASP, you are agreeing that you have read, understand, and will adhere to the provisions described in this plan while working on the Project Site below.

Site Name: Hastings-on-Hudson Former MGP

Investigation: Remedial Action

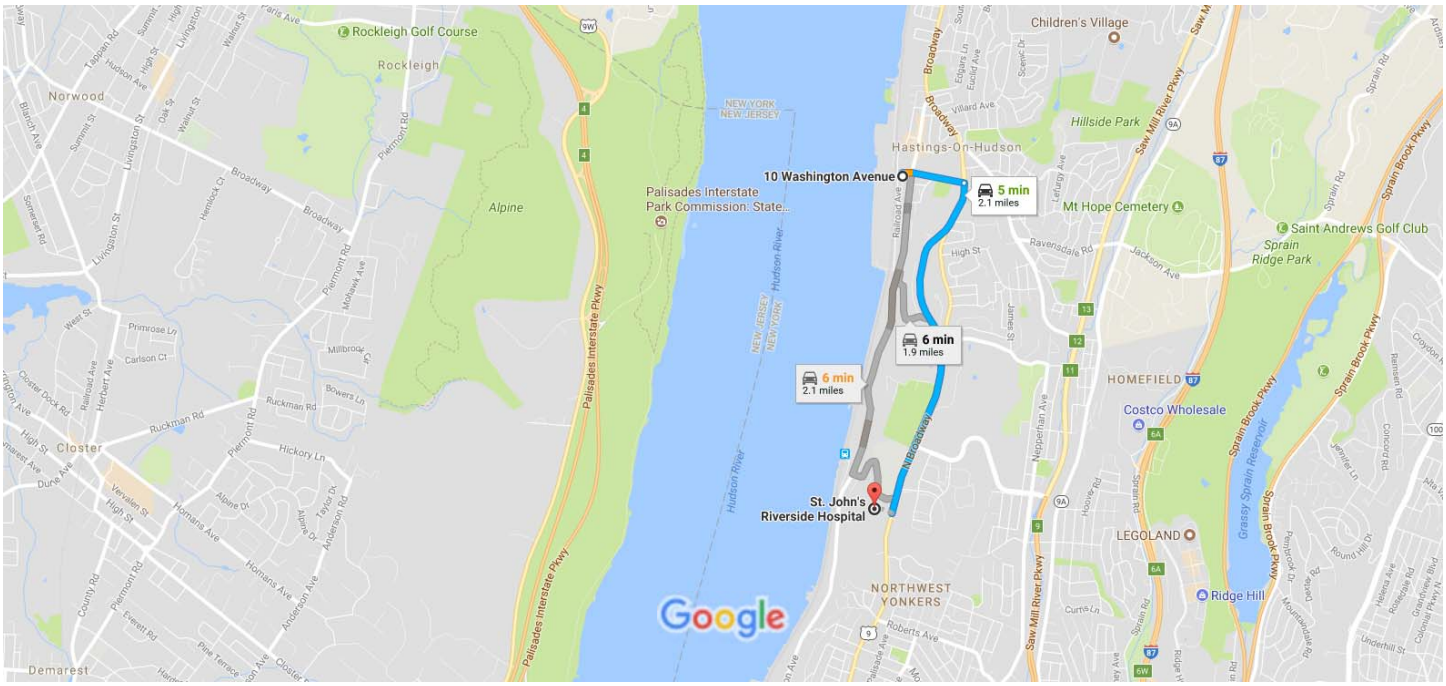
GEI Project No: 070251

Print Name	Signature
Project Manager: Matt O'Neil	

Appendix A

Map to Hospital and Occupational Health Clinic

Google Maps 10 Washington Ave to St. John's Riverside Hospital Drive 2.1 miles, 5 min



Map data ©2017 Google United States 2000 ft

10 Washington Ave

Hastings-On-Hudson, NY 10706

1. Head east on Washington Ave toward Ridge St — 0.3 mi
2. Turn right onto Broadway — 1.8 mi

St. John's Riverside Hospital

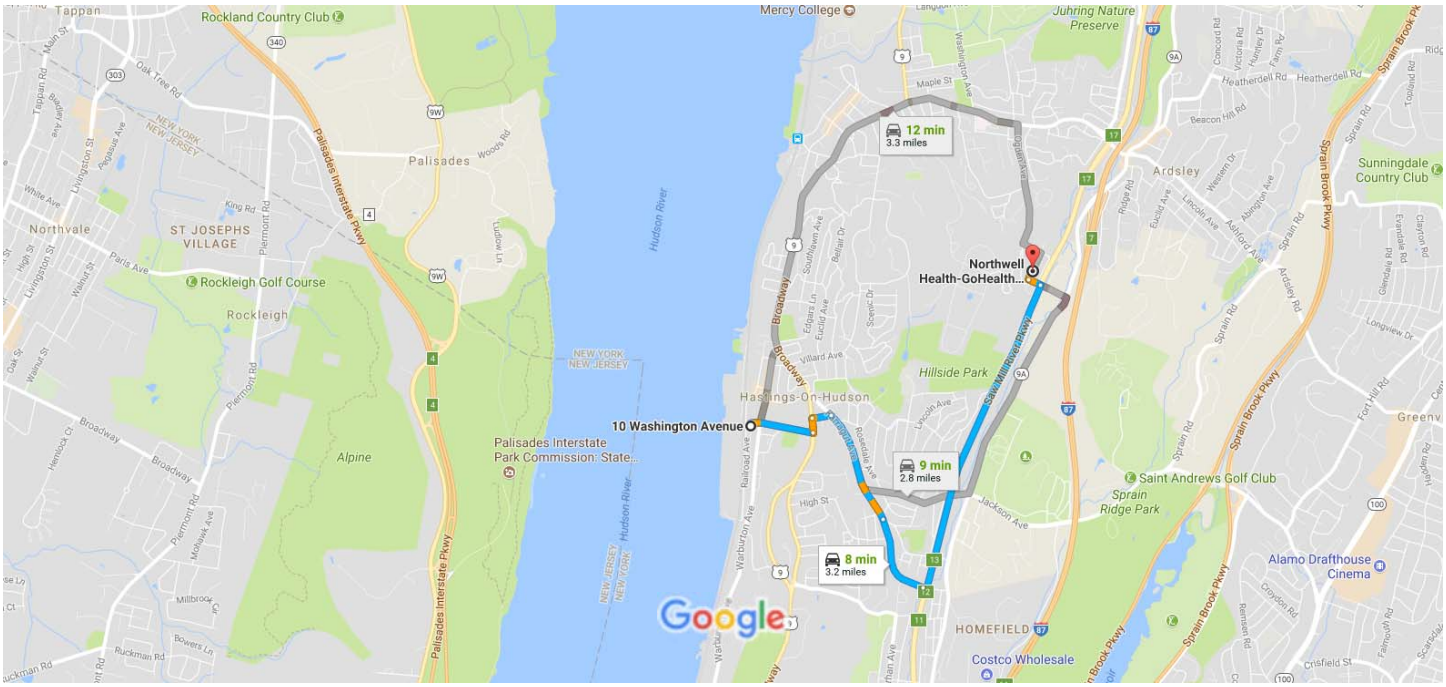
967 N Broadway, Yonkers, NY 10701

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Google Maps

10 Washington Ave to Northwell Health-GoHealth Urgent Care

Drive 3.2 miles, 8 min



Map data ©2017 Google United States 2000 ft

10 Washington Ave

Hastings-On-Hudson, NY 10706

1. Head east on Washington Ave toward Ridge St — 2 min (0.3 mi)
2. Turn left onto Broadway — 20 s (400 ft)

Follow Farragut Ave and Farragut Pkwy to Saw Mill River Pkwy N — 3 min (1.1 mi)

3. Turn right onto Olinda Ave — 495 ft
4. Turn right onto Farragut Ave — 0.6 mi
5. Continue straight onto Farragut Pkwy — 0.4 mi
6. Turn left onto Saw Mill River Pkwy N — 3 min (1.6 mi)

Continue on Lawrence St. Drive to Livingstone Ave — 1 min (0.1 mi)

7. Turn left onto Lawrence St

354 ft

8. Turn right onto Livingstone Ave

240 ft

Northwell Health-GoHealth Urgent Care

30 Livingstone Ave, Dobbs Ferry, NY 10522

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Appendix B

Safety Data Sheets

Safety Data Sheet
H2S Mix CH4

Section 1: Product and Company Identification

SpecAir Specialty Gases
22 Albiston Way
Auburn, ME 04210
Phone: 207-784-5788
Toll Free: 800-292-6218
Fax: 207-784-5383
http://www.specair.com/

Product Code: H2S Mix CH4

Synonyms:
Recommended Use:
Usage Restrictions:

Section 2: Hazards Identification

Warning

Hazard Classification:
Gases Under Pressure

Hazard Statements:
Contains gas under pressure; may explode if heated
Toxic to aquatic life

Precautionary Statements

Storage:
Protect from sunlight.
Store in well-ventilated place.

Section 3: Composition/Information on Ingredients

	CAS #	Concentration

Hydrogen Sulfide	7783-06-4	10 ppm - 100 ppm
Carbon Monoxide	630-08-0	50 ppm - 800 ppm
Methane	74-82-8	1.45% - 2.5%
Oxygen	7782-44-7	12% - 20.9%
Nitrogen	7727-37-9	Balance

	Chemical Substance	Chemical Family	Trade Names
Hydrogen Sulfide	HYDROGEN SULFIDE	inorganic, gas	HYDROGEN SULFIDE (H2S); DIHYDROGEN MONOSULFIDE; DIHYDROGEN SULFIDE; HYDROSULFURIC ACID; SULFUR DIHYDRIDE; SULFURETED HYDROGEN; SULFUR HYDRIDE; STINK DAMP; SEWER GAS; RCRA U135; UN 1053; H2S
Carbon Monoxide	CARBON MONOXIDE	inorganic, gas	CARBON OXIDE; CARBON OXIDE (CO); UN 1016; CO
Methane	METHANE, COMPRESSED GAS	hydrocarbons, gas	FIRE DAMP; MARSH GAS; METHYL HYDRIDE; NATURAL GAS; METHANE; UN 1971; R50; CH4
Oxygen	OXYGEN, COMPRESSED GAS	inorganic, gas	OXYGEN; DIOXYGEN; MOLECULAR OXYGEN; OXYGEN MOLECULE; PURE OXYGEN; UN 1072; O2
Nitrogen	NITROGEN, COMPRESSED GAS	inorganic, gas	DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2

Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Hydrogen Sulfide	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
Carbon Monoxide	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
Methane	Wash exposed skin with soap and water.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
Oxygen	None expected	None expected	Not likely route of exposure	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.	None
Nitrogen	Wash exposed skin with soap and water.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

Section 5: Fire Fighting Measures

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Hydrogen Sulfide	Let burn unless leak can be stopped immediately. Large fires: Use regular foam or flood with fine water spray.	Sulfur oxides	▪ Any self-contained breathing apparatus with a full facepiece. ▪ Protective material types: butyl rubber, polyvinyl chloride (PVC), neoprene
Carbon Monoxide	Carbon dioxide, regular dry chemical Large fires: Use regular foam or flood with fine water spray.	Carbon dioxide	▪ Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. ▪ Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Methane	Carbon dioxide, regular dry chemical Large fires: Use regular foam or flood with fine water spray.	Carbon monoxide, carbon dioxide, water	▪ Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece. ▪ Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece.
Oxygen	Non-flammable. Use extinguishing agent appropriate for the material which is burning. Use water in large quantities for fires involving oxygen.	Oxides of burning material	▪ Respiratory protection may be needed for frequent or heavy exposure. ▪ None
Nitrogen	Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat.	Non-flammable	▪ Respiratory protection may be needed for frequent or heavy exposure.

Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
Hydrogen Sulfide	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Ventilate closed spaces before entering. Evacuation radius: 150 feet. For tank, rail car or tank truck: 800 meters (1/2 mile). Do not touch spilled material.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Remove sources of ignition. Reduce vapors with water spray. Do not get water directly on material.
Carbon Monoxide	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.	Avoid heat, flames, sparks and other sources of ignition. Keep out of water supplies and sewers.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
Methane	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
Oxygen	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.	Avoid contact with combustible materials.	Stop leak if possible without personal risk.
Nitrogen	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	No significant effects from contamination expected.	Stop leak if possible without personal risk.

	Methods for Cleanup	Other Information
Hydrogen Sulfide	Collect runoff for disposal as potential hazardous waste. Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
Carbon Monoxide	Stop leak, evacuate area. Wear protective equipment.	Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
Methane	Not available	Not available
Oxygen	Stop leak and ventilate	None
Nitrogen	N/A	N/A

Section 7: Handling and Storage

	Handling	Storage

	Handling	Storage
Hydrogen Sulfide	Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store outside or in a detached building. Store in a cool, dry place. Store in a well-ventilated area. Avoid contact with light. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30). Keep separated from incompatible substances.	Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.
Carbon Monoxide	Keep separated from incompatible substances.	Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.
Methane	Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.
Oxygen	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.
Nitrogen	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.

Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
Hydrogen Sulfide	HYDROGEN SULFIDE: 20 ppm OSHA ceiling 50 ppm OSHA peak 10 minute(s) (once if no other measurable exposure occurs) 10 ppm (14 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 15 ppm (21 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 10 ppm ACGIH TWA 15 ppm ACGIH STEL 10 ppm (15 mg/m3) NIOSH recommended ceiling 10 minute(s) TLV-TWA: 1ppm Upper respiratory irritation (ACGIH)
Carbon Monoxide	CARBON MONOXIDE: 50 ppm (55 mg/m3) OSHA TWA 35 ppm (40 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 200 ppm (229 mg/m3) OSHA ceiling (vacated by 58 FR 35338, June 30, 1993) 25 ppm ACGIH TWA 35 ppm (40 mg/m3) NIOSH recommended TWA 10 hour(s) 200 ppm (229 mg/m3) NIOSH recommended ceiling
Methane	METHANE, COMPRESSED GAS: ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA METHANE: No occupational exposure limits established. ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA
Oxygen	OXYGEN, COMPRESSED GAS: No occupational exposure limits established.
Nitrogen	NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant)

Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
Hydrogen Sulfide	Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any self-contained breathing apparatus with a full facepiece.
Carbon Monoxide	Eye protection not required, but recommended.	Protective clothing is not required.	Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Methane	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure. Any self-contained breathing apparatus with a full facepiece.
Oxygen	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.
Nitrogen	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Hydrogen Sulfide	Gas	Colorless	Colorless	N/A	Gas	Rotten egg odor	N/A
Carbon Monoxide	Gas	Colorless	Colorless	N/A	Gas	Odorless	Tasteless
Methane	Gas	Colorless	Colorless	N/A	Gas, liquid	Odorless	Tasteless
Oxygen	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless
Nitrogen	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Hydrogen Sulfide	Flammable	Not available	Not available	500 F (260 C)	44-46%	4.0-4.3%
Carbon Monoxide	Flammable	Not available	1479.11 (log = 3.17) (estimated from water solubility)	1128-1202 F (609-650 C)	0.74	12.0-12.5%
Methane	-369 F (-223 C)	Not available	724.44 (log = 2.87) (estimated from water solubility)	999 F (537 C)	15%	5%
Oxygen	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable
Nitrogen	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
Hydrogen Sulfide	-78 to -77 F (-61 to -60.3 C)	-123 F (-86 C)	15200 mmHg @ 25 C	1.2 (Air=1)	1.192	2.58-2.9% @ 20 C	4.5-<7 (saturated solution)	0.13 ppm	Not applicable	0.0128 cP @ 25 C
Carbon Monoxide	-312.7 F (-191.5 C)	-326 F (-199 C)	760 mmHg @ -191 C gas; cannot be liquefied at room temperature	0.968 (Air=1)	Not applicable	2.3% @ 20 C	Not applicable	Not available	Not applicable	0.01657 cP @ 0 C
Methane	-260 F (-162 C)	-297 F (-183 C)	760 mmHg @ -161 C	0.555 (Air=1)	Not applicable	3.5% @ 17 C	Not applicable	Not available	Not applicable	0.01118 cP @ 27 C
Oxygen	-297 F (-183 C)	-360 F (-218 C)	760 mmHg @ -183 C	1.1 (Air=1)	Not applicable	3.2% @ 25 C	Not applicable	Not available	Not applicable	0.02075 cP @ 25 C
Nitrogen	-321 F (-196 C)	-346 F (-210 C)	760 mmHg @ -196 C	0.967 (Air=1)	Not applicable	1.6% @ 20 C	Not applicable	Not available	Not applicable	0.01787 cP @ 27 C

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Hydrogen Sulfide	34.08	H2-S	1.539 g/L @ 0 C	Not available	Not available	Not applicable	Soluble: Carbon disulfide, alcohol, ether, glycerol, gasolines, kerosene, crude oil, alkali solutions
Carbon Monoxide	28.01	C-O	1.250 g/L @ 0 C	Not available	100%	Not applicable	Soluble: Alcohol, benzene, acetic acid, ethyl acetate, chloroform, cuprous chloride solutions
Methane	16.04	C-H4	0.717 g/L @ 0 C	Not available	Not applicable	Not applicable	Soluble: Alcohol, ether, benzene, organic solvents
Oxygen	31.9988	O2	1.309 g/L @ 25 C	Not available	Not applicable	Not applicable	Soluble: Alcohol
Nitrogen	28.0134	N2	1.2506 g/L	Not available	100%	1	Soluble: Liquid ammonia

Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
Hydrogen Sulfide	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Combustible materials, metals, oxidizing materials, halogens, metal oxides, metal salts, bases, rust, oxidants, oxygen, copper powder, acetaldehyde, silver fulminate
Carbon Monoxide	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, halogens, metal oxides, metals, combustible materials, lithium
Methane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Halogens, oxidizing materials, combustible materials
Oxygen	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Combustible materials, halo carbons, metals, bases, reducing agents, amines, metal salts, oxidizing materials, alkaline earth and alkali metals
Nitrogen	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
Hydrogen Sulfide	Oxides of sulfur	Will not polymerize.
Carbon Monoxide	Oxides of carbon	Will not polymerize.
Methane	Oxides of carbon	Will not polymerize.
Oxygen	Miscellaneous decomposition products	Will not polymerize.
Nitrogen	Oxides of nitrogen	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

	Oral LD50	Dermal LD50	Inhalation
Hydrogen Sulfide	444 ppm inhalation-rat LC50	Irritation 0.000125 ppm/5 hour(s) eyes-human	Irritation, lack of sense of smell, sensitivity to light, nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, disorientation, tremors, visual disturbances, suffocation, lung congestion, internal bleeding, heart damage, nerve damage, brain damage, coma, death
Carbon Monoxide	LC50 Inhalation Gas. Rat 1807 ppm 4 hours	Not available	Changes in body temperature, changes in blood pressure, nausea, vomiting, chest pain, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, disorientation, hallucinations, pain in extremities, tremors, loss of coordination, hearing loss, visual disturbances, eye damage, suffocation, blood disorders, convulsions, coma
Methane	Not available	Not available	Nausea, vomiting, difficulty breathing, irregular heartbeat, headache, drowsiness, fatigue, dizziness, disorientation, mood swings, tingling sensation, loss of coordination, suffocation, convulsions, unconsciousness, coma
Oxygen	Not established	Not established	Irritation, changes in body temperature, nausea, difficulty breathing, irregular heartbeat, dizziness, disorientation, hallucinations, mood swings, pain in extremities, tremors, lung congestion, convulsions
Nitrogen	Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma

	Eye Irritation	Skin Irritation	Sensitization
Hydrogen Sulfide	Irritation, sensitivity to light, visual disturbances	Irritation liquid: frostbite	Harmful if inhaled, respiratory tract irritation, skin irritation, eye irritation, blood damage
Carbon Monoxide	No information on significant adverse effects	No information on significant adverse effects	Blood damage, suffocation
Methane	No information on significant adverse effects	No information on significant adverse effects	Difficulty breathing
Oxygen	No information on significant adverse effects	No information on significant adverse effects	No significant target effects reported.
Nitrogen	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing

Chronic Effects

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Hydrogen Sulfide	Not available	Not available	Available.	No data

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Carbon Monoxide	Not available	Available.	Available.	No data
Methane	Not available	Not available	Not available	No data
Oxygen	Not known.	Available.	Available.	No data
Nitrogen	Not hazardous	Not available	Not available	No data

Section 12: Ecological Information

Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Hydrogen Sulfide	Fish toxicity: Acute LC50 7 ug/L Fresh water Fish - Fathead minnow - Pimephales promelas - FRY 96 hours; 14.9 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimeph Invertibrate toxicity: 9730 ug/L 1.5 hour(s) (Mortality) Mediterranean mussel (Mytilus galloprovincialis) Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Highly toxic to aquatic life.	Not available	Not available
Carbon Monoxide	Fish toxicity: 75000 ug/L 1 day(s) LC100 (Mortality) Orangespotted sunfish (Lepomis humilis) Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Relatively non-persistent in the environment. Highly volatile from water.	Not available	Not expected to leach through the soil or the sediment.
Methane	Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Relatively non-persistent in the environment. Moderately volatile from water.	Accumulates very little in the bodies of living organisms.	Not expected to leach through the soil or the sediment.
Oxygen	Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Low bioaccumulation	Not available
Nitrogen	Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Hydrogen Sulfide	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U135.
Carbon Monoxide	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Methane	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Oxygen	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Nitrogen	Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

DOT Information For This Mixture

Shipping Name	Compressed gas, n.o.s. (Nitrogen, Oxygen)
UN Number	UN1956
Hazard Class	2.2
Hazard Information	Non-Flammable Gas

Individual Component Information

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Hydrogen Sulfide	Hydrogen sulfide	UN1053	2.3	Not applicable	2.3; 2.1	Forbidden	Forbidden	Toxic-Inhalation Hazard Zone B
Carbon Monoxide	Carbon monoxide, compressed	UN1016	2.3	Not applicable	2.3; 2.1	Forbidden	25 kg	Toxic-Inhalation Hazard Zone D
Methane	Methane, compressed	UN1971	2.1	Not applicable	2.1	Forbidden	150 kg	N/A
Oxygen	Oxygen, compressed	UN1072	2.2	Not available	2.2; 5.1	75 kg or L	150 kg	N/A
Nitrogen	Nitrogen, compressed	UN1066	2.2	Not applicable	2.2	75 kg or L	150 kg	N/A

Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
Hydrogen Sulfide	HYDROGEN SULFIDE; or HYDROGEN SULPHIDE	UN1053	2.3; 2.1	Not applicable
Carbon Monoxide	Carbon monoxide, compressed	UN1016	2.3; 2.1	Not applicable
Methane	Methane, compressed	UN1971	2.1	Not applicable
Oxygen	Oxygen, compressed	UN1072	2.2; 5.1	Not applicable
Nitrogen	Nitrogen, compressed	UN1066	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
Hydrogen Sulfide	100 LBS RQ	500 LBS TPQ	100 LBS RQ
Carbon Monoxide	Not regulated.	Not regulated.	Not regulated.
Methane	Not regulated.	Not regulated.	Not regulated.
Oxygen	Not regulated.	Not regulated.	Not regulated.
Nitrogen	Not regulated.	Not regulated.	Not regulated.

SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
Hydrogen Sulfide	Yes	No	Yes	No	Yes
Carbon Monoxide	Yes	No	Yes	No	Yes
Methane	Yes	No	Yes	No	Yes
Oxygen	No	No	Yes	No	Yes
Nitrogen	Yes	No	No	No	Yes

SARA 372.65

Hydrogen Sulfide	HYDROGEN SULFIDE: Administrative stay issued Aug. 22, 1994
Carbon Monoxide	Not regulated.

Methane	Not regulated.
Oxygen	Not regulated.
Nitrogen	Not regulated.

OSHA Process Safety

Hydrogen Sulfide	1500 LBS TQ
Carbon Monoxide	Not regulated.
Methane	Not regulated.
Oxygen	Not regulated.
Nitrogen	Not regulated.

State Regulations

	CA Proposition 65
Hydrogen Sulfide	Not regulated.
Carbon Monoxide	Known to the state of California to cause the following: Carbon monoxide Developmental toxicity (Jul 01, 1989)
Methane	Not regulated.
Oxygen	Not regulated.
Nitrogen	Not regulated.

Canadian Regulations

	WHMIS Classification
Hydrogen Sulfide	A, B1, D1A, D2B.
Carbon Monoxide	A, B1, D1A, D2A.
Methane	A, B1
Oxygen	A,C
Nitrogen	A

National Inventory Status

	US Inventory (TSCA)	**TSCA 12b Export Notification**	**Canada Inventory (DSL/NDSL)**
Hydrogen Sulfide	Listed on inventory.	Not listed.	Listed on inventory.
Carbon Monoxide	Listed on inventory.	Not listed.	Listed on inventory.
Methane	Listed on inventory.	Not listed.	Listed on inventory.
Oxygen	Listed on inventory.	Not listed.	Not determined.
Nitrogen	Listed on inventory.	Not listed.	Listed on inventory.

Section 16: Other Information

	NFPA Rating
Hydrogen Sulfide	HEALTH=4 FIRE=4 REACTIVITY=0
Carbon Monoxide	HEALTH=3 FIRE=4 REACTIVITY=0
Methane	HEALTH=1 FIRE=4 REACTIVITY=0
Oxygen	HEALTH=0 FIRE=0 REACTIVITY=0
Nitrogen	HEALTH=1 FIRE=0 REACTIVITY=0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

1 Identification of the substance/mixture and of the supplier

1.1 Product identifier

Trade Name: Alconox
Synonyms:
Product number: Alconox

1.2 Application of the substance / the mixture : Cleaning material/Detergent

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer	**Supplier**
Alconox, Inc. 30 Glenn Street White Plains, NY 10603 1-914-948-4040	Not Applicable

Emergency telephone number:
ChemTel Inc
North America: 1-800-255-3924
International: 01-813-248-0585

2 Hazards identification

2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments.

Hazard-determining components of labeling:
Tetrasodium Pyrophosphate
Sodium tripolyphosphate
Sodium Alkylbenzene Sulfonate

2.2 Label elements:

Skin irritation, category 2.
Eye irritation, category 2A.

Hazard pictograms:

Signal word: Warning

Hazard statements:
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements:
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

Additional information: None.

Hazard description

Hazards Not Otherwise Classified (HNOC): None

Information concerning particular hazards for humans and environment:

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:

The classification is according to EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

3 Composition/information on ingredients

3.1 Chemical characterization : None

3.2 Description : None

3.3 Hazardous components (percentages by weight)

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	12-28
CAS number: 68081-81-2	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	8-22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	2-16

3.4 Additional Information : None.

4 First aid measures

4.1 Description of first aid measures

General information: None.

After inhalation:

Maintain an unobstructed airway.
Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.
Seek medical attention if symptoms develop or persist.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.
Remove contact lens(es) if able to do so during rinsing.
Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly.
Seek medical attention if irritation, discomfort, or vomiting persists.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

4.2 Most important symptoms and effects, both acute and delayed

None

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

For safety reasons unsuitable extinguishing agents : None

5.2 Special hazards arising from the substance or mixture :

Thermal decomposition can lead to release of irritating gases and vapors.

5.3 Advice for firefighters

Protective equipment:

Wear protective eye wear, gloves and clothing.
Refer to Section 8.

5.4 Additional information :

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.
Avoid contact with skin, eyes and clothing.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures :

Ensure adequate ventilation.
Ensure air handling systems are operational.

6.2 Environmental precautions :

Should not be released into the environment.
Prevent from reaching drains, sewer or waterway.

6.3 Methods and material for containment and cleaning up :

Wear protective eye wear, gloves and clothing.

6.4 Reference to other sections : None

7 Handling and storage

7.1 Precautions for safe handling :

Avoid breathing mist or vapor.
Do not eat, drink, smoke or use personal products when handling chemical substances.

7.2 Conditions for safe storage, including any incompatibilities :

Store in a cool, well-ventilated area.

7.3 Specific end use(s):

No additional information.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

8 Exposure controls/personal protection

8.1 Control parameters :

7722-88-5, Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3.

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Respiratory protection:

Not needed under normal conditions.

Protection of skin:

Select glove material impermeable and resistant to the substance.

Eye protection:

Safety goggles or glasses, or appropriate eye protection.

General hygienic measures:

Wash hands before breaks and at the end of work.
Avoid contact with skin, eyes and clothing.

9 Physical and chemical properties

Appearance (physical state, color):	White and cream colored flakes - powder	**Explosion limit lower**: **Explosion limit upper**:	Not determined or not available. Not determined or not available.
Odor:	Not determined or not available.	**Vapor pressure at 20°C**:	Not determined or not available.
Odor threshold:	Not determined or not available.	**Vapor density**:	Not determined or not available.
pH-value:	9.5 (aqueous solution)	**Relative density**:	Not determined or not available.
Melting/Freezing point:	Not determined or not available.	**Solubilities**:	Not determined or not available.
Boiling point/Boiling range:	Not determined or not available.	**Partition coefficient (n-octanol/water)**:	Not determined or not available.
Flash point (closed cup):	Not determined or not available.	**Auto/Self-ignition temperature**:	Not determined or not available.
Evaporation rate:	Not determined or not available.	**Decomposition temperature**:	Not determined or not available.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

Flammability (solid, gaseous):	Not determined or not available.	**Viscosity**:	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
Density at 20°C:	Not determined or not available.		

10 Stability and reactivity

10.1 Reactivity : None

10.2 Chemical stability : None

10.3 Possibility hazardous reactions : None

10.4 Conditions to avoid : None

10.5 Incompatible materials : None

10.6 Hazardous decomposition products : None

11 Toxicological information

11.1 Information on toxicological effects :

Acute Toxicity:

Oral:

: LD50 > 5000 mg/kg oral rat - Product .

Chronic Toxicity: No additional information.

Skin corrosion/irritation:

Sodium Alkylbenzene Sulfonate: Causes skin irritation. .

Serious eye damage/irritation:

Sodium Alkylbenzene Sulfonate: Causes serious eye irritation .

Tetrasodium Pyrophosphate: Rabbit - Risk of serious damage to eyes .

Respiratory or skin sensitization: No additional information.

Carcinogenicity: No additional information.

IARC (International Agency for Research on Cancer): None of the ingredients are listed.

NTP (National Toxicology Program): None of the ingredients are listed.

Germ cell mutagenicity: No additional information.

Reproductive toxicity: No additional information.

STOT-single and repeated exposure: No additional information.

Additional toxicological information: No additional information.

12 Ecological information

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

12.1 Toxicity:

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.
Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.4 mg/l, 48 hours.
Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.
Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.
Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

12.2 Persistence and degradability: No additional information.

12.3 Bioaccumulative potential: No additional information.

12.4 Mobility in soil: No additional information.

General notes: No additional information.

12.5 Results of PBT and vPvB assessment:

PBT: No additional information.

vPvB: No additional information.

12.6 Other adverse effects: No additional information.

13 Disposal considerations

13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)

Relevant Information:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

14 Transport information

14.1 UN Number: None
ADR, ADN, DOT, IMDG, IATA

14.2 UN Proper shipping name: None
ADR, ADN, DOT, IMDG, IATA

14.3 Transport hazard classes:
ADR, ADN, DOT, IMDG, IATA

Class: None
Label: None
LTD. QTY: None

US DOT
Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

Non Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

	Comments: None	**Comments:** None
14.4	**Packing group:** ADR, ADN, DOT, IMDG, IATA	None
14.5	**Environmental hazards** :	None
14.6	**Special precautions for user:**	None
	Danger code (Kemler):	None
	EMS number:	None
	Segregation groups:	None
14.7	**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable.	
14.8	**Transport/Additional information:**	
	Transport category:	None
	Tunnel restriction code:	None
	UN "Model Regulation":	None

15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.

North American

SARA

Section 313 (specific toxic chemical listings): None of the ingredients are listed.
Section 302 (extremely hazardous substances): None of the ingredients are listed.

CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable

Spill Quantity: None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

Inventory: All ingredients are listed.
Rules and Orders: Not applicable.

Proposition 65 (California):

Chemicals known to cause cancer: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males: None of the ingredients are listed.

Chemicals known to cause developmental toxicity: None of the ingredients are listed.

Canadian

Canadian Domestic Substances List (DSL):
All ingredients are listed.

EU

REACH Article 57 (SVHC): None of the ingredients are listed.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

Germany MAK: Not classified.

Asia Pacific

Australia

Australian Inventory of Chemical Substances (AICS): All ingredients are listed.

China

Inventory of Existing Chemical Substances in China (IECSC): All ingredients are listed.

Japan

Inventory of Existing and New Chemical Substances (ENCS): All ingredients are listed.

Korea

Existing Chemicals List (ECL): All ingredients are listed.

New Zealand

New Zealand Inventory of Chemicals (NZOIC): All ingredients are listed.

Philippines

Philippine Inventory of Chemicals and Chemical Substances (PICCS): All ingredients are listed.

Taiwan

Taiwan Chemical Substance Inventory (TSCI): All ingredients are listed.

16 Other information

Abbreviations and Acronyms: None

Summary of Phrases

Hazard statements:

H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements:

P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Manufacturer Statement:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

NFPA: 1-0-0

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

HMIS: 1-0-0

Safety Data Sheet
HYDROGEN CYANIDE IN NITROGEN

Section 1: Product and Company Identification

SpecAir Specialty Gases
22 Albiston Way
Auburn, ME 04210
Phone: 207-784-5788
Toll Free: 800-292-6218
Fax: 207-784-5383
http://www.specair.com/

Product Code: HYDROGEN CYANIDE IN NITROGEN

Synonyms: HCN/N2
Recommended Use: CALIBRATION GAS
Usage Restrictions:

Section 2: Hazards Identification

Danger

Hazard Classification:
Acute Aquatic Toxicity (Category 1)
Acute Dermal Toxicity (Category 1)
Acute Oral Toxicity (Category 1)
Chronic Aquatic Toxicity (Category 1)
Gases Under Pressure

Hazard Statements:
Contains gas under pressure; may explode if heated
Fatal if swallowed
Fatal in contact with skin
Very toxic to aquatic life
Very toxic to aquatic life with long lasting effects

Precautionary Statements
Prevention:
Wash thoroughly after handling.
Do not get in eyes, on skin, or on clothing.
Wear protective gloves and protective clothing.
Do not eat, drink or smoke when using this product.

Response:
If swallowed: Rinse mouth. Do NOT induce vomiting.
Take off immediately all contaminated clothing and wash it before reuse.
Wash with plenty of water

Immediately call a poison center or doctor.

Storage:
Protect from sunlight.
Store in well-ventilated place.
Store locked up.

Disposal:
Dispose of contents and/or container in accordance with applicable regulations.

Section 3: Composition/Information on Ingredients

	CAS #	Concentration
Hydrogen Cyanide	74-90-8	10 ppm
Nitrogen	7727-37-9	Balance

	Chemical Substance	Chemical Family	Trade Names
Hydrogen Cyanide	HYDROGEN CYANIDE, ANHYDROUS, STABILIZED	Inorganic gases	HYDROCYANIC ACID; PRUSSIC ACID; FORMONITRILE; CARBON HYDRIDE NITRIDE; HYDROCYANIC ACID, LIQUEFIED; HYDROGEN CYANIDE; RCRA P063; STCC 4920125; NA 1051; CHN
Nitrogen	NITROGEN, COMPRESSED GAS	Inorganic gases	DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2

Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Hydrogen Cyanide	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately	When safe to enter area, remove from exposure. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Get medical attention immediately.	Consider amyl nitrite inhalation, 1 ampoule (0.2 mL) every 5 minutes, and oxygen. For ingestion, consider gastric lavage. Consider oxygen.
Nitrogen	Wash exposed skin with soap and water.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

Section 5: Fire Fighting Measures

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Hydrogen Cyanide	Let burn unless leak can be stopped immediately. Large fires: Use regular foam or flood with fine water spray.	Carbon monoxide, carbon dioxide and nitrogen oxides	▪ Any self-contained breathing apparatus with a full facepiece. A full-body chemical protective suit. ▪ Any self-contained breathing apparatus with a full facepiece. A full-body chemical protective suit.
Nitrogen	Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat.	Non-flammable	▪ Respiratory protection may be needed for frequent or heavy exposure.

Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
Hydrogen Cyanide	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Ventilate closed spaces before entering. Evacuation radius: 150 feet. For tank, rail car or tank truck: 800 meters (1/2 mile). Do not touch spilled material.	Avoid heat, flames, sparks and other sources of ignition.	Remove sources of ignition. Reduce vapors with water spray. Do not get water directly on material.
Nitrogen	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	No significant effects from contamination expected.	Stop leak if possible without personal risk.

	Methods for Cleanup	Other Information
Hydrogen Cyanide	Stop leak if possible without personal risk. Contact emergency personnel.	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
Nitrogen	N/A	N/A

Section 7: Handling and Storage

	Handling	Storage
Hydrogen Cyanide	Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125°F (52°C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.	Do not get liquid in eyes, on skin, or clothing. Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. If valve is hard to open, discontinue use and contact your supplier
Nitrogen	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.

Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
Hydrogen Cyanide	HYDROGEN CYANIDE, ANHYDROUS, STABILIZED: HYDROGEN CYANIDE: 10 ppm (11 mg/m3) OSHA TWA (skin) 4.7 ppm (5 mg/m3) OSHA STEL (skin) (vacated by 58 FR 35338, June 30, 1993) 4.7 ppm(CN) ACGIH ceiling (skin) 4.7 ppm (5 mg/m3) NIOSH recommended STEL (skin)
Nitrogen	NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant)

Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
Hydrogen Cyanide	Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any self-contained breathing apparatus with a full facepiece. A full-body chemical protective suit.

	Eye Protection	Skin Protection	Respiratory Protection
Nitrogen	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Hydrogen Cyanide	Liquid	Colorless	Colorless	N/A	Liquid	Almond odor	N/A
Nitrogen	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Hydrogen Cyanide	0 F (-18 C) (CC)	IA	Not available	1000 F (538 C)	0.4	0.056
Nitrogen	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
Hydrogen Cyanide	79 F (26 C)	7 F (-14 C)	620 mmHg @ 20 C	0.941 (Air=1)	0.688 @ 20 C	Soluble	Weakly acidic	2-5 ppm	>1 (butyl acetate=1)	Not available
Nitrogen	-321 F (-196 C)	-346 F (-210 C)	760 mmHg @ -196 C	0.967 (Air=1)	Not applicable	1.6% @ 20 C	Not applicable	Not available	Not applicable	0.01787 cP @ 27 C

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Hydrogen Cyanide	27.03	H-C-N	Average 0.07	Not available	Not available	Not available	Soluble: Alcohol
Nitrogen	28.0134	N2	1.2506 g/L	Not available	100%	1	Soluble: Liquid ammonia

Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
Hydrogen Cyanide	May react with evolution of heat on contact with water. Polymerizes explosively if unstabilized and under alkaline conditions, if heated above 50 deg C, in the presence of sunlight or if water or other contaminants are present.	May react with evolution of heat on contact with water. Polymerizes explosively if unstabilized and under alkaline conditions, if heated above 50 deg C, in the presence of sunlight or if water or other contaminants are present.	Combustible materials, bases, amines, oxidizing materials, acids, alkalines, ammonium chloride, heavy metal cyanides
Nitrogen	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
Hydrogen Cyanide	Cyanides	Polymerizes with evolution of heat. Avoid contact with air, light, water, incompatible material or storage and use above room temperature.
Nitrogen	Oxides of nitrogen	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

	Oral LD50	Dermal LD50	Inhalation

	Oral LD50	Dermal LD50	Inhalation
Hydrogen Cyanide	3700 ug/kg oral-mouse LD50	Not available	Irritation, rash, nausea, chest pain, irregular heartbeat, anxiety, headache, blindness, bluish skin color, suffocation, lung congestion, paralysis, convulsions, coma, death
Nitrogen	Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma

	Eye Irritation	Skin Irritation	Sensitization
Hydrogen Cyanide	Irritation, suffocation, death	Suffocation	Acute toxicity, Category 1, oral; H300: Fatal if swallowed. Acute toxicity, Category 1, dermal; H310: Fatal if in contact with skin. Acute toxicity, Category 1, inhalation; H330: Fatal if inhaled. Skin corrosion, Category 1A; H314: Causes severe skin burns and eye damage. Hazardous to the aquatic environment, Acute Category 1; H400: Very toxic to aquatic life. Hazardous to the aquatic environment, Chronic Category 1; H410: Very toxic to aquatic life with long lasting effects.
Nitrogen	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing

Chronic Effects

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Hydrogen Cyanide	Not available	Not available	Not available	No data
Nitrogen	Not hazardous	Not available	Not available	No data

Section 12: Ecological Information

Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Hydrogen Cyanide	Fish toxicity: Acute LC50 0.042 to 0.046 mg/L Fresh water Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss - Juvenile (Fledgling, Hatchling, Weanling) 96 h Invertibrate toxicity: 21 ug/L 83 hour(s) NOEC (Reproduction) Scud (Gammarus pseudolimnaeus) Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
Nitrogen	Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Hydrogen Cyanide	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): P063.
Nitrogen	Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

DOT Information For This Mixture

Shipping Name	Compressed gas, n.o.s. (Nitrogen, Hydrogen Cyanide)
UN Number	UN1956
Hazard Class	2.2
Hazard Information	Non-Flammable Gas

Individual Component Information

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Hydrogen Cyanide	HYDROGEN CYANIDE, STABILIZED with less than 3 percent water	UN1051	6.1	I	6.1; 3	Forbidden	Forbidden	N/A
Nitrogen	Nitrogen, compressed	UN1066	2.2	Not applicable	2.2	75 kg or L	150 kg	N/A

Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
Hydrogen Cyanide	HYDROGEN CYANIDE, STABILIZED with less than 3 percent water	UN1051	6.1; 3	I
Nitrogen	Nitrogen, compressed	UN1066	2.2	Not applicable

Section 15: Regulatory Information

U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
Hydrogen Cyanide	10 LBS RQ	100 LBS TPQ	10 LBS RQ
Nitrogen	Not regulated.	Not regulated.	Not regulated.

SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
Hydrogen Cyanide	Yes	No	Yes	Yes	Yes
Nitrogen	Yes	No	No	No	Yes

SARA 372.65

Hydrogen Cyanide	HYDROGEN CYANIDE
Nitrogen	Not regulated.

OSHA Process Safety

Hydrogen Cyanide	1000 LBS TQ
Nitrogen	Not regulated.

State Regulations

	CA Proposition 65
Hydrogen Cyanide	Not regulated.
Nitrogen	Not regulated.

Canadian Regulations

	WHMIS Classification
Hydrogen Cyanide	B2, D1A, F
Nitrogen	A

National Inventory Status

	US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Hydrogen Cyanide	Listed on inventory.	Not listed.	Not determined.
Nitrogen	Listed on inventory.	Not listed.	Listed on inventory.

Section 16: Other Information

	NFPA Rating
Hydrogen Cyanide	HEALTH=4 FIRE=4 REACTIVITY=2
Nitrogen	HEALTH=1 FIRE=0 REACTIVITY=0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Safety Data Sheet
Isobutylene_Air

Section 1: Product and Company Identification

SpecAir Specialty Gases
22 Albiston Way
Auburn, ME 04210
Phone: 207-784-5788
Toll Free: 800-292-6218
Fax: 207-784-5383
http://www.specair.com/

Product Code: Isobutylene_Air
Synonyms:
Recommended Use:
Usage Restrictions:

Section 2: Hazards Identification

Warning

Hazard Classification:
Gases Under Pressure

Hazard Statements:
Contains gas under pressure; may explode if heated

Precautionary Statements

Storage:
Protect from sunlight.
Store in well-ventilated place.

Section 3: Composition/Information on Ingredients

	CAS #	Concentration
Isobutylene	115-11-7	1 PPM - 9,000 ppm

Air	Not assigned.	balance

	Chemical Substance	Chemical Family	Trade Names
Isobutylene	ISOBUTYLENE	hydrocarbons, aliphatic	2-METHYLPROPENE; ISOBUTENE; LIQUIFIED PETROLEUM GAS; 2-METHYL-1-PROPENE; L.P.G.; GAMMA-BUTYLENE; ASYM-DIMETHYL ETHYLENE; UN 1055
Air	AIR, COMPRESSED		AIR; UN 1002

Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Isobutylene	If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.	Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
Air	Wash exposed skin with soap and water.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Get medical attention.	

Section 5: Fire Fighting Measures

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Isobutylene	Carbon dioxide, regular dry chemical Large fires: Flood with fine water spray.	Carbon monoxide, carbon dioxide, water and toxic and irritating fumes	▪ Any self-contained breathing apparatus with a full facepiece. ▪ Any self-contained breathing apparatus with a full facepiece.
Air	Use extinguishing agents appropriate for surrounding fire.		▪ No respirator is required under normal conditions of use.

Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
Isobutylene	Keep unnecessary people away, isolate hazard area and deny entry. Do not touch spilled material. Ventilate closed spaces before entering.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
Air			Stop leak if possible without personal risk.

	Methods for Cleanup	Other Information
Isobutylene	Evacuate and ventilate area.	None
Air		

Section 7: Handling and Storage

	Handling	Storage

	Handling	Storage
Isobutylene	Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.110. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.
Air	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	

Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
Isobutylene	TLV-TWA: 250 ppm Carcinogenicity (ACGIH)
Air	AIR, COMPRESSED: No occupational exposure limits established.

Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
Isobutylene	For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.	Any self-contained breathing apparatus with a full facepiece.
Air	Eye protection not required under normal conditions.	Protective clothing is not required under normal conditions.	No respirator is required under normal conditions of use.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Isobutylene	Gas	Clear	Colorless	N/A	Liquefied gas	Petroleum odor	N/A
Air	Gas		Colorless			Not available	

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Isobutylene	-105 F (-76 C)	Not available	Not available	869 F (465 C)	0.096	0.018
Air						

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
Isobutylene	19 F (-7 C)	-220 F (-140 C)	3278 mmHg @ 37.7 C	1.9 (Air=1)	0.5879 @ 25 C	Almost insoluble	Not applicable	20 ppm (46 mg/m3) (unspecified)	Not applicable	Not available
Air	-317 F (-194 C)	Not available	760 mmHg @ -194 C	1	Not applicable	Slightly soluble	Not applicable	Not available	Not applicable	0.01853 cP @ 26.85 C

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Isobutylene	56.12	C4-H8	Not available	Not available	100%	Not applicable	Soluble: Organic solvents, alcohol, ether, sulfuric acid
Air			1.29 g/L @ 0 C			Not applicable	Slightly Soluble

Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
Isobutylene	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials
Air	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	None known

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
Isobutylene	Oxides of carbon	Can polymerize in the presence of catalysts.
Air	No hazard expected.	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

	Oral LD50	Dermal LD50	Inhalation
Isobutylene	LC50 (rat, inhalation) = 620 g/m 3 /4 hours LC50 (mouse, inhalation) = 415 g/m 3 /2 hours	Not available	Irritation, nausea, vomiting, headache, symptoms of drunkenness, disorientation, tingling sensation, suffocation, convulsions, coma
Air	Not available	Not available	

	Eye Irritation	Skin Irritation	Sensitization
Isobutylene	Irritation, frostbite, blurred vision	Liquid: burns, frostbite	Central nervous system depression, difficulty breathing
Air	No information is available	No information is available	No significant target effects reported.

Chronic Effects

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Isobutylene	Not listed.	Not established	Not established	No data
Air	Not available	Not available	No data	No data

Section 12: Ecological Information

Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Isobutylene	Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not expected Phyto toxicity: Not expected Other toxicity: Not available	Not available	Not available	Dissipates rapidly.
Air	Fish toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Isobutylene	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Air	Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

DOT Information For This Mixture

Shipping Name	Compressed gas, n.o.s. (Air, Isobutylene)
UN Number	UN1956
Hazard Class	2.2

Hazard Information	Non-Flammable Gas

Individual Component Information

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Isobutylene	ISOBUTYLENE see also PETROLEUM GASES, LIQUEFIED	UN1055	2.1	Not applicable	2.1	Forbidden	150 kg	N/A
Air	Air, compressed	UN1002	2.2	Not available	2.2	Not available	Not available	Not available

Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
Isobutylene	Isobutylene	UN1055	2.1	Not applicable
Air	Air, compressed	UN1002	2.2	Not available

Section 15: Regulatory Information

U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
Isobutylene	Not regulated.	Not regulated.	Not regulated.
Air	Not regulated.	Not regulated.	Not regulated.

SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
Isobutylene	Yes	No	Yes	No	Yes
Air	No	No	No	No	Yes

SARA 372.65

Isobutylene	Not regulated.
Air	Not regulated.

OSHA Process Safety

Isobutylene	Not regulated.
Air	Not regulated.

State Regulations

	CA Proposition 65
Isobutylene	Not regulated.
Air	Not regulated.

Canadian Regulations

	WHMIS Classification
Isobutylene	A,B1
Air	A

National Inventory Status

	US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Isobutylene	Listed on inventory.	Not listed.	Listed on inventory.
Air	Not listed on inventory.	Not listed.	Not determined.

Section 16: Other Information

	NFPA Rating
Isobutylene	HEALTH=1 FIRE=4 REACTIVITY=0
Air	HEALTH=0 FIRE=0 REACTIVITY=0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Methanol, Lab Grade, 4L

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Methanol, Lab Grade, 4L**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25426A**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

Flammable
Flammable liquids, category 2

Toxic
Acute toxicity (oral, dermal, inhalation), category 3

Health hazard
Specific target organ toxicity following single exposure, category 1

AcTox Dermal. 3
Flammable liq. 2
AcTox Oral. 3
AcTox Inhaln. 3
Stot SE. 1

Signal word :Danger

Hazard statements:
Highly flammable liquid and vapour
Toxic if swallowed
Toxic in contact with skin
Toxic if inhaled
Causes damage to organs

Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use

Wear protective gloves/protective clothing/eye protection/face protection
Wash skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapours/spray
Keep away from heat/sparks/open flames/hot surfaces. No smoking
Do not breathe dust/fume/gas/mist/vapours/spray
Specific treatment (see supplemental first aid instructions on this label)
IF ON SKIN: Wash with soap and water
Call a POISON CENTER or doctor/physician if you feel unwell
Specific measures (see supplemental first aid instructions on this label)
Take off contaminated clothing and wash before reuse
Wash contaminated clothing before reuse
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
IF exposed: Call a POISON CENTER or doctor/physician
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Store locked up
Store in a well ventilated place. Keep cool
Dispose of contents and container as instructed in Section 13

Other Non-GHS Classification:

WHMIS

B2 

D1B 

D2B 

NFPA/HMIS

NFPA SCALE (0-4)

HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 67-56-1	Methanol	>90 %

Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Move exposed individual to fresh air. Loosen clothing as necessary and position individual in a comfortable position.Get medical assistance.If breathing is difficult, give oxygen

After skin contact: Wash affected area with soap and water. Rinse/flush exposed skin gently using water for 15-20 minutes. Seek medical attention if irritation persists or if concerned.

After eye contact: Protect unexposed eye. Rinse or flush eye gently with water for at least 15-20 minutes, lifting upper and lower lids.Seek medical attention if irritation persists or if concerned

After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Have exposed individual drink sips of water. Dilute mouth with water or milk after rinsing.Get medical assistance.

Most important symptoms and effects, both acute and delayed:

Poison. Toxic by ingestion, absorption through skin and inhalation, potentially causing irreversible effects. Irritating to eyes, skin, and respiratory tract. Irritation- all routes of exposure.Shortness of breath.Nausea.Headache.May be fatal or cause blindness if swallowed. Cannot be made non-poisonous. May cause gastrointestinal irritation, vomiting, and diarrhea. Central nervous system disorders. Skin disorders, preexisting eye disorders, gastrointestinal tract;Toxic: danger of very serious irreversible effects by inhalation, ingestion or absorption through skin. Experiments have shown reproductive toxicity effects on laboratory animals. May cause adverse kidney and liver effects

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention, provide SDS document to physician.Physician should treat symptomatically.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: Dry chemical, foam, dry sand, or Carbon Dioxide.Water spray can keep containers cool.

For safety reasons unsuitable extinguishing agents: Water may be ineffective.

Special hazards arising from the substance or mixture:

Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated

Advice for firefighters:

Protective equipment: Wear protective eyeware, gloves, and clothing. Refer to Section 8.

Additional information (precautions): Remove all sources of ignition. Avoid contact with skin, eyes, and clothing.Ensure adequate ventilation.Take precautions against static discharge.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Use spark-proof tools and explosion-proof equipment.Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.Ensure adequate ventilation.

Environmental precautions:

Prevent from reaching drains, sewer or waterway. Should not be released into environment.

Methods and material for containment and cleaning up:

If necessary use trained response staff or contractor. Remove all sources of ignition. Contain spillage and then

collect. Do not flush to sewer.Absorb with a noncombustible absorbent material such as sand or earth and containerize for disposal. Ventilate area of leak or spill.Use spark-proof tools and explosion-proof equipment.Follow proper disposal methods. Refer to Section 13.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Use in a chemical fume hood. Wash hands before breaks and immediately after handling the product.Avoid contact with skin, eyes, and clothing.Take precautions against static discharge.

Conditions for safe storage, including any incompatibilities:

Store in a cool location. Provide ventilation for containers. Avoid storage near extreme heat, ignition sources or open flame. Keep container tightly sealed.Store with like hazards. Protect from freezing and physical damage.

SECTION 8 : Exposure controls/personal protection



Control Parameters:	67-56-1, Methanol, ACGIH: 250 ppm STEL; 200 ppm TWA 67-56-1, Methanol, NIOSH: 250 ppm STEL; 325 mg/m3 STEL 67-56-1, Methanol, NIOSH: 200 ppm TWA; 260 mg/m3 TWA
Appropriate Engineering controls:	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Ensure that dust-handling systems (exhaust ducts, dust collectors, vessels, and processing equipment) are designed to prevent the escape of dust into the work area.
Respiratory protection:	Use in a chemical fume hood. If exposure limit is exceeded, a full-face respirator with organic cartridge may be worn.
Protection of skin:	Select glove material impermeable and resistant to the substance.Select glove material based on rates of diffusion and degradation.
Eye protection:	Safety glasses with side shields or goggles.
General hygienic measures:	Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.Perform routine housekeeping.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Clear colorless liquid	**Explosion limit lower**: **Explosion limit upper**:	6 31
Odor:	Alcohol	**Vapor pressure**:	128 hPa @ 20°C
Odor threshold:	Not Available	**Vapor density**:	1.11
pH-value:	Not Available	**Relative density**:	0.79
Melting/Freezing point:	-98°C	**Solubilities**:	Miscible at 20 °C

Boiling point/Boiling range:	64.7°C @ 760mmHg	**Partition coefficient (n-octanol/water)**:	Not Available
Flash point (closed cup):	12°C	**Auto/Self-ignition temperature**:	455°C
Evaporation rate:	5.2	**Decomposition temperature**:	Not Available
Flammability (solid,gaseous):	Flammable	**Viscosity**:	a. Kinematic:Not Available b. Dynamic: Not Available
Density: Not Available			

SECTION 10 : Stability and reactivity

Reactivity: Vapours may form explosive mixture with air.
Chemical stability: Stable under normal conditions.
Possible hazardous reactions: None under normal processing.
Conditions to avoid: Excess heat, Incompatible Materials, flames, or sparks.
Incompatible materials: Oxidizing agents, reducing agents, alkali metals, acids, sodium, potassium, metals as powders, acid chlorides, acid anhydrides, powdered magnesium, and aluminum.
Hazardous decomposition products:carbon monoxide, formaldehyde.

SECTION 11 : Toxicological information

Acute Toxicity:		
Dermal:	(rabbit)	LD-50 15800 mg/kg
Oral:	(rat)	LD-50 5628 mg/kg
Inhalation:	(rat)	LC-50 130,7 mg/l
Chronic Toxicity: No additional information.		
Corrosion Irritation:		
Ocular:		Irritating to eyes
Dermal:		Irritating to skin
Sensitization:		No additional information.
Single Target Organ (STOT):		Classified as causing damage to organs:Eyes, skin, optic nerve, gastrointestinal tract, central nervous system, respiratory system, liver, spleen, kidney, blood
Numerical Measures:		No additional information.
Carcinogenicity:		Teratogenicity : has occurred in experimental animals.
Mutagenicity:		Mutagenetic effects have occurred in experimental animals.

Reproductive Toxicity:	Developmental Effects (Immediate/Delayed) have occurred in experimental animals

SECTION 12 : Ecological information

Ecotoxicity

Freshwater Fish: 96 Hr LC50 Pimephales promelas: 28200 mg/L

Freshwater Fish: 96 Hr LC50 Oncorhynchus mykiss: 19500 - 20700 mg/L

Freshwater Fish: 96 Hr LC50 Pimephales promelas: >100 mg/L

Freshwater Fish: 96 Hr LC50 Oncorhynchus mykiss: 18 - 20 mL/L

Freshwater Fish: 96 Hr LC50 Lepomis macrochirus: 13500 - 17600 mg/L

Persistence and degradability: Not persistant.
Bioaccumulative potential: Not Bioaccumulative.
Mobility in soil: Aqueous solution has high mobility in soil.
Other adverse effects:

SECTION 13 : Disposal considerations

Waste disposal recommendations:

Methanol RCRA waste code U154. Do not allow product to reach sewage system or open water.It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Absorb with a noncombustible absorbent material such as sand or earth and containerize for disposal. Provide ventilation. Have fire extinguishing agent available in case of fire. Eliminate all sources of ignition.Use spark-proof tools and explosion-proof equipment.Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information

UN-Number

UN1230

UN proper shipping name

Methanol

Transport hazard class(es)

Class:
3 Flammable liquids

Class:
6.1 Toxic substances

Packing group:II
Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Acute, Chronic, Fire

SARA Section 313 (Specific toxic chemical listings):

67-56-1 Methanol

RCRA (hazardous waste code):

67-56-1 Methanol RCRA waste code U154

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

67-56-1 Methanol 5000 lbs

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

67-56-1 Methanol

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

67-56-1 Methanol

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.Note:. The responsibility to provide a safe workplace remains with the user.The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.The information contained herein is, to the best of our knowledge and belief, accurate.However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material.It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:

IMDG: International Maritime Code for Dangerous Goods
PNEC: Predicted No-Effect Concentration (REACH)

CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)
NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
DNEL: Derived No-Effect Level (REACH)

Effective date : 01.08.2015
Last updated : 03.27.2015

SAFETY DATA SHEET

Creation Date 30-June-2009 **Revision Date** 24-May-2017 **Revision Number** 4

1. Identification

Product Name **Nitric acid**

Cat No. : **SA95**

Synonyms HNO3 in water.

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Importer/Distributor
Fisher Scientific
112 Colonnade Road,
Ottawa, ON K2E 7L6,
Canada
Tel: 1-800-234-7437

Manufacturer
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification

WHMIS 2015 Classification Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

Corrosive to metals	Category 1
Skin Corrosion/irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney.	
Health Hazards Not Otherwise Classified	Category 1
Corrosive to the respiratory tract	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals
Causes severe skin burns and eye damage
May cause damage to organs through prolonged or repeated exposure
Corrosive to the respiratory tract

Precautionary Statements
Prevention
Keep only in original container
Do not breathe dust/fumes/gas/mist/vapours/spray
Wash face, hands and any exposed skin thoroughly after handling
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Wear respiratory protection
Response
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
IF INHALED: Remove person to fresh air and keep comfortable for breathing
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER/doctor
Wash contaminated clothing before reuse
Absorb spillage to prevent material damage
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in corrosive resistant polypropylene container with a resistant inliner
Store in a dry place
Disposal
Dispose of contents/container to an approved waste disposal plant

3. Composition / information on ingredients

Component	CAS-No	Weight %
Water	7732-18-5	80-95
Nitric acid	7697-37-2	5-20

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Move to fresh air. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required. If not breathing, give artificial respiration.

Ingestion Do not induce vomiting. Call a physician or Poison Control Center immediately.

Most important symptoms/effects Causes burns by all exposure routes. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature No information available
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Corrosive Material. Non-combustible. Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Nitrogen oxides (NOx)
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
4	0	0	OX

6. Accidental release measures

Personal Precautions Wear self-contained breathing apparatus and protective suit. Evacuate personnel to safe areas. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing.

Environmental Precautions Avoid release to the environment. See Section 12 for additional ecological information.

Methods for Containment and Clean Up Wear self-contained breathing apparatus and protective suit. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Do not ingest.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area. Do not store in metal containers.

8. Exposure controls / personal protection

Exposure Guidelines

Component	Alberta	British Columbia	Ontario TWAEV	Quebec	ACGIH TLV	OSHA PEL	NIOSH IDLH
Nitric acid	TWA: 2 ppm TWA: 5.2 mg/m³ STEL: 4 ppm STEL: 10 mg/m³	TWA: 2 ppm STEL: 4 ppm	TWA: 2 ppm STEL: 4 ppm	TWA: 2 ppm TWA: 5.2 mg/m³ STEL: 4 ppm STEL: 10 mg/m³	TWA: 2 ppm STEL: 4 ppm	(Vacated) TWA: 2 ppm (Vacated) TWA: 5 mg/m³ (Vacated) STEL: 4 ppm (Vacated) STEL: 10 mg/m³	IDLH: 25 ppm TWA: 2 ppm TWA: 5 mg/m³ STEL: 4 ppm STEL: 10 mg/m³

						TWA: 2 ppm TWA: 5 mg/m^3	

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Goggles
Hand Protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Glove material	Breakthrough time	Glove thickness	Glove comments
Butyl rubber	> 480 minutes	0.45 mm	As tested under EN374-3
Neoprene gloves	> 480 minutes	0.56 mm	Determination of Resistance to Permeation by Chemicals

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly
Recommended Filter type: Particulates filter conforming to EN 143

When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls

Prevent product from entering drains.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Clear
Odor	Odorless
Odor Threshold	No information available
pH	; < 1
Melting Point/Range	No data available
Boiling Point/Range	100 °C / 212 °F
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available

Vapor Pressure	No information available
Vapor Density	No information available
Specific Gravity	1.03-1.12
Solubility	miscible
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available

10. Stability and reactivity

Reactive Hazard Yes

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat.

Incompatible Materials Strong bases, Reducing agents, Aldehydes, Alcohols, Cyanides, Metals, Powdered metals, Ammonia

Hazardous Decomposition Products Nitrogen oxides (NOx)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product
Oral LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Dermal LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Vapor LC50 Category 1. ATE < 0.5 mg/l. Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	Not listed	Not listed
Nitric acid	Not listed	Not listed	LC50 = 2500 ppm. (Rat) 1h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes burns by all exposure routes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Water	7732-18-5	Not listed	Not listed	Not listed	Not listed	Not listed
Nitric acid	7697-37-2	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure Kidney

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. This product contains the following substance(s) which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Nitric acid	Not listed	LC50: = 72 mg/L, 96h (Gambusia affinis)	Not listed	Not listed

Persistence and Degradability Soluble in water Persistence is unlikely based on information available. Miscible with water

Bioaccumulation/ Accumulation No information available.

Mobility . Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Nitric acid	-2.3

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

- **UN-No** UN2031
- **Proper Shipping Name** NITRIC ACID
- **Hazard Class** 8
- **Subsidiary Hazard Class** 5.1
- **Packing Group** II

TDG

- **UN-No** UN2031
- **Proper Shipping Name** NITRIC ACID
- **Hazard Class** 8
- **Packing Group** II

IATA

- **UN-No** UN2031
- **Proper Shipping Name** NITRIC ACID
- **Hazard Class** 8
- **Packing Group** II

IMDG/IMO

- **UN-No** UN2031
- **Proper Shipping Name** NITRIC ACID
- **Hazard Class** 8
- **Packing Group** II

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	DSL	NDSL	TSCA	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Water	X	-	X	231-791-2	-		X	-	X	X	X
Nitric acid	X	-	X	231-714-2	-		X	X	X	X	X

Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

Component	Canada - National Pollutant Release Inventory (NPRI)	Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances	Canada's Chemicals Management Plan (CEPA)
Nitric acid	Part 1, Group A Substance		

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 30-June-2009
Revision Date 24-May-2017
Print Date 24-May-2017
Revision Summary This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Section 1: IDENTIFICATION

Product Name: Simple Green® All-Purpose Cleaner
Additional Names:

Manufacturer's Part Number: **Please refer to Section 16*

Recommended Use: Cleaner & Degreaser for water tolerant surfaces.
Restrictions on Use: Do not use on non-rinsable surfaces.

Company: Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649 USA
Telephone: 800-228-0709 ● 562-795-6000 *Mon – Fri, 8am – 5pm PST*
Fax: 562-592-3830
Email: info@simplegreen.com
Emergency Phone: Chem-Tel 24-Hour Emergency Service: 800-255-3924

Section 2: HAZARDS IDENTIFICATION

This product is not classified as hazardous under 2012 OSHA Hazard Communication Standards (29 CFR 1910.1200).

OSHA HCS 2012
Label Elements
Signal Word: None **Hazard Symbol(s)/Pictogram(s):** None required

Hazard Statements: None
Precautionary Statements: None
Hazards Not Otherwise Classified (HNOC): None
Other Information: None Known

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	Percent Range
Water	7732-18-5	> 84.8%*
Ethoxylated Alcohol	68439-46-3	< 5%*
Sodium Citrate	68-04-2	< 5%*
Tetrasodium *N,N*-bis(carboxymethyl)-L-glutamate	51981-21-6	< 1%*
Sodium Carbonate	497-19-8	< 1%*
Citric Acid	77-92-9	< 1%*
Isothiazolinone mixture	55965-84-9	< 0.2%*
Fragrance	Proprietary Mixture	< 1%*
Colorant	Proprietary Mixture	< 1%*

**specific percentages of composition are being withheld as a trade secret*

Section 4: FIRST-AID MEASURES

Inhalation: Not expected to cause respiratory irritation. If adverse effect occurs, move to fresh air.
Skin Contact: Not expected to cause skin irritation. If adverse effect occurs, rinse skin with water.
Eye Contact: Not expected to cause eye irritation. If adverse effect occurs, flush eyes with water.
Ingestion: May cause upset stomach. Drink plenty of water to dilute. See section 11.

Most Important Symptoms/Effects, Acute and Delayed: None known.

Indication of Immediate Medical Attention and Special Treatment Needed, if necessary: Treat symptomatically

Section 5: FIRE-FIGHTING MEASURES

Suitable & Unsuitable Extinguishing Media: Use Dry chemical, CO2, water spray or "alcohol" foam. Avoid high volume jet water.
Specific Hazards Arising from Chemical: In event of fire, fire created carbon oxides may be formed.
Special Protective Actions for Fire-Fighters: Wear positive pressure self-contained breathing apparatus; Wear full protective clothing.

See section 16 for NFPA rating.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: *For non-emergency and emergency personnel:* See section 8 – personal protection. Avoid eye contact. Safety goggles suggested.

Environmental Precautions: Do not allow into open waterways and ground water systems.

Methods and Materials for Containment and Clean Up: Dike or soak up with inert absorbent material. See section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Precautions for Safe Handling: Ensure adequate ventilation. Keep out of reach of children. Keep away from heat, sparks, open flame and direct sunlight. Do not pierce any part of the container. Do not mix or contaminate with any other chemical. Do not eat, drink or smoke while using this product.

Conditions for Safe Storage including Incompatibilities: Keep container tightly closed. Keep in cool dry area. Avoid prolonged exposure to sunlight. Do not store at temperatures above 109°F (42.7°C). If separation occurs, mix the product for reconstitution.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limit Values: No components listed with TWA or STEL values under OSHA or ACGIH.

Appropriate Engineering Controls: Showers, eyewash stations, ventilation systems

Individual Protection Measures / Personal Protective Equipment (PPE)
Eye Contact: Use protective glasses or safety goggles if splashing or spray-back is likely.
Respiratory: Use in well ventilated areas or local exhaust ventilations when cleaning small spaces.
Skin Contact: Use protective gloves (any material) when used for prolonged periods or dermally sensitive.
General Hygiene Considerations: Wash thoroughly after handling and before eating or drinking.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Green Liquid
Odor: Added sassafras odor
Odor Threshold: Not determined
pH ASTM D-1293**:** 8.5 – 9.5
Freezing Point ASTM D-1177**:** 0-3.33°C (32-38°F)
Boiling Point & Range ASTM D-1120**:** 101°C (213.8°F)
Flash Point ASTM D-93**:** > 212°F
Evaporation Rate ASTM D-1901**:** ½ Butyl Acetate @ 25°C
Flammability (solid, gas): Not applicable
Upper/Lower Flammability or Explosive Limits: Not applicable
Vapor Pressure ASTM D-323**:** 0.60 PSI @77°F, 2.05 PSI @100°F
Vapor Density: Not determined

Partition Coefficient: n-octanol/water: Not determined
Autoignition Temperature: Non-flammable
Decomposition Temperature: 109°F
Viscosity: Like water
Specific Gravity ASTM D-891**:** 1.01 – 1.03
VOCs: ***Water & fragrance exemption in calculation*

SCAQMD 304-91 / EPA 24:	0 g/L	0 lb/gal	0%
CARB Method 310**:	2.5 g/L	0.021 lb/gal	0.25%
SCAQMD Method 313:	Not tested		

VOC Composite Partial Pressure: Not determined
Relative Density ASTM D-4017**:** 8.34 – 8.42 lb/gal
Solubility: 100% in water

Section 10: STABILITY AND REACTIVITY

Reactivity: Non-reactive.
Chemical Stability: Stable under normal conditions 70°F (21°C) and 14.7 psig (760 mmHg).
Possibility of Hazardous Reactions: None known.
Conditions to Avoid: Excessive heat or cold.
Incompatible Materials: Do not mix with oxidizers, acids, bathroom cleaners, or disinfecting agents.
Hazardous Decomposition Products: Normal products of combustion - CO, CO2.

Section 11: TOXICOLOGICAL INFORMATION

Likely Routes of Exposure:
Inhalation - Overexposure may cause headache.
Skin Contact - Not expected to cause irritation, repeated contact may cause dry skin.
Eye Contact - Not expected to cause irritation.
Ingestion - May cause upset stomach.

Symptoms related to the physical, chemical and toxicological characteristics: no symptoms expected under typical use conditions.
Delayed and immediate effects and or chronic effects from short term exposure: no symptoms expected under typical use conditions.
Delayed and immediate effects and or chronic effects from long term exposure: headache, dry skin, or skin irritation may occur.
Interactive effects: Not known.

Numerical Measures of Toxicity

Acute Toxicity:
Oral LD_{50} (rat) > 5 g/kg body weight
Dermal LD_{50} (rabbit) > 5 g/kg body weight
Calculated via OSHA HCS 2012 / Globally Harmonized System of Classification and Labelling of Chemicals

Skin Corrosion/Irritation: Non-irritant per Dermal Irritection® assay modeling. No animal testing performed.
Eye Damage/Irritation: Minimal irritant per Ocular Irritection® assay modeling. No animal testing performed.
Germ Cell Mutagenicity: Mixture does not classify under this category.
Carcinogenicity: Mixture does not classify under this category.
Reproductive Toxicity: Mixture does not classify under this category.
STOT-Single Exposure: Mixture does not classify under this category.
STOT-Repeated Exposure: Mixture does not classify under this category.
Aspiration Hazard: Mixture does not classify under this category.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Volume of ingredients used does not trigger toxicity classifications under the Globally Harmonized System of Classification and Labelling of Chemicals.
Aquatic: Aquatic Toxicity - Low, based on OECD 201, 202, 203 + Microtox: EC_{50} & IC_{50} ≥100 mg/L. Volume of ingredients used does not trigger toxicity classifications under the Globally Harmonized System of Classification and Labelling of Chemicals.
Terrestrial: Not tested on finished formulation.

Persistence and Degradability: Readily Biodegradable per OCED 301D, Closed Bottle Test
Bioaccumulative Potential: No data available.
Mobility in Soil: No data available.
Other Adverse Effects: No data available.

Section 13: DISPOSAL CONSIDERATIONS

Unused or Used Liquid: May be considered hazardous in your area depending on usage and tonnage of disposal – check with local, regional, and or national regulations for appropriate methods of disposal.

Empty Containers: May be offered for recycling.

Never dispose of used degreasing rinsates into lakes, streams, and open bodies of water or storm drains.

Section 14: TRANSPORT INFORMATION

U.N. Number: Not applicable
U.N. Proper Shipping Name: Cleaning Compound, Liquid NOI
Transport Hazard Class(es): Not applicable
NMFC Number: 48580-3
Packing Group: Not applicable
Class: 55
Environmental Hazards: Marine Pollutant - NO
Transport in Bulk (according to Annex II of MARPOL 73/78 and IBC Code): Unknown.
Special precautions which user needs to be aware of/comply with, in connection with transport or conveyance either within or outside their premises: None known.

U.S. (DOT) / Canadian TDG: Not Regulated for shipping.
ICAO/ IATA: Not classified as Hazardous
IMO / IDMG: Not classified as Hazardous
ADR/RID: Not classified as Hazardous

Section 15: REGULATORY INFORMATION

All components are listed on: TSCA and DSL Inventory.

SARA Title III: Sections 311/312 Hazard Categories – Not applicable.
Sections 313 Superfunds Amendments and Reauthorizations Act of 1986 – Not applicable.
Sections 302 – Not applicable.

Clean Air Act (CAA): Not applicable
Clean Water Act (CWA): Not applicable

State Right To Know Lists: No ingredients listed
California Proposition 65: No ingredients listed
Texas ESL:

Ethoxylated Alcohol	68439-46-3	60 µg/m^3 long term	600 µg/m^3 short term
Sodium Citrate	68-04-2	5 µg/m^3 long term	50 µg/m^3 short term
Sodium Carbonate	497-19-8	5 µg/m^3 long term	50 µg/m^3 short term
Citric Acid	77-92-9	10 µg/m^3 long term	100 µg/m^3 short term

Section 16: OTHER INFORMATION

Size	UPC	Size	UPC
2 oz. Pump	043318130366	1 Gallon w/ Dilution Bottle	043318000669
2 oz. Pump	043318131035	1 Gallon	043318000799
4 oz. Pump	043318130014	1 Gallon w/ Dilution Bottle	043318001383
16 oz. Trigger	043318130021	1 Gallon w/ Dilution Bottle	043318002021
22 oz. Trigger	043318130229	1 Gallon	043318130052
24 oz. Trigger, 12 per case	043318000034	1 Gallon w/ Dilution Bottle, 112 per case	043318480140
24 oz. Trigger	043318000300	1 Gallon w/ Dilution Bottle, 4 per case	043318480416
24 oz. Trigger	043318130137	1 Gallon w/ Dilution Bottle, 24 per case	043318480492
32 oz. Trigger	043318000652	1 Gallon w/ laundry	043318002052
32 oz. Trigger	043318130335	1 Gallon w/ towel	043318001222
67.6 oz	043318000393	140 oz.	043318001390
67.6 oz.	043318130144	140 oz., 168 per case	043318561405
1 Gallon w/ Dilution Bottle	043318000539	140 oz. w/ Dilution Bottle	043318001468
1 Gallon w/ Dilution Bottle	043318000645		

USA items listed only. Not all items listed. USA items may not be valid for international sale.

Section 16: OTHER INFORMATION - continued

NFPA:

Health – None
Flammability – Non-flammable
Stability – Stable
Special - None

Acronyms

NTP	National Toxicology Program	IARC	International Agency for Research on Cancer
OSHA	Occupational Safety and Health Administration	CPSC	Consumer Product Safety Commission
TSCA	Toxic Substances Control Act	DSL	Domestic Substances List

Prepared / Revised By: Sunshine Makers, Inc., Regulatory Department.
This SDS has been revised in the following sections: Revised SDS layout

DISCLAIMER: The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Appendix C

Heat Stress and Cold Stress Guidelines

Heat Stress Guidelines

Form	Signs & Symptoms	Care	Prevention[3]
Heat Rash	Tiny red vesicles in affected skin area. If the area is extensive, sweating can be impaired.	Apply mild lotions and cleanse the affected area.	Cool resting and sleeping areas to permit skin to dry between heat exposures.
Heat Cramps	Spasm, muscular pain (cramps) in stomach area and extremities (arms and legs).	Provide replacement fluids with minerals (salt) such as Gatorade.	Adequate salt intake with meals[1]. ACCLIMATIZATION[2]
Heat Exhaustion	Profuse sweating, cool (clammy) moist skin, dizziness, confusion, pale skin color, faint, rapid shallow breathing, headache, weakness, and/or muscle cramps.	Remove from heat, sit or lie down, rest, replace lost water with electrolyte replacement fluids (water, Gatorade) take frequent sips of liquids in amounts greater than required to satisfy thirst.	ACCLIMATIZATION[2] Adequate salt intake with meals[1], only during early part of heat season. Ample water intake, frequently during the day.
Heat Stroke	HOT <u>Dry</u> Skin. Sweating has stopped. Mental confusion, dizziness, nausea, chills, severe headache, collapse, delirium, and/or coma.	HEAT STROKE IS A MEDICAL EMERGENCY • Remove from heat. • COOL THE BODY AS RAPIDLY AS POSSIBLE by immersing in cold (or cool) water, or splash with water and fan. • Call for Emergency Assistance. • Observe for signs of shock.	ACCLIMATIZATION[2] Initially moderate workload in heat (8 to 14 days). Monitor worker's activities.

<u>Footnotes</u>:

1.) American diets are normally high in salt, sufficient to aid acclimatization. However, during the early part of the heat season, (May, June), one extra shake of salt during one to two meals per day may help, so long as this is permitted by your physician. Check with your personal physician.

2.) ACCLIMATIZATION - The process of adapting to heat is indicated by worker's ability to perform hot jobs less fluid loss, lower concentrations of salt loss in sweat, and a reduced core (body) temperature and heart rate.

3.) Method to Achieve Acclimatization - Moderate work or exercise in hot temperatures during early part of heat season. Adequate salt (mineral) and water intake. Gradually increasing work time in hot temperatures. Avoid alcohol. Normally takes 8 to 14 days to achieve acclimatization. Lost rapidly, if removed from strenuous work (or exercise) in hot temperature for more than approximately 5 days.

Cold Stress Guidelines

Stress	Symptoms	What to do
Mild Hypothermia	• Body Temp 98 to 90°F • Shivering • Lack of coordination, stumbling, fumbling hands • Slurred speech • Memory loss • Pale, cold skin	• Move to warm area • Stay active • Remove wet clothes and replace with dry clothes or blankets • Cover the head • Drink warm (not hot) sugary drink
Moderate Hypothermia	• Body temp 90 to 86°F • Shivering stops • Unable to walk or stand • Confused and/or irrational	• All of the above, plus: o Call 911 o Cover all extremities completely o Place very warm objects, such as hot packs on the victim's head, neck, chest, and groin
Severe Hypothermia	• Body temp 86 to 78°F • Severe muscle stiffness • Very sleepy or unconscious • Ice cold skin • Death	• Call 911 • Treat victim very gently • Do not attempt to re-warm
Frostbite	• Cold, tingling, stinging, or aching feeling in the frostbitten area, followed by numbness • Skin color turns red, then purple, then white or very pale skin • Cold to the touch • Blisters in severe cases	• Call 911 • Do not rub the area • Wrap in soft cloth • If help is delayed, immerse in warm (not hot) water
Trench Foot	• Tingling, itching, or burning sensation • Blisters	• Soak feet in warm water, then wrap with dry cloth bandages • Drink a warm (not hot) sugary drink

Appendix D

Forms

GEI Consultants

Accident/Incident Report Form

Please complete this form and send it to your Branch Manager, HR and CHSO ***within 24 hours*** of the incident.

SECTION A — ACCIDENT/INCIDENT DETAILS

EMPLOYEE INFORMATION:

Name: _____

Home Address: _____
Street Address City State Zip Code

Contact Information: ( ) _____ ( ) _____
Primary Secondary

Date of Birth: _____

Date of Hire: _____

Branch: _____

Supervisor: _____

OTHER INJURED (IF APPLICABLE):

Name: _____

Home Address: _____
Street Address City State Zip Code

Contact Information: ( ) _____ ( ) _____
Primary Secondary

Date of Birth: _____

Date of Hire: _____

Branch: _____

Supervisor: _____

Date and Time Accident/Incident	Date and Time Reported
____ /____ /____ Month Day Year	____ /____ /____ Month Day Year
____ A.M. ____ P.M.	____ A.M. ____ P.M.

LOCATION OF INCIDENT/ACCIDENT

Project Name: _____

Client and Location: _____

or _____

Office Location: _____

INCIDENT TYPE: (Check All That Applies)

- ☐ **Personal Injury/Illness**
- ☐ **Vehicle Accident**
- ☐ **Property Damage**
- ☐ **Environmental Spill**
- ☐ **Other**

WITNESS INFORMATION

Name: _____

Contact Number: _____

Company: _____

WHAT HAPPENED TO THE INJURED PARTY: ☐ First Aid Administered ☐ Refused Treatment/Transport ☐ Transported to Hospital ☐ Returned to Work ☐ Went Home ☐ Went to Physician ☐ Unknown

Clinic/Hospital or Treating Physician: _____ Phone: _____
Name Street Address City State Zip Code

SECTION B — PERSONAL INJURY

Cause of Injury: _____

Part of Body Injured: _____ Multiple Injuries: ☐ Y ☐ N

Was PPE worn when injured? : ☐ Y ☐ N What PPE was worn? _____

WAS INJURY A RESULT OF THE USE A MOTOR VEHICLE: ☐ **YES** ☐ **NO** **(If yes, complete Section C)**

GEI Consultants

Accident/Incident Report Form

Please complete this form and send it to your Branch Manager, HR and CHSO ***within 24 hours*** of the incident.

SECTION C — AUTO ACCIDENT ONLY

DRIVER/VEHICLE INFORMATION

Name of Insured: _____

Department: _____

Driver's License Number: _____

DOB: ____/____/____ State: _____

Description of Vehicle: License Plate Number: _____

Make: _____ Model: _____ Year:_____ Color:_____

Owner: _____

Name of Other Driver: _____

Driver's License Number: _____

State: _____

Description of Vehicle: License Plate Number: _____

Make: _____ Model:_____ Year:_____ Color:_____

Insurance Carrier: _____

Policy Number: _____Ph. Number:_____

SECTION D — PROPERTY DAMAGE OR CHEMICAL RELEASE ONLY

Type of Damage(s): _____

Cause of Damage(s): _____

Type of Chemical Released (if known): _____

Quantity of Chemical Released: _____

Spill Measures Employed: _____

SECTION E — NATURE OF ACCIDENT/INCIDENT AND EXTENT OF INJURIES/DAMAGES

(Please give a detailed description of what happened. Attach a sketch or picture if applicable)

_____

_____

_____

_____

_____

_____

_____

_____

_____

I hereby certify that the above information is true and correct to my understanding of this accident/incident.

_____ _____

Employee/Preparer's Name **Date and Time**

GEI Consultants

Daily Safety Briefing and Site Visitor Sign-In

Project Number:	**Project Name:**
[1]Date:	**Time:**
Briefing Conducted by:	**Signature:**

This sign-in log documents the tailgate briefing conducted in accordance with the site specific HASP. Personnel who perform work operations on site are required to attend each briefing and to acknowledge receipt of each briefing, daily.

TOPICS COVERED (check all those covered):

☐ Accident Reporting Procedures	☐ General PPE Usage	☐ Site Control	☐ Other:
☐ Cellular Phone Charged w/Service	☐ Heat Stress	☐ Site Emergency Procedures	☐ Other:
☐ Changes to the HASP	☐ Hearing Conservation	☐ Slips, Trips, Falls	☐ Other:
☐ Cold Stress	☐ Lockout/Tagout	☐ Traffic Safety	☐ Other:
☐ Confined Space	☐ Personal Hygiene	☐ Other:	☐ Other:
☐ Decon Procedures	☐ Respiratory Protection	☐ Other:	☐ Other:
☐ Exposure Guidelines	☐ Review of Hazards	☐ Other:	☐ Other:

Daily Safety Topic Description:

Personnel Sign-in List

Printed Name	Signature	Company Name	Time-In	Time-Out

[1] This form is applicable for *only* 1 day of site activity.

Revised January 2015

Project Safety Briefing Form

Project Number:	**Project Name:**
Date:	**Time:**
Briefing Conducted by:	**Signature:**

This sign-in log documents that a project specific-briefing was conducted in accordance with the site-specific HASP and GEI's H&S policy. GEI personnel who perform work on site are required to attend this project briefing. Applicable health and safety SOPs and any additional hazards are also required to be reviewed during this briefing. Prior to the start of the project or upon the start of a new on-site project team member, this form must be completed. Please email this completed form to: *HealthandSafety@geiconsultants.com*

TOPICS COVERED (check all those covered):			
SOP HS-001 Biological Hazards		Accident Reporting Procedures	
SOP HS-002 Bloodborne Pathogens		Changes to the HASP	
SOP HS-003 Container Management		Cold Stress	
SOP HS-004 Driver Safety		Confined Space	
SOP HS-005 Electrical Safety - Lockout/Tagout		Decon Procedures	
SOP HS-006 Excavation/Trenching		Exposure Guidelines	
SOP HS-007 General Safety		General PPE Usage	
SOP HS-008 Hand and Power Tools		Heat Stress	
SOP HS-009 Hazardous Substances Management		Hearing Conservation	
SOP HS-010 Inclement Weather		Lockout/Tagout	
SOP HS-011 Ladders		Personal Hygiene	
SOP HS-012 Noise Exposure		Respiratory Protection	
SOP HS-013 Nuclear Density Gauge		Review of Hazard Evaluation	
SOP HS-014 Utility Markout		Site Control	
SOP HS-015 Respirator Fit Test		Site Emergency Procedures	
SOP HS-016 Traffic Hazards		Slips, Trips, Falls	
SOP HS-017 Water Safety		Traffic Safety	
SOP HS-018 Working Around Heavy Equipment		Other (Specify):	
SOP HS-019 Rail Safety		Other (Specify):	
SOP HS-020 Aerial Lift		Other (Specify):	
SOP HS-021 Mobile Equipment		Other (Specify):	
SOP HS-022 Aquatic Ecological Survey/Electrofishing		Other (Specify):	
SOP HS-023 Scaffolding		Other (Specify):	
SOP HS-024 Wilderness Safety		Other (Specify):	
SOP HS-025 Manual Lifting		Other (Specify):	

Personnel Sign-in List	
Printed Name	**Signature**

Appendix E

GEI's Health and Safety SOPs

STANDARD OPERATING PROCEDURES

SOP No. HS-001 Biological Hazards

1.1 Objective

The objective of this standard operating procedure (SOP) is to prevent or limit the potential for GEI personnel to encounter biological hazards during field activities.

1.2 General

This SOP is intended for use by employees engaged in work with the potential for contact with biological hazards such as animals, insects, plants, and sewage. The site-specific health and safety plan (HASP) should include a hazard assessment for the project that identifies the potential for encounters with biological hazards and the control methods to be implemented by GEI employees. These hazards should be reviewed in the project safety briefing and documented on the Project Safety Briefing form, found on the Health and Safety page of the GEI intranet.

1.2.1 Animals

During some site operations, animals such as stray or domesticated dogs or cats, raccoons, snakes, bears, rats, bats, etc. may be encountered. Employees should use discretion and attempt to avoid contact with animals. If these animals present a problem, efforts will be made to remove these animals from the site by contacting a licensed animal control technician.

1.2.1.1 Rabies

The rabies virus is transmitted through the bite of an infected animal or contact with saliva or brain/nervous system tissue of an infected animal. The rabies virus infects the central nervous system causing disease in the brain. The early symptoms of rabies in people are fever, headache, and general weakness or discomfort. As the disease progresses, more specific symptoms appear and may include insomnia, anxiety, confusion, slight or partial paralysis, excitation, hallucinations, agitation, hypersalivation (increase in saliva), difficulty swallowing, and hydrophobia (fear of water). Death usually occurs within days of the onset of these symptoms.

If you are bitten or think you may be exposed, wash any wounds immediately and thoroughly with soap and water. Then notify the Project Manager and Corporate Health and Safety Officer (CHSO) and go to the hospital emergency room. The doctor, possibly in consultation with the state or local health department, will decide if you need a rabies vaccination. Decisions to start vaccination will be based on your type of exposure and the animal you were exposed to, as well as laboratory and surveillance information for the

geographic area where the exposure occurred. An Accident Report Form should be completed and submitted per GEI's accident reporting procedures.

1.2.2 Insects

Insects, including bees, wasps, hornets, mosquitoes, ticks, spiders, etc may be present at a job site making the chance of a bite/sting possible. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition. Some insect bites can transmit diseases such as Lyme disease or a virus such as West Nile. The following is a list of preventive measures:

- Apply insect repellent prior to performing field work and as often as needed throughout the work shift
- Wear proper protective clothing (work boots, socks and light colored clothing)
- Wear shoes, long pants with bottoms tucked into boots or socks, and a long-sleeved shirt when outdoors for long periods of time, or when many insects are most active (between dawn and dusk).
- When walking in wooded areas, avoid contact with bushes, tall grass, or brush as much as possible
- Field personnel who may have insect allergies should have bee sting allergy medication on site and should provide this information to the Site Safety Officer (SSO) and the CHSO prior to commencing work.
- Field personnel should perform a self-check at the end of the day for ticks.

1.2.3 Tick-borne Diseases

Lyme disease is caused by infection from a deer tick that carries a spirochete. During the painless tick bite, the spirochete may be transmitted into the bloodstream often after feeding on the host for 12 to 24 hours. The ticks that cause the disease are often no bigger than a poppy seed or a comma in newsprint. The peak months for human infection are from May to September.

Symptoms appear in three stages. First symptoms usually appear from 2 days to a few weeks after a person is bitten by an infected tick. Symptoms usually consist of a ring-like red rash on the skin where the tick was attached. The rash is often bulls-eye like with red around the edges and clear in the center. The rash may be warm, itchy, tender, and/or "doughy." Unfortunately, this rash appears in only 60 to 80 percent of infected persons. An infected person also has flu-like symptoms of a stiff neck, chills, fever, sore throat, headache, fatigue and joint pain. These symptoms often disappear after a few weeks.

The second stage symptoms, which occur weeks to months later include meningitis, severe headache, drooping of the muscles on the face, called Bell's Palsy, encephalitis, numbness, withdrawal and lethargy. These symptoms may last for several weeks to several months. Third stage symptoms, which occur months or years later include arthritis, heart problems, and loss of memory. The third stage symptoms may mimic multiple sclerosis and Alzheimer's disease.

Personnel should check themselves when in areas that could harbor deer ticks, wear light color clothing and visually check themselves and their buddy when coming from wooded or vegetated areas. If a GEI employee has been bitten by a tick, the CHSO should be contacted immediately. An Accident Report form must be completed by the individual in compliance with the Accident Reporting procedure outlined in the Corporate Health and Safety Manual.

From left to right: The deer tick adult female, adult male, nymph, and larva on a centimeter scale.

The tick can be removed by pulling gently at the head with tweezers. If tweezers are not available, cover your fingers with tissue paper and use them to grasp the tick. It is important to grasp the tick as close to the site of attachment and use a firm steady pull to remove it. Wash hands immediately after with soap and water. The affected area should then be disinfected with an antiseptic wipe. All mouth parts must be removed from the skin. If the tick is removed by breaking off the mouth parts, an irritation or infection may occur. Also, the organism that is causing the disease can still enter the body through the skin. The employee will be offered the option for medical treatment by a physician, which typically involves antibiotics. If personnel feel sick or have signs similar to those above, they should notify the SSO and the CHSO immediately.

Treatment with antibiotics is effective and recovery is usually complete. In the first stage antibiotics are usually given orally. Second and third stage treatment, however is prolonged and recovery may take longer. Antibiotic treatment is usually provided intravenously for second and third stage Lyme disease.

The deer tick can also cause **Babesiosis**, an infection of the parasite Babesia Microti. Symptoms of Baesiosis may not be evident, but may also include fever, fatigue and

hemolytic anemia lasting from several days to several months. Babesiosis is most commonly diagnosed in the elderly or in individuals whose immune systems are compromised.

Ehrlichiosis is a tick-borne disease which can be caused by either of two different organisms. Human monocytic ehrlichiosis (HME) is caused by *Ehrlichia chaffeensis*, which is transmitted by the lone star tick (*Amblyomma americanum*). Human granulocytic anaplasmosis (HGA), previously known as human granulocytic ehrlichiosis (HGE), is caused by *Anaplasma phagocytophilia*, which is transmitted by the deer tick (*Ixodes scapularis*).

In New York State, most cases of ehrlichiosis have been reported on Long Island and in the Hudson Valley. Ehrlichiosis is transmitted by the bite of infected ticks, including the deer tick and the lone star tick. The symptoms of HME and HGE are the same and usually include fever, muscle aches, weakness and headache. Patients may also experience confusion, nausea, vomiting and joint pain. Unlike Lyme disease or Rocky Mountain spotted fever, a rash is not common. Infection usually produces mild to moderately severe illness, with high fever and headache, but may occasionally be life-threatening or even fatal. Symptoms appear one to three weeks after the bite of an infected tick. However, not every exposure results in infection.

Rocky Mountain spotted fever (RMSF) is a tick-borne disease caused by a rickettsia (a microbe that differs somewhat from bacteria and virus). Fewer than 50 cases are reported annually in New York State. In the eastern United States, children are infected most frequently, while in the western United States, disease incidence is highest among adult males. Disease incidence is directly related to exposure to tick-infested habitats or to infested pets. Most of the cases in New York State have occurred on Long Island. RMSF is characterized by a sudden onset of moderate to high fever (which can last for two or three weeks), severe headache, fatigue, deep muscle pain, chills and rash. The rash begins on the legs or arms, may include the soles of the feet or palms of the hands and may spread rapidly to the trunk or rest of the body. Symptoms usually appear within two weeks of the bite of an infected tick.

*(Information on Ehrlichiosis, Babesiosis, and Rocky Mountain Spotted Fever was derived from the New York State Department of Health).

1.2.4 West Nile Virus

West Nile Virus (WNV) is a mosquito-borne infection transmitted through the bite of an infected mosquito. The symptoms of WNV can be asymptomatic (no symptoms) or in more serious cases can lead to West Nile Fever. West Nile Fever can include fever, headache, tiredness, body ache, an occasional rash on the trunk of the body, and swollen lymph glands, In severe cases, people have developed West Nile Encephalitis or

Meningitis which symptoms include fever, headache, neck stiffness, tremors, coma and in some cases death. The incubation period for the disease is usually 2 to 15 days. The symptoms can range from a few days to several weeks. Most mosquitoes are not infected and the chance of infection from a mosquito bite of an on-site employee is very small.

The following precautions will be used to help reduce the risk of mosquito bites:

- Reduce mosquito-breeding areas by making sure wheelbarrows, buckets, and other containers are turned upside down when not used so that they do not collect standing water.
- Wear shoes, long pants with bottoms tucked into boots or socks, and a long-sleeved shirt when outdoors for long periods of time, or when many mosquitoes are most active (between dawn and dusk).
- Use mosquito repellant according to the manufacturer's directions when outdoors for long periods of time and when mosquitoes are most active.

Centers for Disease Control and Prevention (CDC) evaluation of information contained in peer-reviewed scientific literature and data available from the Environmental Protection Agency (EPA) has identified several EPA registered products that provide repellent activity sufficient to help people avoid the bites of disease carrying mosquitoes. Products containing these active ingredients typically provide reasonably long-lasting protection:

- **DEET** (Chemical Name: N,N-diethyl-m-toluamide or N,N-diethly-3-methyl-benzamide) 20 to 30 percent DEET
- **Picaridin** (KBR 3023, Chemical Name: 2-(2-hydroxyethyl)-1-piperidinecarboxylic acid 1-methylpropyl ester)
- **Oil of Lemon Eucalyptus** or **PMD** (Chemical Name: para-Menthane-3,8-diol) the synthesized version of oil of lemon eucalyptus
- **IR3535** (Chemical Name: 3-[N-Butyl-N-acetyl]-aminopropionic acid, ethyl ester)
- **Permethrin** (3-Phenoxybenzyl (1RS)-cis,trans-3-(2,2-dichlorovinyl) -2,2-dimethylcyclopropanecarboxylate) - Permethrin kills ticks and can be used on clothing (but not skin)

EPA characterizes the active ingredients DEET and Picaridin as "conventional repellents" and Oil of Lemon Eucalyptus, PMD, and IR3535 as "biopesticide repellents", which are derived from natural materials.

In general, higher concentrations of active ingredient provide longer duration of protection, regardless of the active ingredient, although concentrations above approximately 50 percent do not offer a marked increase in protection time. Products with less than 10 percent active ingredient may offer only limited protection, often from 1 to 2 hours. Products that offer sustained release or controlled release (micro-encapsulated) formulations, even with lower active ingredient concentrations, may provide longer protection times. Regardless of what product you use, if you start to get mosquito bites reapply the repellent according to the label instructions or remove yourself from the area with biting insects if possible.

Clothing and other products can be purchased pre-treated, or products can be treated using EPA-registered products. Permethrin is the only pesticide approved by the EPA for these uses. Permethrin binds tightly to the fabrics, resulting in little loss during washing and minimal transfer to the skin. Permethrin is poorly absorbed through the skin, although sunscreens and other products may increase the rate of skin absorption.

If you decide to use permethrin-treated clothing, consider these tips:

- Read the application instructions carefully and apply the product according to the label directions. Do not over-treat products.
- Permethrin treatments are only intended for use on fabrics; do not apply them directly to the skin or other items.
- Do not apply permethrin to clothing while it is being worn.
- Apply the products outdoors in well ventilated areas that are protected from wind.
- Hang treated fabrics outdoors and allow them to dry completely before wearing them.
- Wash permethrin treated clothing separately from other clothing items.

1.2.5 Plants

The potential for contact with poisonous plants, such as poison ivy, sumac, and oak, exists when performing fieldwork in wooded or boggy areas. These plants can cause allergic reaction when in contact with the leaves or vines.

Poison ivy can be found as vines on tree trunks or as upright bushes. Poison ivy consists of three leaflets with notched edges. Two leaflets form a pair on opposite sides of the stalk, and the third leaflet stands by itself at the tip. Poison ivy is red in the early spring and turns shiny green later in the spring. Poison ivy grows throughout much of North America, including all states east of the Rocky Mountains. It is normally found in

wooded areas, especially along edge areas where the tree line breaks and allows sunshine to filter through. It also grows in exposed rocky areas, open fields and disturbed areas.

Poison sumac can be present in the form of a flat-topped shrub or tree. It has fern-like leaves, which are velvety dark green on top and pale underneath. The branches of immature trees have a velvety "down." Poison sumac has white, "hairy" berry clusters. Poison sumac grows exclusively in very wet or flooded soils, usually in swamps and peat bogs, in the eastern United States.

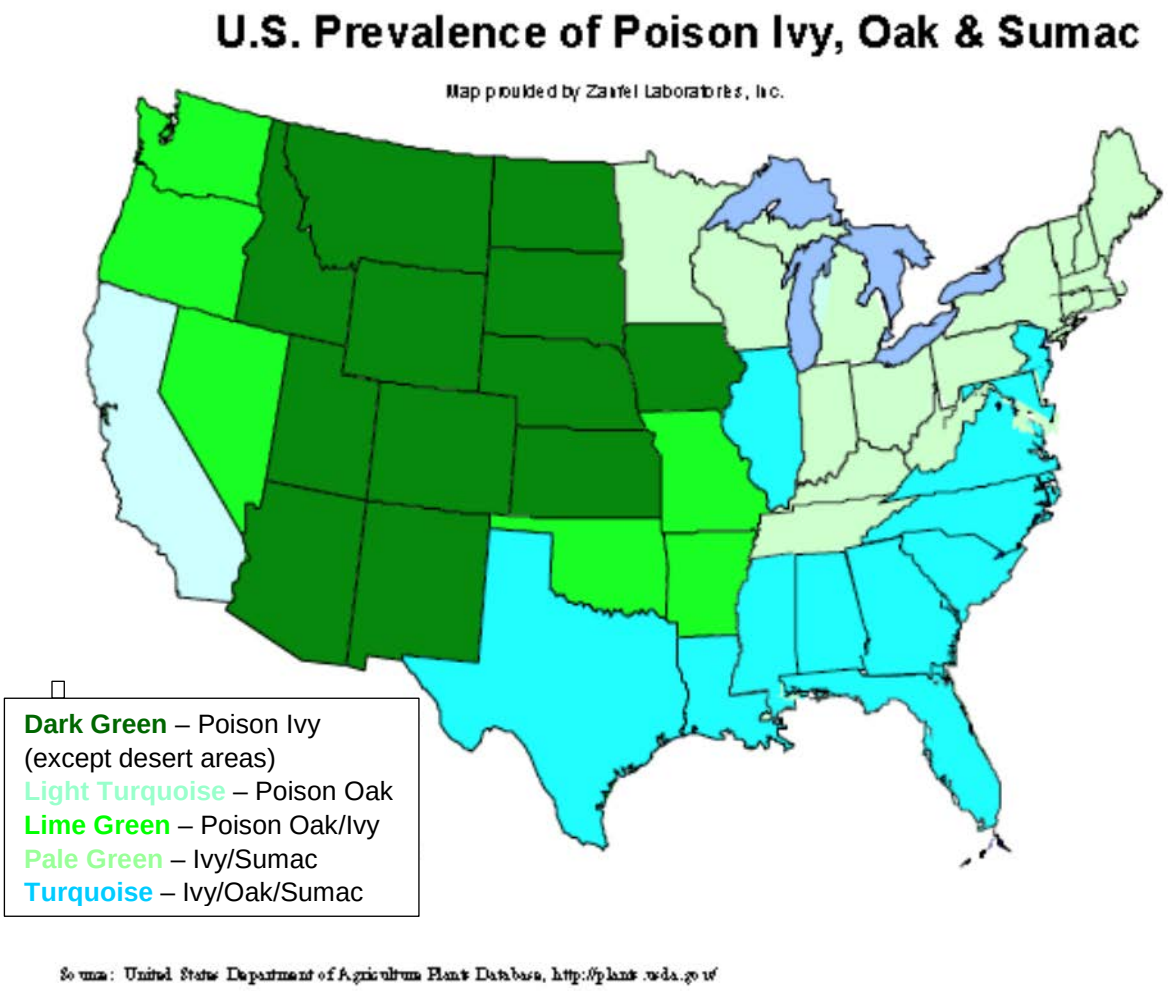
Poison oak can be present as a sparingly branched shrub. Poison oak can grow anywhere in the United States with the exception of Hawaii, Alaska, and some southwest areas that have desert climates. Poison oak is similar to poison ivy in that it has the same leaflet configuration; however, the leaves have slightly deeper notches.

Keep in mind that for each of these plants,

Poison Oak

Poison Ivy

Poison Sumac



To prevent exposure to these poisonous plants:

- Barrier skin creams, such as lotion containing bentoquatum (Tecnu®), may offer some protection prevent the occurrence of exposure symptoms.
- Wear long sleeves, long pants, boots, and gloves.

Contact with poison ivy, sumac, or oak may lead to a skin rash, characterized by reddened, itchy, blistering skin which needs first aid treatment. Susceptible individuals should identify themselves to the SSO or GEI Project Manager. If you believe you have contacted one of these plants:

- Immediately wash skin thoroughly with soap and water, taking care not to touch your face or other body parts.
- Wash exposed clothing separately in hot water with detergent.
- After use, clean tools, and soles of boots with rubbing alcohol or soap and lots of water. Urushiol can remain active on the surface of objects for up to 5 years.

- If a rash occurs, contact the CHSO and complete and submit an Accident Report Form.

1.2.6 Sewage and Bacterial Impacted Sediments

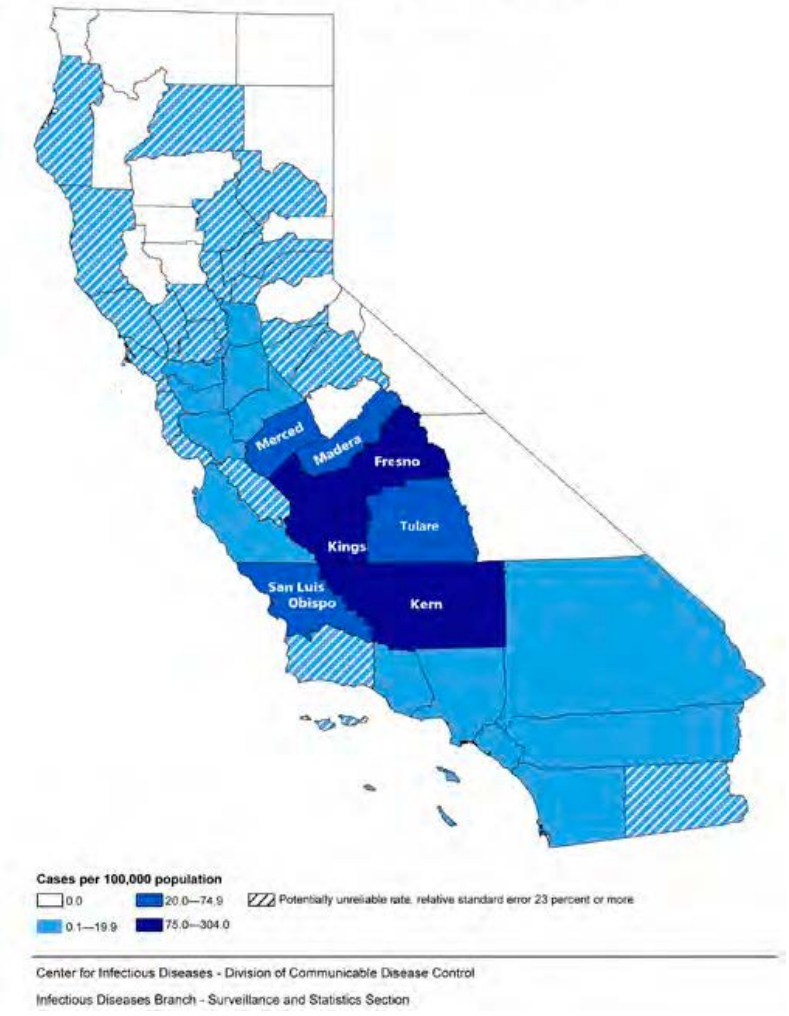
Some project work may be conducted at sites that serve or have served as a combined sewer overflow (CSO) and consequently may have received untreated sanitary sewage from numerous sources. Decomposed sewage can potentially be encountered within sites and their sediments. Sediments could contain soil and marine microorganisms, and bacterium associated with sewage. Many of these bacterium can cause illness through ingestion, direct contact, or the inhalation of a bio-aerosol. Potential respiratory exposure to biological agents can also occur through the inhalation of aerosols produced during sediment handling activities. Personal protective equipment as identified in the site-specific HASP will be worn to minimize potential exposures. Employees will follow the decontamination or disposal procedures identified in the HASP.

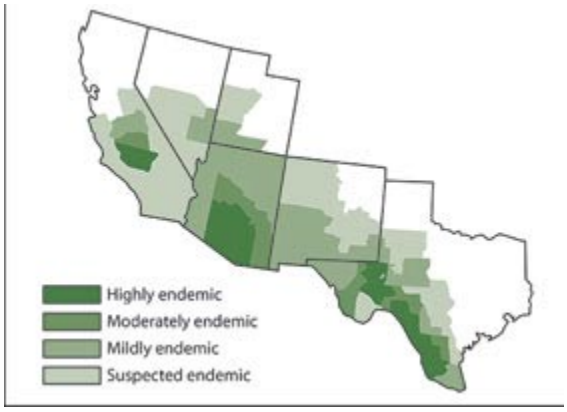
1.2.6 Fungal Spores in Soil – Valley Fever

Valley Fever is an illness that usually affects the lungs. It is caused by the fungus Coccidioides immitis that lives in the top 2 to 12 inches of soil in many parts of California. When fungal spores are present, any work activity that disturbs the soil, such as digging, grading or other earth moving operations, or vehicle operation on dirt roads, can cause the spores to become airborne, therefore increasing the risk of Valley Fever. All employees on sites where the fungus is present, and who are exposed to dusty conditions and wind-blown dusts are at increased risk of becoming infected.

Valley Fever fungal spores are too small to be seen, and there is no reliable way to test the soil for spores before working in a particular place. Valley Fever can be found throughout the southwestern United States, parts of Mexico and South America. Some California counties consistently have Valley Fever fungus present in the soil. In these regions Valley Fever is considered endemic. Health departments track the number of cases of Valley Fever illness that occur. This information is used to map illness rates as seen on the figure below.

California county-specific coccidioidomycosis incidence rates, 2011





When present, symptoms usually occur between seven to 21 days after breathing in spores, and can include:

- Cough
- Fever
- Chest pain
- Headache
- Muscle aches
- Rash on upper trunk or extremities
- Joint pain in the knees or ankles
- Fatigue

Symptoms of Valley Fever can be mistaken for other diseases such as the flu (influenza) and TB (tuberculosis), so it is important for employees to obtain medical care for an accurate diagnosis and possible treatment.

While there is no vaccine to prevent Valley Fever, the following steps are important to take in order to limit risk:

- Determine if the worksite is in an endemic area. Contact the local health department for more information about the risk in the county GEI is performing work that may disturb soils.
- Prepare work plans and work practices that reduce employee's exposure, which may include:
    - Provide air conditioned cabs for vehicles that generate heavy dust and make sure employees keep windows and vents closed.
    - Suspend work during heavy winds.
- When exposure to dust is unavoidable, provide National Institute for Occupational Safety and Health (NIOSH)-approved respiratory protection with particulate filters rated as N95, N99, N100, P100, or High Efficiency Particulate Air (HEPA). Employers must develop and implement a respiratory protection program in accordance with California's Occupational Safety and Health Administration (Cal/OSHA's) Respiratory Protection standard (8 CCR 5144).
- Take measures to reduce transporting spores off site, such as:
    - Clean tools, equipment, PPE and vehicles before transporting off site.
    - If employee's clothing is likely to be heavily contaminated with dust, provide coveralls and change rooms, and showers where possible.

1.3 Limitations

Follow safety procedures as defined in the site-specific HASP. Appropriate PPE must be worn correctly to provide the intended level of protection.

1.4 References

http://www.cdc.gov/ncidod/dvbid/westnile/index.htm
http://www.cdc.gov/ncidod/dvbid/westnile/qa/insect_repellent.htm
http://www.epa.gov/pesticides/health/mosquitoes/insectrp.htm
http://www.cdc.gov/niosh/topics/lyme/
Protecting Yourself From Ticks and Mosquitoes, NIOSH Fast Facts, Publication No. 2010-119
http://npic.orst.edu/pest/mosquito/ptc.html

1.5 Attachments

None

1.6 Contact

GEI Corporate Health & Safety Officer
GEI East – North Regional Health & Safety Officer
GEI East – South Regional Health & Safety Officer
GEI Central Regional Health & Safety Officer
GEI West Regional Region Health & Safety Officer

STANDARD OPERATING PROCEDURES

SOP NO. HS-003 Container Management

1.1 Objective

This standard operating procedure (SOP) has been developed to minimize the potential for injuries to GEI employees performing container and drum handling and sampling, through proper use of engineering and administrative controls, personal protective equipment (PPE), and education.

1.2 General

This SOP is intended for use by employees engaged in work with the management of containers that may contain hazardous substances or contaminated media. The site-specific health and safety plan (HASP) should include a hazard assessment and control methods to be implemented by GEI employees. These hazards should be reviewed in the project safety briefing and documented on the Project Safety Briefing form, found on the Health and Safety page of the GEI intranet.

Hazardous substances and contaminated media will be handled, transported, labeled, and disposed of in accordance with this paragraph. Drums and containers will meet the appropriate United States Department of Transportation (DOT), Occupational Safety and Health Administration (OSHA), and Environmental Protection Agency (EPA) regulations for the wastes that they contain.

Site operations will be organized to minimize the amount of drum or container movement. Prior to movement of drums or containers, employees exposed to the transfer operation will be notified of the potential hazards associated with the contents of the drums or containers. Unlabeled drums and containers will be considered to contain hazardous substances and handled accordingly until the contents are positively identified and labeled.

DOT specified salvage drums or containers and suitable quantities of proper absorbent will be kept available and used in areas where spills, leaks, or ruptures may occur. Where spills may occur, a spill containment program, which may be part of the HASP, will be implemented to contain and isolate the entire volume of the hazardous substance being transferred.

1.3 Opening Drums and Containers

The following procedures will be followed in areas where drums or containers are being opened:

- Employees not actually involved in opening drums or containers will be kept a safe distance from the drums or containers being opened.
- If employees must work near or adjacent to drums or containers being opened, a suitable shield that does not interfere with the work operation will be placed between the employee and the drums or containers being opened to protect the employee in case of accidental release.
- GEI employees will not handle or attempt to open bulging containers. Employees will not stand upon or work from drums or containers. GEI will contract with a hazardous waste company to handle, manage, and dispose of a bulging drum.

1.4 Material Handling Equipment

Material handling equipment, such as drum dollies, used to transfer drums and containers will be selected, positioned, and operated to minimize sources of ignition.

1.5 Radioactive Wastes

GEI does not routinely handle or manage radioactive waste. If required to do so for a project, procedures will be approved by the Corporate Health and Safety Officer (CHSO) and Regional Health and Safety Officer (RHSO).

1.6 Shock-Sensitive Wastes

GEI employees will not handle shock-sensitive waste. Shock-sensitive waste or chemicals may explode with friction, movement or heat. Some chemicals are shock-sensitive by nature-, others become shock-sensitive through drying, decomposition, or slow reactions with oxygen, nitrogen, or the container. Some chemicals that are, or can, become shock-sensitive will have that hazard noted in the safety data sheet (SDS).

- Drums and containers containing packaged laboratory wastes will be considered to contain shock-sensitive or explosive materials until they have been characterized. *Caution: Shipping of shock-sensitive wastes may be prohibited under U.S. Department of Transportation regulations. Shippers will refer to 49 CFR 173.21 and 173.50.*

1.7 Laboratory Waste Packs

GEI employees will not handle or open laboratory waste packs.

1.8 Sampling of Drum and Container Contents

Sampling of containers and drums will be done in accordance with a site-specific sampling plan that will be developed in conjunction with a site-specific HASP.

1.9 Staging Areas

Drums and containers will be identified and classified prior to packaging for shipment. Drum or container staging areas will be kept to a minimum number as approved by the client to safely identify and classify materials and prepare them for transport. Staging areas will be provided with adequate access and egress routes. Bulking of hazardous wastes will be permitted only after a thorough characterization of the materials has been completed and approved by the Client. GEI employees will not sign manifests unless a written authorization agreement is in place with the Client.

1.10 Tank and Vault Procedures

GEI employees do not routinely sample vaults and tanks. Entry procedures will be coordinated and approved by the CHSO and RHSO.

1.11 Limitations

Follow safety procedures as defined in the site-specific HASP. Appropriate PPE must be worn correctly to provide the intended level of protection.

1.12 References

OSHA 1910.120 Hazardous Waste Operations and Emergency Response (j) Handling of Drums and Containers.

1.13 Attachments

None

1.14 Contact

GEI Corporate Health & Safety Officer
GEI East – North Regional Health & Safety Officer
GEI East – South Regional Health & Safety Officer
GEI Central Regional Health & Safety Officer
GEI West Regional Region Health & Safety Officer

STANDARD OPERATING PROCEDURE
HS-004 Driver Safety

1.1 Objective

GEI has implemented a Safe Driving Program to encourage safe driving habits and promote the ongoing safety of our staff and the communities where we work. For more information, refer to the Operation of Vehicles section of GEI's Employee Handbook.

This standard operating procedure (SOP) provides requirements and recommendations to minimize the potential risks while operating or riding in a motor vehicle.

1.2 General

GEI employees will adhere to the following requirements when operating a vehicle while conducting business on behalf of GEI. These requirements apply to GEI owned, rental, and personal vehicles used to conduct GEI business:

- Employees must maintain a valid and current driver's license.
- Employees using a personal vehicle for work-related travel must have proper insurance coverage that meets the requirements in the state in which they reside.
- Employees must wear their safety belt while in a moving vehicle.
- Vehicle accidents will be reported in accordance with GEI's accident reporting procedures. .
- Vehicles will be properly maintained and safely operated (refer to GEI's Fleet Maintenance Program).
- Employees will follow safe driving behaviors, which include limiting distractions such as manipulating radios or other equipment that may cause a distraction. Employees should not exceed the posted speed limit and should maintain a safe distance between other vehicles.
- When parking a vehicle at a job site, the employee should position the vehicle in a manner to reduce or eliminate the need to operate the vehicle in reverse. A safety cone should be placed at the rear of the vehicle after parking the vehicle and be removed prior to moving the vehicle. This procedure makes the employee aware of other vehicles, equipment, and structures within the backup radius of the vehicle.

When driving a rental vehicle or GEI vehicle that you are unfamiliar with orient yourself to the vehicle by:

- Walking around the vehicle to observe the condition of the vehicle and hazards that could be within the travel path.
- Becoming familiar with the size of the vehicle.

- Adjusting mirrors (rear and side).
- Becoming familiar with dashboard, center console, and steering controls.
- Locating the turn signals, windshield wipers, lights, emergency flashers, and the heating, air conditioning, and defrost controls.

1.3 Driving Defensively

Driving defensively means not only taking responsibility for yourself and your actions but also keeping an eye on "the other guy." Good defensive drivers may be able to anticipate what the other driver will do next. GEI recommends the following guidelines to help reduce your risks on the road.

Do not start the vehicle until each passenger and their belongings are secured in the vehicle.

- Remember that driving above or below the speed limit can increase the likelihood of a collision.
- If you notice that a car is straddling the center line, weaving, making wide turns, stopping abruptly or responding slowly to traffic signals, the driver may be impaired or using a cellular telephone.
- Avoid an impaired driver by turning right at the nearest corner or exiting at the nearest exit. If it appears that an oncoming car is crossing into your lane, pull over to the roadside, sound the horn and flash your lights.
- Notify the police if you observe motorist who is driving suspiciously.
- Follow the rules of the road. Do not contest the "right of way" or try to race another car during a merge. Be respectful of other motorists.
- Allow large vehicles, including tractor trailers, extra breaking distance, turning radius, and avoid traveling in their blind spots.
- Do not follow too closely. GEI employees should use a "three-second following distance" or a "three-second plus following distance."
- While driving be cautious, aware, and responsible.
- Use extra caution and reduce speed in construction areas and school zones.
- Be aware of pedestrians, bicyclists, and motorcyclists.

1.4 Cellular Phone Use and Other Distractions

Refer to the Human Resources policy on use of cellular telephones while operating a vehicle on company business.

1.5 Drugs and Alcohol

The use of illegal drugs or alcohol is prohibited when driving a vehicle on GEI business. Be aware of the side effects of prescription and over-the-counter medications which can impair an employee’s ability to drive.

1.6 Adverse Driving Conditions

1.6.1 Driving at Night

Vision maybe limited at night due to impairment of the driver's depth perception, color recognition, and peripheral vision. Another factor adding danger to night or early morning driving is fatigue. Drowsiness makes driving more difficult by dulling concentration and slowing reaction time.

Effective measures to minimize these hazards by preparing your car and following guidelines:

- Have your headlights properly aimed. Misaimed headlights blind other drivers and reduce your ability to see the road.
- Alcohol severely impairs your driving ability and acts as a depressant.
- Avoid smoking when you drive. Smoke's nicotine and carbon monoxide hamper night vision.
- Lights will not help the driver see better in early twilight, but they will make it easier for other drivers to see you. Do not overdrive your headlights. You should be able to stop inside the illuminated area. If you do not, you create a blind crash area in front of your vehicle.
- If an oncoming vehicle does not lower beams from high to low, avoid glare by watching the right edge of the road and using it as a steering guide.
- Make frequent stops for light snacks and exercise. If you are too tired to drive, stop in a safe area and get some rest.
- Observe driving safety as soon as the sun goes down. Twilight is one of the most difficult times to drive, because your eyes are constantly changing to adapt to the growing darkness.

1.6.2 Snow/Freezing Conditions

When snow and ice are present, be prepared by following these winter driving safety tips.

1.6.2.1 Prepare the Vehicle Before a Snowstorm

- Check under the hood and take a look at the vehicles cooling system. Make sure the vehicle contains adequate antifreeze and the hoses are in good condition.
- Test heaters and defrosters ahead of time to make sure they are in good working condition.
- Test your windshield wipers and check the condition of your wiper blades. If wipers leave streaks on your windshields, replace the blades.
- It is recommended that a windshield washer/antifreeze solution is used during winter conditions.
- Check your lights and periodically clear them of snow and dirt.
- Car batteries need extra power in cold conditions. Make sure the battery's terminals are clean and cables are secure.

- Keep your gas tank at least half full in the winter to help avoid gas line freeze up.

1.6.2.2 Driving During and After a Snowstorm

- Wear sunglasses to aid in limiting reflection from snow.
- Be aware of blind spots created by snow banks.
- Be extra cautious of pedestrians and other vehicles in intersections.
- Allow extra time for braking and increase the distance between you and the car ahead of you.
- Reduce your speed and do not exceed the posted limit.
- If you start to lose traction take your foot off the gas and gradually reduce your speed. Accelerate slowly once you feel traction is regained.
- If you start to skid, steer in the direction of the skid. Remember, steering can be more important than braking on slippery roads.

1.6.3 Driving In the Rain

To prevent losing control of your car on wet pavement, take these preventive measures.

- Prevent skids by driving slowly and carefully, especially on curves.
- Steer and brake with a light touch.
- When you need to stop or slow, do not brake hard or lock the wheels.
- Maintain mild pressure on the brake pedal.

If you skid, ease your foot off the gas, and carefully steer in the direction you want the front of the car to go. For cars without anti-lock brakes, avoid using your brakes. This procedure, known as "steering into the skid," will bring the back end of the car in line with the front. If your car has anti-lock brake systems (ABS), brake firmly as you "steer into the skid."

Hydroplaning happens when the water in front of your tires builds up faster than your car's weight can push it out of the way. The water pressure causes your car to lose contact with the road surface and slide on a thin layer of water between your tires and the road. At this point, your car can be completely out of contact with the road, and you are in danger of skidding or drifting out of your lane, or even off the road.

To avoid hydroplaning, keep the tires properly inflated and maintain good tread on the tires. If tires need to be replaced on a company vehicle, notify the branch manager or their designee. Slow down when roads are wet, and stay away from puddles. Try to drive in the tire tracks left by the cars in front of you. If you begin to hydroplane, do not brake or turn suddenly. This could throw your car into a skid. Ease your foot off the gas until the car slows and you can feel the road again. If you need to brake, do it gently with light pumping actions. If your car has ABS, then brake normally; the car's computer will mimic a pumping action, when necessary.

If weather conditions worsen to the point where the driver is not comfortable driving, pull the vehicle over to a safe location until conditions improve. Do not drive during severe weather conditions. Do not attempt to drive on roads with standing water or that have been flooded. Find an alternate route if these conditions exist.

1.6.4 Off Road

If operation of a vehicle is required off publicly or privately maintained roads or in situations where four-wheel-drive vehicles are required, the appropriate vehicle for the situation will be used.

1.7 Driver Training

GEI employees are required to complete driver safety training every 3 years. Employees will complete the examination at the end of each module and forward the training certificate to Human Resources.

1.8 Limitations

Follow safety procedures as defined in the site-specific HASP.

1.9 References

National Safety Council
Oklahoma Safety Council
GEI Consultants, Inc. Employee Handbook

1.10 Attachments

1.11 Contact

GEI Corporate Health & Safety Officer
GEI East – North Regional Health & Safety Officer
GEI East – South Regional Health & Safety Officer
GEI Central Regional Health & Safety Officer
GEI West Regional Region Health & Safety Officer

STANDARD OPERATING PROCEDURES

SOP No. HS-010 Inclement Weather

1.1 Objective

Inclement weather can affect work activities and pose safety hazards to employees working in these conditions. The following guidelines will be followed when weather conditions become a safety concern.

1.2 General

This standard operating procedure (SOP) is intended for use by employees engaged in work with the potential to be affected by inclement weather. The site-specific health and safety plan (HASP) should include a hazard assessment for the project that identifies the potential for encounters with biological hazards and the control methods to be implemented by GEI employees. These hazards should be reviewed in the project safety briefing and documented on the Project Safety Briefing form, found on the Health and Safety page of the GEI intranet.

Employees should be aware of local weather conditions and monitor advisories issued by the National Weather Service and other local reporting services. Depending on location and season, storms are capable of producing heavy rain, floods, extreme temperatures, high wind conditions, lighting, tornados, and/or snowfall.

1.2.1 Heavy Rain

If working or driving in a storm use extreme caution. When driving, turn your lights on when the rainfall becomes heavy. Employees should be aware of the following:

- Heavy rain decreases visibility, especially when driving.
- Surfaces and tools become slippery.
- If you are working in the rain and your clothes become wet there is a risk of hypothermia when exposed to winds, even in warm temperatures.
- If the storms are going to produce thunder and/or lightning, leave the work area immediately and move to a safe area.
- Use your best judgment to determine if the rainfall becomes too heavy to continue working safely.

1.2.2 Lightning

Lightning can strike as far as 10 miles from the area where it is raining. That's about the distance you can hear thunder. **If you can hear thunder, you are within striking distance. Seek safe shelter immediately.** This can be within a building or vehicle. Wait 30 minutes after the last clap of thunder or flash of lightning before going outside again.

1.2.3 Flooding

Flooding may occur as a result of heavy rain in a short period of time. Flooding can be particularly acute in canyon areas where dry creek beds can turn into raging rivers from rainfall in distant or higher elevation areas. Be aware of this and your surroundings and move to a safe place if you begin to see signs that flooding may occur. Do not attempt to drive through areas or streets that are flooded. Seek alternate routes. Be particularly cautious at night when flooded areas are difficult to see. Urban flooding can stop traffic and increase the potential for traffic accidents and becoming trapped in vehicles.

1.2.4 Extreme Temperatures

Work activities may take place in extreme heat or cold. Be prepared if these conditions are anticipated. Have the appropriate personal protective equipment (PPE) available, exercise proper fluid intake, and take breaks to prevent heat and cold stress. For more information about these conditions see the heat stress and cold stress programs found in GEI's Health and Safety Manual.

1.2.5 High Wind and Tornados

Tropical storms are described as storms with sustained winds ranging from 39 to 73 miles per hour (mph) and hurricanes produce sustained winds that exceed 74 mph. When winds approach 40 mph (gale force winds) twigs begin to break off of trees and vehicles will veer off of the road. When winds approach **40 mph** or the GEI employee feels unsafe based on the activities being performed, stop work and seek shelter as soon as possible. Blowing or falling debris and overhanging limbs/signs can be a significant hazard. If possible, avoid driving in these conditions; 70 percent of injuries during hurricanes are a result of vehicle accidents. Note that tall or elevated equipment will have manufacturer's safe operating wind speeds defined that could be less than 40 mph. The operator's manual should be consulted prior to operation of the equipment.

A tornado is a violent, dangerous, rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud. The Fujita Scale is used to rate the intensity of a tornado by examining the damage caused by the tornado after it has passed over a man-made structure. Based on the Fujita Scale or F-Scale Numbers begin at F0: 40-72 mph and go to F6: 319-379 mph (F6 is generally theoretical). Nearly three-fourths of tornados are on the weak F0-F1 scale with just over two-thirds of deaths resulting from the violent F4-F5 tornados. If tornado wind

speeds exceed the 40 mph, stop work and seek shelter immediately if a tornado is seen. If a tornado siren is sounded move immediately to safety indoors and then move to a windowless interior space, basement, stair well, or designated fall-out shelter. Windows should not be opened before an oncoming tornado. If there is no shelter available, seat belt yourself into your stationary vehicle or seek a depression or low spot on the land surface.

1.2.6 Snowfall and Ice Conditions

Working in the winter months will result in activities taking place during periods of snowfall or icy conditions. If you are working during or after snow has fallen, dress appropriately for the conditions. Snow and ice can cause working surfaces to become slippery. Clear snow and ice from work areas to prevent slip hazards. Use caution when performing snow or ice removal activities to prevent injuries. Driving in snowy and icy conditions is also hazardous. Reduce speed and use caution if you must drive in these conditions.

If the weather conditions deteriorate and you do not feel safe working in these conditions, stop work, move to a safe indoor location, and contact your Project Manager to let them know the weather, work conditions, and your location.

1.3 Limitations

Follow safety procedures as defined in the site-specific HASP. Appropriate PPE must be worn correctly to provide the intended level of protection. Protection extreme weather conditions can best be accomplished if the conditions are anticipated. Monitor local weather conditions prior to starting work.

1.4 References

Center for Disease Control and Prevention – Natural Disasters and Severe Weather
http://www.bt.cdc.gov/disasters/
National Lightning Safety Institute
NOAA, National Weather Service
Office of Climate, Water, and Weather Services

1.5 Attachment

None

1.6 Contact

GEI Corporate Health & Safety Officer
GEI East – North Regional Health & Safety Officer

GEI East – South Regional Health & Safety Officer
GEI Central Regional Health & Safety Officer
GEI West Regional Region Health & Safety Officer

STANDARD OPERATING PROCEDURE

SOP HS-014 Utility Mark-out

1.1 Objective

This standard operating procedure (SOP) provides guidance for utility mark-out procedures related to drilling, excavation, or other sub-surface or intrusive activities to avoid injury to GEI employees or property damage. This SOP is applicable when GEI is responsible for its operation or our subcontractor's operation for utility mark-out.

Clients or local agencies may have additional requirements or procedures for the marking of utilities. If local utility mark-out procedures differ from those described within this SOP, applicable state or municipal regulations should be followed.

1.2 General

- This SOP is intended for use by employees engaged in work with sub-surface or intrusive activities. The site-specific health and safety plan (HASP) should include a hazard assessment for the project that identifies the potential for subsurface hazards and the control methods to be implemented by GEI employees. These hazards should be reviewed in the project safety briefing and documented on the Project Safety Briefing form, found on the Health and Safety page of the GEI intranet.
- The contractor or GEI employee visits the site and marks out each exploration area with white paint, flags, or stakes. Mark-outs will be performed wearing required PPE, including eye protection when using spray paint to perform the mark-out.
- Exploration locations should be marked out with sample identification number(s) and type of sample (e.g., boring, test-pit, or monitoring well).
- The contractor compiles information about the work areas on a request form specified by the state utility mark-out program and provides this information to the mark-out program call center with a phone call or electronic submittal. Work area location maps can be sent to the utility mark-out program to clarify locations.
- The mark-out program customer service representative will provide a mark-out ticket number and a list of utilities notified upon receipt of the request information. This information will be recorded on the GEI documentation form or in other project documents.

- If known, the contractor will also notify non-member utility operators (such as apartment complexes, commercial complexes, railroads with communication cables, etc.).
- Utility companies or their sub-contractors will only mark-out, or clear, utilities under their responsibility. Generally, this means that they will only mark-out utilities within the public right-of-way up to private property boundaries. Information needed to determine the location of utilities on private properties will be requested from the property owner. This may include available property drawings or as-built figures. If this information is not available, additional non-intrusive surveys of the property may be required by a private utility locator to find underground utilities by using techniques, including ground penetrating radar (GPR).
- American Public Works Association (APWA) Uniform Color Code For Marking Underground Utility Lines are:

    1. **White** – Proposed Excavation
    2. **Pink** – Temporary Survey Markings
    3. **Red** – Electric Power Lines, Cables, Conduit and Lighting Cables
    4. **Yellow** – Gas, Oil, Steam, Petroleum, and Gaseous Material
    5. **Orange** – Communications, Alarm, Signal Lines, Cables or Conduit
    6. **Blue** – Water
    7. **Purple** – Radioactive Materials
    8. **Green** – Sanitary and Storm Sewers and Drain Lines

- Before the intrusive work activities begin, the contractor will verify that each utility company has completed a utility location for the work area or the location has been cleared by a private locator and record this on the mark-out request information sheet.
- A visual survey of the project area will be done prior to the start of intrusive activities. This visual inspection will be done to identify signs, manholes, utility boxes, or other evidence of an underground utility is present and has been considered.
- The contractor can begin work on the scheduled work date and time if the utility operators have responded, taking care to find and preserve markings that have been made.
- Completed clearance documentation will be located on the excavation site during excavation activities and kept in project files.
- When excavating near a buried utility, observe the approximate location around that utility.

- If exposing a utility, proper support and protection must be provided so that the utility will not be damaged.
- If the excavation work requires significant spans of the utility to be exposed, it is the contractor's responsibility to support them (to prevent sagging or collapse) as needed. Contact the utility operator for support, guidance, or assistance.
- When the excavation is complete, provide proper backfill for utilities that have been exposed.

- Take care not to damage the conduit or protective coating of a utility. If the contractor damages this, leave the damaged utility exposed and immediately call the utility owner.
- If a gas line is contacted, the contractor must notify police, fire, and emergency personnel, and evacuate employees according to the site evacuation procedures. No attempt should be made to tamper with or correct the damaged utility.
- If the contractor/consultant needs to dig within the approximate location of a combustible, hazardous fluid, or gas line (natural gas, propane or gasoline), soft digging is required (hand digging, vacuum extraction) to a maximum depth of five feet. The approximate location is defined as 24 inches on either side of the designated center line of the utility if the diameter is not provided or 24 inches from each outside edge if the diameter is provided.

1.3 Limitations

- Follow safety procedures as defined in the site-specific HASP. Appropriate PPE must be worn correctly to provide the intended level of protection.
- Mark-out notification time usually does not include holidays. Make sure holidays are considered and mark-out time is scheduled accordingly. Under no circumstances are intrusive activities allowed to be performed prior to the required mark-out.
- Do not use white paint if precipitation is eminent. Consider using stakes if snow is predicted.

1.4 References

Reference the website for the "Call Before You Dig – 811" for the utility mark-out agency for the state you working in prior to site work. If you have issues locating the appropriate agency, contact the Health and Safety Committee for assistance.

1.5 Attachment

Attachment A – Standard Utility Color Codes
Attachment B – GEI Utility Clearance Documentation Form

1.6 Contact

GEI Corporate Health & Safety Officer
GEI East – North Regional Health & Safety Officer
GEI East – South Regional Health & Safety Officer
GEI Central Regional Health & Safety Officer
GEI West Regional Region Health & Safety Officer

COLOR CODE FOR UTILITY MARKING

(BASED ON 'THE AMERICAN PUBLIC WORKS ASSOCIATION' RECOMMENDATIONS AND THE ANSI STANDARD Z-53.1 FOR SAFETY COLORS)

UTILITY	COLOR
PROPOSED EXCAVATION	WHITE
ELECTRIC POWER LINES, CABLES, CONDUIT AND LIGHTING CABLES	RED
POTABLE WATER	BLUE
STEAM, CONDENSATE, GAS OR OIL COMPRESSED AIR	YELLOW
TELECOMMUNICATIONS, ALARM OR SIGNAL LINES, CABLES OR CONDUIT	ORANGE
TEMPORARY SURVEY MARKINGS	PINK
SEWER AND STORM DRAINS	GREEN
CHILLED WATER, RECLAIMED WATER, IRRIGATION AND SLURRY LINES	PURPLE
OTHER	LIGHT BLUE

1.0/4902e011.pdf (12/2004)

Utility Clearance Documentation

Client: _____

Project: _____

Site: _____

Excavation/Drilling Location ID: _____

Excavator/Driller: _____

GEI PM: _____

GEI Field Team Leader: _____

Utility Drawings Reviewed: _____

Provided By: _____

Reviewed By: _____

Utility Clearance Call Date: _____

Utility Clearance Received back from (list utilities): _____

Completed By (Company): _____ Date: _____

GEI Staff Responsible for Oversight: _____

Metal Detector Survey (yes/no): _____

Drilling Location Cleared by: _____

Contractor: _____ Date: _____

GEI Staff Responsible for Oversight: _____

Private Location Clearance Required (yes/no): _____

Contractor: _____ Date: _____

Methods used for utility location (i.e. GPR, electronic pipe location) _____

GEI Staff Responsible for Oversight: _____

Hand clearing Performed: _____ Date: _____

Contractor: _____

GEI Staff Responsible for Oversight: _____

Notes: _____

Based upon the best available information, appropriate utility clearance procedures were performed for the invasive work specified. If client ordered/site specific deviations from existing GEI utility clearance procedures exist, they are approved by the client signature below.

Client Signature (Optional): _____ Date: _____

GEI, Inc. Representative: _____ Date: _____

STANDARD OPERATING PROCEDURES

SOP No. HS-016 Traffic Hazard Management

1.1 Objective

The objective of this standard operating procedure (SOP) is to prevent or limit the potential for GEI personnel to encounter traffic hazards during field activities.

1.2 General

This SOP is intended for use by employees engaged in work with the potential for traffic hazards. The site-specific health and safety plan (HASP) should include a hazard assessment for the project that identifies the potential for exposure to traffic hazards and the control methods to be implemented by GEI employees. These hazards should be reviewed in the project safety briefing and documented on the Project Safety Briefing form, found on the Health and Safety page of the GEI intranet.

1.3 Traffic Hazard Management

Traffic Hazard Management is the process of identifying and managing the potential risks associated with the movement of traffic through, around, or past a work area. This Traffic Hazard Management SOP is designed to assist employees in identifying and managing these hazards. Work areas should be as safe as possible. It is the responsibility of GEI employees to follow the Traffic Hazard Management plan and adhere to these safety standards. Safety is not negotiable.

Under no circumstances are GEI employees permitted to commence work in a situation that they feel puts their health and safety, or the health and safety of others, at risk.

Major risk factors for work site Traffic Hazard Management include:

- The speed of traffic past or through a work site.
- The clearance between moving traffic, workers, vehicles and equipment, and over-head power lines.
- Traffic volume and vehicle composition.
- Nature and conditions at the work site and approaches to the work site.
- Other factors such as the time of day, sight distance, weather, presence of pedestrians, or cyclists, and the type of work being carried out.

- Other hazards in proximity to the work site (e.g., power lines, open excavations) that may have conflicting measures needing to be considered when developing the plan.

1.4 Site Preparation

The following management measures will be considered whenever working in traffic areas. In addition, remain aware of the amount of traffic around the working area. The work space should be large enough for the job to be completed safely. Check permit, traffic control plans, and flagger/police detail requirements for the local jurisdiction. Perform routine checks of the work zone to make sure there are adequate levels of protection.

1.4.1 Warning Cones and Warning Signs

GEI employees will comply with the Department of Transportation's (DOT) Manual on Uniformed Traffic Control Devices (MUTCD) and/or state regulations for temporary traffic barriers (cones, barriers) and sign placement when required for working in traffic areas. Clearly define the work site by placing traffic barriers around the work space to indicate the space that is needed to safely perform the work. The traffic barrier will help make the work site more visible to other workers and moving vehicles. Place traffic barriers to give yourself adequate space to work, so equipment is not outside the space. OSHA suggests placing the first warning sign at a distance calculated to be 4 to 8 times (in feet) the speed limit (in MPH).

1.4.2 Adequate Light

Requirements for night conditions and work areas with poor visibility are similar to day requirements; however there are a number of additional things to consider, such as visibility of the work site to advancing traffic and sufficient lighting. OSHA requires lighting for workers on foot and equipment operators to be at least 5 foot-candles or greater.

Visibility of the work area can be increased by employing the following measures:

- Using parked vehicles hazard and flashing lights.
- Wearing reflective safety vest that is in good condition.
- Providing adequate lighting to illuminate the work area. This lighting should be positioned so that there is no glare to approaching drivers.
- Placing advance warning signs and cones with retro reflective stripes so that they are visible to road users.

1.4.3 Distance from the Nearest Traffic Lane

Work areas located along roadsides will have a minimum clearance as defined by DOT's MUTCD and/or state or local DOT regulations for cone and sign placement.

1.4.4 PPE

The proper personal protective equipment (PPE), as outlined in the project HASP, will be worn when appropriate. The color/type of safety vest will comply with site regulations.

1.5 Equipment Operation

Vehicles and heavy equipment operators should use a spotter when possible if it is necessary to drive in reverse to reduce risk of collision with oncoming traffic. If it is necessary to drive against the flow of traffic make sure this area is within the work zone and properly blocked off from oncoming traffic.

1.6 Pedestrian Safety

When working near pedestrian traffic, a safe walkway will be established. Refer to local regulations when establishing pedestrian walkways.

1.7 Limitations

Follow safety procedures as defined in the site-specific HASP, federal DOT, and local jurisdictions. Appropriate PPE must be worn correctly to provide the intended level of protection.

1.8 References

DOT's Manual on Uniformed Traffic Control Devices (2009 Edition)
https://www.osha.gov/SLTC/etools/hurricane/work-zone.html

1.9 Attachments

None

1.10 Contact

GEI Corporate Health and Safety Officer
GEI East-North Regional Health and Safety Officer
GEI East-South Regional Health and Safety Officer
GEI Mid-West Regional Health and Safety Officer

GEI Western Regional Health and Safety Officer

STANDARD OPERATING PROCEDURES

SOP No. HS-018 Working Around Heavy Equipment

1.1 Objective

The objective of this standard operating procedure (SOP) is to prevent or limit the physical hazards when working around heavy equipment for GEI personnel.

1.2 General

This SOP is intended for use by employees engaged in work with the potential for working near heavy equipment. The site-specific health and safety plan (HASP) should include a hazard assessment for the project for working near heavy equipment to be implemented by GEI employees. These hazards should be reviewed in the project safety briefing and documented on the Project Safety Briefing form, found on the Health and Safety page of the GEI intranet.

1.3 Heavy Equipment

Heavy equipment (excavators, backhoes, drill rigs, etc.), can present many physical hazards that can result in serious injury or death if the proper safety precautions are not followed. The following is a list of precautions to be aware of when working around heavy equipment:

- Wear appropriate personal protective equipment (PPE), including a reflective, high-visibility safety vest.
- Always keep your distance from moving vehicles.
- Do not assume the vehicle operator knows where you are or where you are going. Make sure to make eye contact and receive acknowledgement of your presence with the operator. Avoid working near heavy equipment, but if unavoidable, communicate your location with the heavy equipment operators. If using hand signals, discuss the signals with the equipment operator prior to starting work.
- Watch for moving equipment. Construction sites can have a lot of activity and vehicles may be moving closer than you may think.
- Do not rely on back-up or other alarms. They may not be working or you may not hear them with the noise of other activities taking place in the area.
- Stay out of the swing radius of cranes, excavators, or other equipment that swings or rotates.
- Do not walk beside a moving vehicle, the vehicle may turn, slip, or the load may shift causing the vehicle to go off course.

- Do not ride on the outside of a moving vehicle.
- Always stay out from under a suspended load on cranes or hoists, even if it means taking the long way around.
- Do not walk behind a piece of equipment that is backing up. The operator may not see you.
- If working next to heavy equipment is unavoidable, be aware of the hazards including pinch points and moving parts. Use a spotter to watch the work area for moving equipment.
- If necessary, ask the operator to stop equipment operation to perform your work tasks.
- Verify the location and operation of emergency shut-off devices on the equipment.
- Be aware of the fuels and chemicals associated with the equipment. Have a spill prevention and response plan in place that includes the appropriate containment materials (i.e., spill kit).
- Do not wear loose fitting clothing when working around moving equipment (i.e., drill rig augers).
- Do not operate heavy equipment.
- Do not use cellular telephones near operating equipment.

1.4 Limitations

Follow safety procedures as defined in the site-specific HASP. Appropriate PPE must be worn correctly to provide the intended level of protection.

1.5 References

OSHA 29 CFR 1926.600 – Subpart O; Motor Vehicles, Mechanized Equipment, and Marine Operations.
www.*toolboxtopics.com*/Construction
Caterpillar Safety – http://safety.cat.com/

1.6 Attachment

None

1.7 Contact

GEI Corporate Health & Safety Officer
GEI East – North Regional Health & Safety Officer
GEI East – South Regional Health & Safety Officer
GEI Central Regional Health & Safety Officer
GEI West Regional Region Health & Safety Officer

STANDARD OPERATING PROCEDURES

SOP No. HS-025 Manual Lifting

1.1 Objective

The purpose of the GEI Consultants, Inc. (GEI) Manual Lifting SOP is to identify and reduce potential work-related musculoskeletal disorder (WMSD) hazards. The SOP is intended to comply with state regulations and safe work practices developed by the Occupational Safety and Health Administration (OSHA). Modifications to meet these requirements will be made to this program as changing laws or regulations dictate.

1.2 General

The following Safe Lifting guidelines will be followed by GEI employees involved in manual lifting activities:

- Before manual lifting is performed, a hazard assessment must be completed. The assessment must consider size, bulk, and weight of the object(s), if mechanical lifting equipment is required, if two-man lift is required, whether vision is obscured while carrying and the walking surface and path where the object is to be carried.
- Get a co-worker to help if equipment or other item is too heavy to lift.
- If possible, use powered equipment instead of manually lifting heavy materials. Lifting equipment such as dollies, hand trucks, lift-assist devices, jacks, or carts can be provided for employees.
- Reduce lifts from shoulder height and from floor height by repositioning the shelf or bin.
- Make sure walkways are clear of tripping hazards before moving materials.
- Use your legs and keep your back in a natural position while lifting. Keep the load close to your torso.

- Test the load to be lifted to estimate its weight, size, and bulk and to determine the proper lifting method.

- Do not twist while carrying a load. Instead, shift your feet and take small steps in the direction you want to turn.
- Make sure there are appropriately marked and sufficiently safe clearances for aisles and at loading docks or passageways where mechanical-handling equipment is used.
- Properly stack loose or unboxed materials which might fall from a pile by blocking, interlocking, or limiting the height of the pile to prevent falling hazards.
- Bags, containers, bundles, etc. should be stored in tiers that are stacked, blocked, interlocked, and limited in height so that they are stable and secure to prevent sliding or collapse.
- Storage areas should be kept free from accumulation of materials that could lead to tripping, fire, or explosion.
- Work methods and stations should be designed to minimize the distance between the person and the object being handled.

Supervision must periodically evaluate work areas and employees' work techniques to assess the potential for and prevention of injuries. New operations should be evaluated to engineer out hazards before work processes are implemented.

1.3 Injury Reporting

Injuries experienced during manual lifting activities should receive prompt medical attention. If a GEI employee suffers an injury on the job, he/she is to report the injury to their immediate supervisor within 2 hours of the incident. The supervisor will immediately notify the CSHO and Director of Human Resources.

After verbal notification has been made, an Incident and Accident Report Form is to be completed by the employee and/or Project Manager and submitted to Human Resources and the CHSO within 24 hours of its occurrence. This form is available on the Health and Safety site on the GEI Intranet.

Upon notification from a Branch or Office Manager, Human Resources, and/or the receipt of the Incident and Accident Report Form, the CHSO and/or the RHSO will conduct an investigation and evaluation of the incident and the incident response. Information received will be analyzed for the hazards and risk factors associated with the incident. The CHSO will then recommend (as necessary) engineering controls, PPE, training or other appropriate measures to minimize the potential for future musculoskeletal injuries. The CHSO/RHSO will develop educational information based on lessons learned for distribution to GEI employees.

1.4 Training

Training will include general principles of ergonomics, correct maul lifting training to avoid musculoskeletal injuries, recognition of hazards and injuries, procedures for reporting hazardous conditions, and methods and procedures for early reporting of injuries.

1.5 Ergonomic Evaluation Process

1.5.1 Requesting an Evaluation

An evaluation can be requested by the employee if they have concerns about their workstation, tasks, or are experiencing discomfort while working. The employee can request an evaluation by directly contacting their supervisor, Branch Manager, RHSO, HR or the CHSO via email. The Branch Manager will be notified of the requested evaluation. The Coordinator will send the Worksheet to the employee, who will complete it and return it to the Coordinator. The Coordinator will review the Worksheet and suggest modifications to the employee. If these modifications do not resolve the issue, the Coordinator will then schedule an in-person evaluation with the employee. If an employee is experiencing discomfort at their workstation and a request for an evaluation has been made, the evaluation will occur as soon as possible to assist the employee. If the Coordinator is not available another Coordinator will be assigned the evaluation.

Coordinators will be trained to treat the information obtained during the evaluation as confidential. If there are concerns the employee does not wish to discuss with the Coordinator due to their personal nature, a representative from HR will be designated to assist with the evaluation.

1.5.2 Job Hazard Analysis

Once the evaluation has been scheduled, the Coordinator will meet with the employee at their workstation and conduct the interview and review their work area. The Ergonomic Evaluation Checklist will help guide the Coordinator through a series of questions to help evaluate the potential ergonomic safety concerns. The evaluation is designed to be a conversation between the employee and Coordinator to help develop an open dialog. During the evaluation the Coordinator will identify ergonomic risk factors and implement immediate corrective actions, if possible. In many cases, simple adjustments can be made to the work station using existing equipment. Ergonomic work practices including “ergo breaks” and stretching can also be recommended.

1.5.3 Corrective Actions

During the evaluation the Coordinator may suggest adjustments that can be made to the existing work station. The employee will be encouraged to adopt the suggestions but ultimately has the choice to accept and implement them. Once the evaluation has been completed, the Coordinator will review the evaluation and if there are concerns, they will evaluate them with the HSC. Once the HSC has discussed the evaluation and developed corrective actions, they will be documented on the Checklist. The corrective actions will be shared with the employee and the Branch Manager. Prior to equipment purchases, approval will be authorized by the local branch manager.

Broken equipment will be taken out of service, properly disposed of and replaced. If improper equipment is being used, the proper equipment will be obtained or purchased with approval. If the employee's workspace presents a hazardous condition (fire hazards, trip hazards, noise exposure, etc.) the hazard will be corrected, if possible, or the employee will be moved to a safe workspace. If the equipment being used is not an appropriate fit for the employee, a suggestion will be made in the evaluation report to obtain or purchase the equipment that fits the employee properly.

If a repetitive task is identified, options will be discussed with the Branch Manager, the HSC and/or other appropriate personnel to evaluate whether the task can be altered to facilitate a safer condition. Many times accelerated deadlines, apprehension, or lack of options cause an employee to believe they don't have a choice and will just push through to complete the task potentially causing an ergonomic injury. These types of situations need to be recognized and corrected. A proactive approach by both the Branch Manager and employee should be instituted to prevent or anticipate these situations so that the correct equipment, additional employees or better planning can be incorporated while still meeting the deadline.

The organization of the workspace is also an important ergonomic factor. Items should be placed so that frequently used equipment is within arm's reach and located on the correct side of the body for which that equipment is used to prevent unnecessary twisting or reaching. Having adequate space to complete tasks is necessary but may not be achieved if piles and unnecessary items occupy the space. The Coordinator can suggest how to take advantage of tools and organizational skills to free up space.

Other areas of concern may be outside factors that occur away from the office. If the employee conducts field work, the tasks should be completed with ergonomics in mind.

A separate evaluation of these tasks may be conducted to determine if a different process or equipment may be used to reduce any unnecessary pressure or fatigue to the employee's body. At times when employees have permission to work from home or use their GEI computers at home, in hotels while traveling, in an environment that is not ergonomically correct, employees will be encouraged to adopt the ergonomic recommendations they learn at work.

Employee's hobbies can also pose ergonomic risks. Hobbies that involve repetitive motions, prolonged postures, vibration, excessive force/overexertion and adverse environmental factors may cause ergonomic injuries that can be aggravated at work.

During the interview process, the Coordinator will try to identify these risks and discuss techniques to help alleviate discomfort and minimize additional injury. It will be up to the employee to modify anon-related work risks.

If an employee is experiencing discomfort, efforts will be made to alleviate the discomfort while at work. For example, if an employee has a physical injury that occurred outside of work that requires them to keep their leg elevated, the employee can work with their Coordinator to determine a solution. This may involve temporarily modifying their workstation or transferring to another workstation. Healthy work practices and generally good health are keys to staying comfortable at work too. Regular stretch breaks, good posture, vision check-ups, good sleep habits and maintaining a healthy weight are factors in creating a comfortable work environment. If a physical non-work related problem persists and impedes the employee from being effective at work, suggestions may be made to see a personal physician for further advice.

1.5.4 Reporting and Follow-up

Once the evaluation has been completed and the Coordinator's suggestions have been implemented, the Coordinator will document the findings on the Checklist and an evaluation report will be completed and submitted to the employee, the evaluated employee's Branch Manager, and the CHSO. Then a follow-up will be conducted by the Coordinator to evaluate whether the adjustments were successful. The timeline for follow-up will be based on the adjustments suggested and employed. If new equipment is installed, the Coordinator will follow-up after the equipment has been installed and the employee has had time to adjust to it. If an injury has been identified, the Coordinator will notify the Branch Manager and CHSO immediately following the evaluation. This will confirm on-going management of the injury.

During the follow-up evaluation the Coordinator will make visits to the employee's workstation and assess visually and through interviews determine how the changes have been received. Each of these follow-ups will be documented on the Checklist. If during the follow-up a re-adjustment or different equipment is needed, the reevaluation process will continue until the employee is comfortable.

1.6 Limitations

Follow safety procedures for manual lifting.

1.7 References

OSHA Technical Manual (OTM), Section VII: Chapter 1 - Back Disorders And Injuries

1.8 Attachments

None

1.9 Contact

GEI Corporate Health & Safety Officer
GEI East – North Regional Health & Safety Officer
GEI East – South Regional Health & Safety Officer
GEI Central Regional Health & Safety Officer
GEI West Regional Region Health & Safety Officer

Appendix F

Con Edison Corporate Environmental, Health, and Safety Procedures

UTILITY CLEARANCE PROCESS FOR INTRUSIVE ACTIVITIES
E H&S REMEDIATION PROGRAM

1.0 INTRODUCTION

This document outlines a process to identify, locate and clear subsurface utilities as part of all Environmental Health and Safety (EH&S) Department's Remediation Section intrusive site investigations. The various activities that comprise this process are specified in efforts to eliminate or substantially reduce the risk of encountering a subsurface utility while performing intrusive activities. Where appropriate, reference is made to other existing *Con Edison and or industry* safety procedures that should also be considered. **Note that modifications and additions to the text in this version of the process, relative to the topics outlined in Section 2.0, are italicized.**

Due to the potential presence of subsurface utilities and the inherent variable of their size, depth and layout, it is not possible to address all situations and circumstances that may be encountered during intrusive activities. However, adherence to the steps outlined here will effectively minimize physical impacts to subsurface utilities and prevent associated health, safety *and environmental* risks that might otherwise result from field investigation activities. The activities prescribed below should not be blindly followed. Rather, it is the intent of this document that **ALL FIELD PERSONNEL**:

1) Understand the terms of this process including all revised or added provisions;

2) Develop an awareness and be mindful of, the potential and actual risks associated with utilities and other related hazards at a site;

3) Become familiar with the location(s) and configuration(s) of all subsurface utilities at the site, *which will include surrounding/adjacent facilities and or buildings*, as marked out and as delineated on available drawings;

4) Develop an awareness and understanding of the potential uncertainties associated with utility locations as marked out;

5) Maintain a high level of vigilance while implementing all components of intrusive fieldwork.

ALL FIELD PERSONNEL, including the Con Edison Project Manager (PM), Construction Management (CM), consultants and contractors should, *at a minimum,* be familiar with the fundamental provisions of this utility clearance process PRIOR to engaging in any field activities.

The process described in the remainder of this document consists of the three (3) primary components summarized below. These components are designed for use in an integrated manner.

Process Narrative – The narrative provides detailed descriptions of the specific steps that should be taken prior to and during intrusive activities to minimize the potential of encountering subsurface utilities.

Utility Clearance Flow Chart: The key steps of the utility clearance process, as outlined in the narrative, are shown graphically on the flow chart provided in **Attachment A**. The flow chart serves as a guide and should not replace the narrative for developing an understanding of and/or implementing the process.

Utility Clearance Checklist - A key component of this process is the completion of the checklist provided in **Attachment B**. The checklist shall, be completed by the Con Edison PM *or their designee, such as consultant or Con Edison Construction Management Inspector.* The intent of the checklist is to ensure that all appropriate steps of the process described herein have been completed. Secondly, it will be used to document that all reasonable steps were taken to prevent conditions that may be potentially harmful to the on-site workers and the surrounding community at large, and that might otherwise adversely impact the physical integrity of, or cause damage to, the utility. The completed checklist will be incorporated in the project files maintained by the Con Edison PM *or their designee*.

2.0 REVISIONS FROM PREVIOUS VERSION

This version (**Revision 2**) *contains modifications to Revision 1 and includes additional provisions and or guidance based on lessons learned during implementation of the previous versions* for intrusive activities at various sites. The key topics that have been added or modified are listed below and described in greater detailed in the referenced sections of this protocol.

- *Considerations for potential presence of fiber optics;*
- *Accessing manholes and other utilities during field inspection and utility mark out;.*
- *Considerations for potential presence of traffic control electric lines; and*
- *Considerations for potential presence of unmapped non-routine utilities or subsurface utilities, such as drainage pipes, etc.*

Modifications and additions to the text relative to the introductory sections of this document and the topics listed above are *italicized.*

3.0 APPLICABILITY

The utility clearance process shall be performed prior to and/or during the intrusive site investigation activities listed below.

- Excavation of Soil Borings

- Installation of Monitoring Wells
- Installation of Soil Gas Sampling Probe Points
- Excavation of Exploratory Test Pits/Trenches

4.0 SUBSURFACE UTILITY CLEARANCE PROCESS

The key activities that comprise the process are listed below and a detailed description of each is provided in the remainder of this document in the order in which they should be completed (as shown in the Utility Clearance Flow Chart in **Attachment A**).

- Obtain Plates, Drawings and Maps
- Notification to Con Edison Operating Groups and Submission of Site-Specific HASP for review and approval
- Code 753 Utility Mark-Out
- Site Walk
- Utility Clearance - Sample Location Confirmation
- Checklist Completion

It is noted that completion of some steps may not be warranted for all intrusive activities at all sites. The process is designed to be flexible and, thus, allows the Con Edison PM to incorporate those utility clearance activities that are appropriate for a set of site-specific conditions, knowledge of the site, previous work completed at a site, etc. Exceptions are summarized in Section 5.0 of this document. The key premise is that any deviations and the rationale for each are well documented and reflect sound judgment on the part of the Con Edison PM and other project personnel.

4.1 Obtain Plates, Drawings and Maps

Hard copies of available utility plates, drawings and/or maps should be obtained by the Con Edison PM *or their designee.* Drawings, plates, etc. should be reviewed as a preliminary step to determine the type and approximate size and location of utilities in the vicinity of the work site. . *When working at, adjacent to or in the immediate vicinity of a Con Edison facility ("Facility"), such as substation or gas regulator station, the Con Edison PM or their designee shall also obtain and review the Facility-specific plates. These shall include all utilities (both Con Edison and non-Con Edison) on and/or entering or leaving the Facility. Regardless of who obtains the requisite utility plates and or drawings, the Con Edison PM shall ensure that the job package is complete and includes ALL required such drawings and or plates of sub-surface facilities in the*

area(s) of intrusive activity, such as excavation or drilling. The drawing title, most recent revision date shown on the drawings, approximate scale and source shall be documented in the appropriate space(s) on the Utility Clearance Checklist (**Attachment B**).

The source of the drawings may vary depending on whether the site is a Con Edison owned/operated facility, private/public property, or extends into a public street/sidewalk. The various sources for substation utility drawings are discussed below and listed in **Table 1**. Drawings for private properties and facilities, such as apartments, schools, churches, residences, etc., can typically be reviewed at, and/or obtained from, the property/facility manager and Department of Public Works and/or Department of Buildings in the municipality where the property is located.

NOTE: Fiber optics at Con Edison facilities are not routinely identified on utility drawings. Therefore, when conducting intrusive work at Con Edison facilities, the facility engineer should be contacted in advance of the site walk to determine if fiber optic cables are known to be present and, if so, what is their layout. Fiber optic lines generally cannot be detected using routine geophysical methods accordingly, at sites with known fiber optics every effort should be made to determine their location or confirm their absence in the work area.

NOTE: Copies of all drawings obtained during this step should be available at the site during all site walks/inspections and at all times during subsequent intrusive activities. The drawings should be reviewed immediately prior to implementing intrusive activities at each new site location where intrusive activities are to be performed.

Steam, Gas and Electric
All electric and gas plates are available on Con Edison's intranet by searching for 'maps' or accessing the Advanced Mapping System website listed below.

http://maps/AdvancedMappingHomePage.htm

Similarly, steam plates can be obtained by selecting "Active" and "Archived" Steam Plates from the website:

http://maps/steam.htm

Based on agreement between Transmission Operations and EH&S, Remediation personnel may access these intranet sites and print the plates using the plotter located in the 2nd floor of Building 138. In addition, a large format photocopier, which is also located in Building 97, is available for use by EH&S remediation. A log book, which is stored at the facility, should be completed each time the facilities (i.e., computer, and or photocopier) are used.

Conduit and Duct Occupancy (C&DO) utility plates can also be obtained from the appropriate Con Edison engineering group(s) including, electric (e.g., distribution lines, transmission feeders, etc.) steam and gas by the Con Edison PM.

AFTER accessing the website and obtaining the required drawings, the appropriate party listed in **Table 1** may be contacted with inquiries regarding electric and steam plates or for questions regarding use of the Advanced Mapping System.

Sewer and Water

Drawings showing water and sewer utilities should be obtained from the New York City Department of Environmental Protection (NYCDEP) *or, if in Westchester, then the drawings and or plates should be obtained from the local authority, such as the County Health Department or municipal Departments of Public Works (DPW) and or Buildings (DOB).* Drawings can be requested from the NYCDEP by completing the form provided in **Attachment C** and faxing or mailing it using the appropriate contact information listed on the request form. If you have questions you should contact the NYCDEP personnel at the telephone number listed in **Table 1**.

Subterranean Tunnels

Drawings showing locations and depths of tunnels including subways and automobile tunnels and related subsurface infrastructure should be obtained as appropriate by contacting the Metropolitan Transportation Authority as listed in **Table 1**. It is noted that if intrusive activities will be performed in the immediate vicinity of subsurface MTA structures, such as subway or automobile tunnels, a letter submitted to the MTA may be required to request a work permit from MTA. The letter should include a brief summary of the work and a map(s)/drawing(s) of the proposed work and will be submitted to:

Mr. Rajen Ydeshi
Outside Projects
New York City Transit
2 Broadway, 7th Floor
New York, New York 10004

Fiber Optics

As noted above, fiber optic lines are typically not shown Con Edison's utility drawings. Accordingly, the facility engineer should be consulted regarding the presence,and if present, their location as discussed above.

Traffic Control Cables

Drawings and or plates for subsurface traffic control facilities should be requested from New York City Department of Transportation (NYCDOT) or the local/ municipal DPW or DOT.

Miscellaneous

Con Edison generally does not maintain plates and drawings showing detailed information of utility distribution on private property. However, as discussed above, facility managers, property owners, Department of Public Works and/or Department of Buildings of the municipality where the site is located, should be contacted in efforts to obtain available utility drawings for the facility. Contact information (e.g., telephone numbers, e-mail addresses, etc.) for municipalities

can typically be obtained by accessing the municipality's website. The name, address and telephone numbers for the Department of Buildings in New York City are listed in **Table 1**.

4.2 Complete Utility Markouts

Due to the diversity and nature of sites investigated by the EH&S Remediation Group and the potential utilities at these sites, an effective mark out *will require a Code 753 utility survey with supplemental M-scope survey by Con Edison and or a subsurface utility survey by a private utility-locating contractor*. The applicability of each of these surveys is discussed below.

4.2.1 Overview of Utility Markout Methods

Code 753

The Con Edison PM should instruct their consultant and/or contractor to request a Code 753 utility mark out as per the 16 New York City Rules and Regulations (NYCRR) Part 753. Consistent with the One-Call (also called Dig Safe New York) criteria, the request should be made at least 72 hours prior to initiating fieldwork. The telephone numbers of the various one-call systems are listed by region below.

New York City / Long Island:	(800) 272-4480
Westchester	(800) 962-7962

Confirmation that mark outs completed under Code 753, and as received by facsimile or telephone from the participating utility companies, should be documented on spaces provided on the Utility Clearance Checklist (**Attachment B**). The markouts should be maintained by the Con Edison PM or designated representative. If the physical markings on the street/sidewalk become faint or obscure they should be refreshed by over-painting with new paint as needed. When the utility markouts are being refreshed, typically by consultant, contractor, or other project personnel, a Con Edison representative or their designee **MUST** be present and observe this activity.

Con Edison M-Scope Survey

Con Edison engineering groups (see below for contacts) can conduct utility surveys using a 'M-Scope' on a case-by-case basis and will be limited to the engineering group' availability. This tool uses the magnetic susceptibility of subsurface features such as electrical conduits, electric cables, pipes, etc. This method of survey can be subject to interference by other conductive bodies at grade or in the subsurface, such as buried pieces of metal, rebar in concrete, iron-rich soil, etc., and may be ineffective or produce misleading results in these types of conditions. A utility survey using an M-Scope can be requested by contacting the appropriate party listed below. Note for markouts inside substations contact Mark Rimler at (212) 460-3921.

County	Contact Name	Telephone Number
Manhattan	Jane Shin	(212) 894-9345
Brooklyn & Queens	John Haas	(718) 348-6725
Bronx	Greg Kasbarian	(718) 904-4659
Westchester	Faney Bantin	(914) 789-6715
Staten Island	Joseph Nappi	(718) 890-6231

Private Utility Contractor

Prior to mobilizing to the site the following information MUST be provided to and reviewed by the Con Edison PM:

- the name of the contractor;
- the name of technician(s) who will perform the utility surveys;
- for each technician, a summary of experience and training in conducting surveys in a setting similar that at the site (e.g., urban, inside buildings, etc.); and
- Summary of experience and training of each instrument.

When using a private utility location contractor, the Con Edison PM shall diligently attempt to arrange for the facility or property manager and or engineer, who is most familiar with the utility layout and distribution in the building or on the property to participate in the site walk with the private utility locating contractor during on the first day of conducting the on-site utility survey.

Private utility contractors employ a variety of utility detection and location techniques, which may include:

- Ground Penetrating Radar (GPR)
- Magnetometer *(M-Scope) [for locating metallic **and** non-metallic pipes and cables]*
- Radio Frequency Induction (RFI) *[for locating non-metallic pipes and cables]*
- Electrical Conductivity
- Electrical Resistance
- Acoustics

Use of multiple methods may permit the detection and surveying of conductive and non-conductive buried utilities.

The utility location contractor **SHALL** specify which utility detection tool/techniques they plan to bring **AND** use at the site. In addition, they **SHALL** bring **ALL** support tools and equipment necessary to allow them access to manholes, vaults, circuit boxes, pipe clean-outs, etc.

At the commencement of a utility survey using a private utility location contractor **AND** prior to them deploying any survey equipment, the utility location contractor **SHALL**, *in cooperation with the Con Edison PM and or their designee:*

1) Review **ALL** utility drawings

2) Reconcile **ALL** drawings with markouts identified by the Code 753 survey at the property perimeter.

3) Determine presence, type and nature of sub-slab utilities and diligently attempt to confirm their configuration during the utility survey.

4) Inspect the site to identify*/reconcile* where **ALL** utility service(s) enters and or leaves the property and or building. This **SHALL** include a thorough inspection of building basement(s); boiler and or machine room(s); externally-exposed utility infrastructure including manholes; vaults; electrical, gas, water valves and or meters; etc.

5) For work at or adjacent to Con Edison Facilities, conduct the site walk and review the facilities drawings with key Facility Management personnel.

6) Visually identify, open and inspect **ALL** relevant utility access-ways including manholes, vaults, gas and or water valves boxes and telephone, *fiber optic* cable, *traffic control lines* and communication boxes.

NOTE: Only circular manholes shall be opened. If opened improperly, rectangular manhole covers can fall into the underlying vault and damage the contained utility (e.g., transformer). If it isa anticipated that manholes will need to be opened, Con Edison Transmission and Service Operations (T&SO) shall be contacted prior to conducting the site walk and or utility clearance survey using a private locator.

7) Identify and document **ALL** apparent uncertainties such as manholes containing service lines that apparently go to the building or property, but that cannot be located within the basement of the building or on site.

NOTE: In **ALL** cases, the private utility contractor shall diligently attempt to 'hook-onto' or 'tone' each conduit source (e.g., pertinent electrical conduits in basement, water and or gas valves in valve box, *sewer and or drain pipes,* distribution lines in manhole, *telecommunication lines,* etc.). This may require opening manholes circuit electrical distribution 'trunk' boxes, moving equipment or stored materials at the facility or property to allow access. No project personnel shall enter a manhole or vault unless they are certified and trained in confined space

access, have and know how to use **ALL** pertinent safety equipment, and approved by the Con Edison PM.

In some situations, multiple metallic conduits may be in direct contact in the subsurface. In this circumstance the signal of the locating tool may be transferred from the conduit being 'toned' to an adjacent conduit(s) and may produce a 'secondary' signal. In efforts to understand and identify this occurrence, the location of each apparent signal shall be visually/physically marked using pieces of tape, paint or similar method. The sources being 'toned' shall be numbered and the corresponding signals associated with each signal source shall be marked with the corresponding number at each location where the signals from each source is detected. Accordingly, the resulting mark outs will show apparent multiple conduits for a single source.

4.2.2 Applicability of Utility Clearance Resources

The use of the various utility markout resources that may be employed at various sites is summarized in the table below and discussed in the remainder of this section.

Site Setting	**Utility Survey by Con Edison**	**Utility Survey by Private Contractor**	**Code 753 (1)**
Con Edison Facility	X	X (optional)	X[1]
Street / Sidewalk	X (optional)	X (optional)	X
Private Property	X (optional)	X	X[1]

(1) At larger Con Edison Properties (e.g., Astoria) or large private or publicly owned properties, a Code 753 survey may not be warranted.

Con Edison Facility

Utility markouts at Con Edison facilities should be coordinated by the Con Edison PM with support from the Construction Management (CM) inspector assigned to the project (if any) and/or *key Facility Management personnel*, as appropriate. At a minimum, an M-Scope survey should be completed. In some circumstances, an independent utility locating contractor should also be used. The decision to use a utility contractor will be made by the Con Edison PM. The use of an independent utility mark-out contractor is strongly recommended at sites where a variety of utilities are known or suspected to be present and which may not be readily identified or mapped using M-Scope alone. A benefit of using a utility locator contractor is that, as described above, they can provide a greater array of tools to locate a variety of subsurface utilities that are non-conductive, such as concrete sewer lines, PVC pipes, etc. in addition to identifying/confirming the presence and location of conductive utilities.

Private Property (including Soil Gas Sampling Probes)

An independent utility locator should be used for utility markouts on private properties. It is noted that utility mark-outs in basements or slab-on-grade constructed buildings may be

inconclusive due to the presence of rebar or welders-mesh commonly used as reinforcement in concrete. Accordingly, a thorough inspection of the basement floor and walls should be performed to identify where utilities enter and leave the building, as well as how the utility (elctric, water gas, steam, etc.) are distributed in the vicinity of the sample locations. Sub- or in-floor utilities often enter along the perimeter of the floor, at support columns, and/or along dividing walls. The observation of utilities entering the floor may indicate utilities that lie within or immediately beneath the concrete basement slab. If the location of the utility layout of any such sub- or in-floor utility cannot be effectively determined, then any intrusive work must be discussed with the Con Edison PM and may require that no intrusive activities be performed at that location. *However, this action should only be considered after all applicable survey tools and methods have been diligently deployed and or implemented.*

Public Street / Sidewalk

A combination of Con Edison utility survey staff and independent utility locator contractors may be used for work areas located in and along roadways. Since Con Edison maintains utilities in streets and along sidewalks, in addition to the mark outs performed through the Code 753 survey, an M-scope survey may also be requested within a 10 foot radius of each proposed sample location. It is noted that due to often heavy work loads of the M-Scope survey staff, this option may not always be available or practicable and should be considered optional.

4.3 Site Walk

After completion of the activities outlined above, a site walk shall be conducted by the Con Edison PM with participation from Construction Management (if it will be providing field oversight), contractors (drillers, soil gas, excavators, private utility location contractor, etc.), Con Edison *Facility Managers,* NYSDEC (as deemed appropriate by the Con Edison PM), private facility managers/property owners *and or owners/operators/representatives of private utilities, such as NYCDOT, municipal DPWs, Westchester Department of Sewer, Westchester County Department of Health, etc.* A list of the names and phone numbers of each participant at the site walk will be maintained by the Con Edison PM. The key objectives of the site walk are to:

- Review the all planned locations where invasive activities will be performed,
- Adjust the positions of the locations away from utilities as marked out (as necessary)
- Collectively determine the appropriate utility clearance activities (e.g., test pits, etc.) that will be performed at each location (as described in Section 3.4) and document all decisions and /or concerns using the Utility Clearance Checklist (as described in Section 4.0) and in **Table 2**.

Other site conditions and project issues assessed during the site walk should include:

- Presence and location of overhead utilities and/or obstructions that might prevent the safe operation of drilling /excavating equipment;

- Presence of, or need for, appropriate grounding for electrical equipment at the site;
- Site access to equipment;
- Storage of equipment/supplies overnight (e.g., establish a staging area);
- Storage and management of investigative derived waste (IDW);
- Hours of on-site work;
- Permits needed, if any;
- Review roles and responsibilities of all project personnel who will be onsite;
- Review site and emergency contacts; and
- Review anticipated schedule of work *and contingency action as deemed appropriate.*

4.4 Utility Clearance - Sample Location Confirmation

The appropriate actions necessary to confirm the location and/or absence of utilities, which are agreed on during the site walk and as documented in the Utility Clearance Checklist and in **Table 2**, will be implemented at each sample location during the investigation. As discussed above, and as shown the Utility Clearance Process Flow Chart, the actions will generally include one or more of the following:

- Moving the location outside the **tolerance zone**, if possible. If no ***tolerance zone*** is marked out during the utility survey (i.e., only a utility center line is marked), the **tolerance zone** will be defined in the field as: **the distance of one-half of the known diameter of the utility plus two feet on either side of the centerline as marked out.**
- Performing a utility clearance test pit at each location where intrusive work will be performed; and/or
- Performing a utility clearance test pit using non-mechanical means to expose and physically verify the exact location and configuration of all nearby utilities.

Brief descriptions of the activities that will be completed during the various investigation activities are discussed below.

NOTE: When working within 25 feet of high pressure gas lines (i.e., 125 psig or greater), ***Gas Emergency Response Center (ERC)*** **shall be contacted** ***[718-319-2330] and notified of the planned activities at least two days prior to start of intrusive work. If working within 5 feet of a transmission main or within 10 feet of the tolerance zone of a main*** **the gas line will be**

carefully excavated by hand in accordance with the Gas Operations Standard G-11863, titled "Inspection and Maintenance Requirements Associated with the Excavation Activities Near Gas Pipelines Operating at 125 psig and Above".

Soil Borings / Monitoring Wells

All locations within the tolerance zone should be moved outside the zone, if possible. After moving the location, a utility clearance test pit should be excavated to a minimum of 5-feet below ground surface using non-mechanical methods, such as hand auger, post-hole digger and/or vacuum truck. The diameter of the test pit should be at least two inches wider than the outer diameter (OD) of the mechanized drilling equipment. The 5-foot depth is consistent with the concept that most utilities are typically installed within the top five feet of the subsurface.

NOTE: Utilities may be deeper than five feet due to buildup of surface grade on properties and or streets or right-of-ways. Although the original depth of utilities is anticipated to be within the upper five feet, utilities that are buried in areas that have been built up will presently be deeper by the thickness of the built-up material.

Intrusive investigation locations where physical space prohibits the relocation of proposed sample locations outside the tolerance zone, the adjacent utility(ies) will be exposed by excavating using non-mechanical methods to visually confirm its physical location and configuration. This confirmatory excavation will be completed in addition, a 5-foot excavation at the specific location being investigated (e.g., soil boring, monitoring well boring, etc.), as described above.

Soil Gas Sampling

At soil gas sample locations, test pits will also be excavated to one foot below grade or below the bottom of a concrete floor, if present, prior to installation of soil gas sample probes points. The one-foot depth specified is consistent with the concept that most utilities that could be impacted by the advancement and emplacement of the probe points, such as telephone lines, local electric (e.g., for outdoor lighting), cable television, in-ground sprinkler lines, etc., are typically installed from grade to a depth of one foot.

Basements / Indoor Soil Borings and Monitoring Wells

Prior to installing a soil boring, monitoring well or soil gas sample probe point in the concrete slab of a basement and after identifying that no utilities are present in the floor of the basement or foundation slab (as per Section 3.2.2), an electric powered diamond core drill, concrete saw or jack hammer will be used to advance through the concrete and expose the underlying soil. *If sub-slab utilities are suspected of being present, but not confirmed during the utility location survey, the concrete shall be cored or saw cut to an estimated depth of approximately 2/3 the thickness of the concrete (if known). If the thickness of the concrete thickness is not known, it shall be assumed to 8-inches thick. Coring shall proceed at 1-inch increments, with the removal of each one-inch 'plug' of concrete and visual inspection of the core hole to verify the absence of utilities. The remaining 1/3 of the concrete shall be broken using electric jackhammer,,*

hammer drill or using hand tools. Appropriate safety equipment shall be worn during concrete removal actions.

At each location where soil borings and/or monitoring wells will be installed, a hand excavated test pit will then be advanced to a depth of five feet below the bottom of concrete slab. This test pit should be excavated using hand auger, post-hole digger and/or vacuum truck in tandem with a non-conductive probe rod, which can be used to confirm the absence of utilities to a depth of five feet below the bottom of the concrete slab.

NOTE: The use of a jack-hammer to loosen compact soil during hand excavating a utility clearance test pit is strictly prohibited, except as noted above.

Exploratory Test Pit/Trench

Exploratory test pits/trenches will be performed to identify the presence or absence of subsurface structures related to former operating facilities at the site, such as gas holder foundations at former manufactured gas plant (MGP) sites, and should not be confused with **utility clearance test pits** discussed above. The **exploratory test pits** or **trenches** will typical have dimensions of approximately five feet wide by 10 feet deep by 10 to 20 long, accordingly, excavating them by hand is impracticable. The excavation of **exploratory test pits/trenches** must be approached with heightened awareness as the potential for damaging subsurface utilities, if present, is great.

In efforts to develop a reasonable degree of confidence that utilities will not be encountered during excavation of **exploratory test pits/trenche***s*, a focused utility survey will be conducted in the area immediately surrounding the test pit or the area defined by a boundary established by measuring two feet perpendicular from all sides of the proposed exploratory test pit boundaries. For example, if the surface dimensions of the exploratory test pit are 10 feet long by 5 feet wide, the surrounding area of the focused utility survey will have dimensions 14 feet long by nine (9) feet wide. It is suggested that the focused utility survey should be completed after all other on-site surveys have been completed. This will allow the surveyor(s) to develop a better understanding of the site-wide subsurface utility configuration.

Following completion of the focused utility survey, **utility clearance test pit***s* will be excavated by hand to confirm the presence of any and all utilities identified within five feet from the exploratory test pit/trench. After exposing the utilities, the excavator can proceed to excavate the **exploratory test pit/trench**, however, the operator should be experienced with digging in areas where underground utilities may be present and should use the utmost care when performing the excavation. Excavation should proceed slowly enough so that any obstruction/structure encountered can be evaluated and to confirm that the structure is not a utility.

5.0 CHECKLIST COMPLETION

The Utility Clearance Checklist (**Attachment B**), as well as the overall Utility Clearance Process to locate and clear utilities was designed to be dynamic. Accordingly the Utility Clearance Checklist should be updated throughout the process as each utility clearance activity is

completed. During the site walk and after all utility-related issues at each location have been identified and addressed to the satisfaction of all project personnel, the relevant portions of the Utility Clearance Checklist will be completed by the Con Edison PM. It is noted that the Utility Clearance Checklist will be considered complete only after all proposed utility clearance actions identified during the site walk have been successfully implemented and all pertinent information and activities have been documented.

6.0 EXCEPTIONS TO REQUIREMENTS OF THE UTILITY CLEARANCE PROCESS

Due to the inherent diversity and conditions present at project sites, some general exceptions to the utility clearance process are identified below.

- Sites where extensive utility mapping has been completed and/or where extensive intrusive activities have already been performed.

- Locations where facility layout is well documented and understood.

- Sites or portions of large sites (e.g., Astoria facility) where utilities are known not to exist currently or to not have ever existed throughout the life of the facility, property or site.

All circumstances where one or more steps of this process are not being implemented must be discussed with the Con Edison PM and must be duly documented. Regardless of whether or not exceptions are made during the utility clearance process, a Utility Clearance Checklist should always be completed for each site, in accordance with the terms outlined in Section 4.0 of this document.

Table 1 - Summary Table of Resources for Obtaining Subsurface Utility Plates and Drawings

Utility Type	County	Company	Organization	Name	Telephone Number
Electric	All	Con Edison	Electric Engineering	http://maps/AdvancedMappingSystem.htm(1)	
			For Questions contact:	John Ensemplare (Mgr. – B&Q)	(718) 802-5540
				Mike Mitchell (Mgr. – Manhattan)	(212) 460-1119
				Richard Mariani (Mgr. – Westchester)	(914) 925-6026
Gas	All	Con Edison	Gas Engineering	http://maps/steam.htm(1)	--
			For Questions contact:	Mike Verlizzo (Mgr.)	(718) 319-2357
Steam	All	Con Edison	Steam Engineering	http://maps/steam.htm(1)	--
			For Questions contact:	Tony Barbera	(212) 460-4843
Sewer /Water	NYC	NYC DEP /	Bureau of Water and Sewer Operations	Vincent Soriano/ Doug Greely	(718) 595-5330
Tunnels	Subway Crossing the East River	MTA	Outside Projects – Adjacent Work	Vasanth Battu/ Rajen Ydeshi / [If drilling in immediate vicinity of MTA structure, e.g., subway tunnel, car tunnel, etc., you will need submit a letter and plan drawing(s) to Mr. Ydeshi]	(646) 252-4473 (646) 252-3641
	Crossing the Hudson River	Port Authority of NY/NJ	Surveying	Richard Danko (rdanko@panynj.gov) Bill Kane (wkane@panynj.gov)	(201) 595-4841 (201) 595-4842

(1) "Maps" website listed is accessible on the Con Edison Intranet.

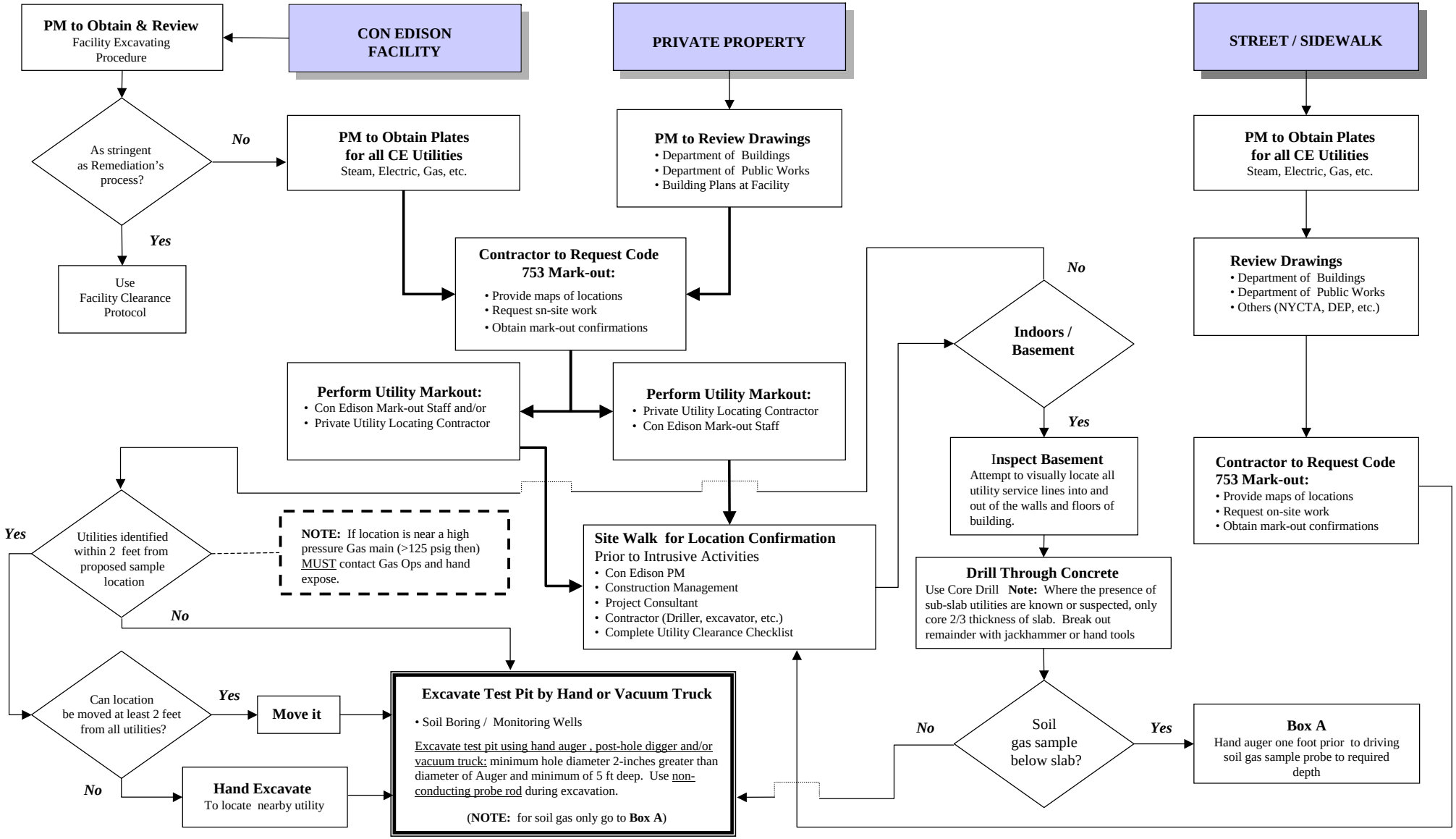
ATTACHMENT A

Utility Clearance Process Flow Chart

Utility Clearance Process During Intrusive Activities
E H & S – Remediation Group

10/08/03

Rev. 1



ATTACHMENT B

Utility Clearance Process Checklist

CHECKLIST FOR INTRUSIVE FIELDWORK

PROJECT BACKGROUND INFORMATION

Site Name: _____ **Job No.** _____

Site Address: _____

Con Edison Project Manager: _____ **Phone:** _____

Con Edison Site Manager: _____ _____

Consultant Project Manager: _____ **Phone:** _____

Consultant Site Manager _____ **Phone:** _____

Subcontractor (driller, excavation, etc): _____

Subcontractor's Contact Person: _____ **Phone** _____

Meeting / Start Date _____ **Time** _____

HEALTH AND SAFETY PLAN REVIEW

Name: _____ **Organization:** _____ **Date:** _____

Name: _____ **Organization:** _____ **Date:** _____

Name: _____ **Organization:** _____ **Date:** _____

Health and Safety Form Completed: _____ **Date** _____

Site Drawings (yes/no/NA): _____ **(Attach site figure with proposed boring locations)**

CODE 753 UTILITY MARK-OUT REQUESTED? Y / N

Called by: _____ **Organization:** _____

Date: _____ **Time** _____ **Initials** _____

Reference # _____

Utility Drawings Received: _____ (Attach copy of utility maps)

UTILITY INVENTORY

Above Ground Services:

Utility	Utility Company Name	Depth (ft)	Phone	Date Notified	Notification Method	Marked
Electric		NA				Y / N
Telephone		NA				Y / N
Cable		NA				Y / N
Overhead Supports		NA				Y / N
Traffic light cables		NA				Y / N

Drawings/Plates Obtained (List) _____

Notes: _____

CHECKLIST FOR INTRUSIVE FIELDWORK

UTILITY INVENTORY (continued)

Below Ground Services:

Drawings/Plates Obtained (List) _____

Utility	Utility Company Name	Depth (ft)	Phone	Date Notified	Notification Method	Marked
Electric						Y / N
Telephone						Y / N
Cable						Y / N
Gas						Y / N
Water						Y / N
UST System						Y / N
Storm						Y / N
Sanitary						Y / N
Steam						Y / N
Pipeline Companies						Y / N
Other (Tunnels, etc.)						Y / N

PRIVATE UTILITY LOCATING SERVICE RETAINED? Y / N

Date _____ **Time** _____ **Initials** _____

Name of Locating Service: _____

Telephone #/ contact: _____

Name of Operator(s)/Type of sensing equipment used _____

METAL DETECTOR SURVEY

Drilling location cleared by _____ **(Consultant/Contractor) with a metal detecto**

Consultant / Contractor Name _____ **By (initials):** _____ **Date:** _____

INTRUSIVE SAMPLING LOCATIONS MARKED, M-SCOPED AND CLEARED

Locations Marked by: _____ Date(s): _____

_____ Date(s): _____

M-Scope performed by: _____ Date: _____

Conduct Site Walk and Complete Site Walk Table

ACKNOWLEDGEMENT

The parties listed on the attached Site Walk Sign-In Sheet have participated in a site walk at _____ to review proposed intrusive sampling locations and to evaluate the presence, configuration and identification of utilities at this site, as marked out. The parties have agreed with the proposed activities that will be completed prior to conducting intrusive work. The utility clearance activities will be completed as summarized in Table A (attached).

ADDITIONAL COMMENTS / NOTES: _____

CHECKLIST FOR INTRUSIVE FIELDWORK

Site Walk Sign-In Sheet

Project Name: _____

Date of Site Walk: _____

Name:	Organization:	Phone No.

ATTACHMENT C

Instructions for Obtaining Drawings for Sewer and Water Utilities

From the NYC DEP

Vincent J. Soriano, Chief
New York City Department of Environmental Protection
Bureau of Water and Sewer Operations
Central Mapping and Records
59-17 Junction Boulevard, 12th Floor
Corona, New York 11368

UPDATED PROCEDURES FOR REQUESTING INFORMATION

Effective immediately, the guidelines listed below are to be followed when requesting information pertaining to the water and sewer system. Water information pertaining to water main size and location is processed by this office. Sewer information pertaining to requests for drainage plans (used in sewer design work, drainage work, a drainage plan will **not** tell you the location of the sewer), interceptors and schematic Inflow/Infiltration (I/I) maps are processed through this office. **Requests for information pertaining to the locations of sewers, which are derived from as built drawings, sewer house connections, and water house (tap) connections will not be processed by this office. You must contact the specific borough Permitting and Connection office. Also requests for flow tests are not processed in this office.** Requests for information can be mailed to the above address or faxed to (718) 595-5781. **Information is not given nor are requests taken over the telephone.** A taped message of instructions can be heard by dialing (718) 595-5779. Please do not leave requests at the end of this tape, as they will not be processed.

1) **All** requests must clearly clarify the locations and work that is being done. Specific limits or a clear site plan must be provided. Project limits marked or highlighted on a Hagstrom map, or references to address or block/lot will **not** be processed. Hagstroms are often illegible and our records are not filed by address and block and lot. You **must** submit a separate request for each borough. With the increasing amount of work being processed by the Records Unit a completed request form (a blank is attached) **must be attached to each request and be completely filled out, especially the description of work being done.**

2) **All** corporate requests **must be submitted on official company or agency letterhead.** Copies of letterhead submitted via fax are acceptable.

3) **All requests must be submitted to this office at least ten days before the work is to be started by your company/agency.** Complexity of a request, DEP emergencies to name two situations can cause a slight backlog and a delay in response time. There is also closer scrutiny in the information that is requested and released. While it is understood each job is important to the individual asking for the information, requests are processed in the order in which they are received. This office will make every attempt to meet your needs, but labeling a request an "emergency" or "need it ASAP" will not help the processing, and it is unfair to the other clients.

4) If you are faxing your request to our office please do not follow up with a hard copy request later on. With the amount of work performed, there have been instances where staff time is used processing the same request twice.

5) If you request to have your records picked up after the research is done rather than have them mailed, please check off the appropriate box on the request form. Our office will hold the package for TWO business days only, and then it will be automatically mailed out. However it is stressed for you to wait for someone from the Records Unit to call and tell you the information package is ready before you come down. This will save you a needless trip if the information is not yet available.

6) **Walk in requests are no longer accepted.**
7) Requests covering large areas can no longer be processed. We ask that you break them down and submit them separately for an area no larger than eight blocks. If you have numerous locations please prioritize them and submit the requests to us in the order for the areas you need first.

Please pass this along to colleagues in your company that might also make requests to this office. I thank you in advance for your cooperation.

Vincent J. Soriano

Vincent J. Soriano, Chief
BW&SO Mapping/Records

REV 7/02

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS CENTRAL MAPPING AND RECORDS
59-17 JUNCTION BLVD. - 12TH FL. CORONA, N.Y. 11368 FAX: (718)595-5781

REQUEST FOR INFORMATION FORM

NAME _____

FIRM/AGENCY _____

ADDRESS _____

CITY _____ **STATE** _____ **ZIP** _____

TELEPHONE # _____ **FAX #** _____

BOROUGH (Check one)

BRONX ( )
BROOKLYN ( )
MANHATTAN ( )
QUEENS ( )
STATEN ISLAND ( )

PURPOSE OF REQUEST FOR WATER RECORDS(WORK BEING DONE)
DRILLING/BORING/EXCAVATION( ) SURVEY( )
DESIGN( ) PLANNING/ANALYSIS( ) OTHER( )_____
PURPOSE OF REQUEST FOR SEWER RECORDS
SEWER DESIGN( ) Provide latest adopted drainage plan unless otherwise noted for the following sewer type
STORM( ) SANITARY( ) COMBINED( )
INFLOW/INFILTRATION ANALYSIS( )
INTERCEPTOR INFORMATION( ) OTHER( )_____

IF YOU HAVE BEEN RETAINED BY A CITY, STATE OR FEDERAL AGENCY INDICATE NAME BELOW

_____

AGENCY CONTRACT NUMBER _____

PROVIDE A BRIEF DESCRIPTION OF THE PROJECT YOU ARE WORKING ON THAT REQUIRES THE ABOVE INFORMATION. For example, designing a new 10" sanitary sewer, excavation, drilling contract, etc. NO REQUEST WILL BE PROCESSED WITHOUT AN EXPLANATION.

_____

_____

IN HOUSE STAFF ONLY
PROJECT FOLDER_____ DATE LOANED_____ DATE RETURNED_____

LOCATION STREET NAME	FROM	TO

PLEASE CALL TO HAVE INFORMATION PICKED UP IN PERSON( )
FOR OFFICE USE ONLY
DATE IN_____ DATE OUT_____ ASSIGNED TO_____
RECORDS SENT: