New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, 11th Floor
625 Broadway, Albany, New York 12233-7014
Phone: (518) 402-9662 • **Fax:** (518) 402-9679
Website: www.dec.ny.gov

Joe Martens
Commissioner

November 27, 2013

Mr. John J. Ruspantini, CHMM
Environmental Analyst
Site Investigation & Remediation
James A. Carigg Center
18 Link Drive
P.O. Box 5224
Binghamton, NY 13902-5224

Subject: Remedial Design (RD)
Dansville Former Manufactured Gas Plant (MGP) Site
Village of Dansville, Livingston County
Site # 8-26-012

Dear Mr. Ruspantini:

The New York State Department of Environmental Conservation ("the Department") has reviewed and approves of the Remedial Design document for the former Dansville MGP Site.

If you have any questions please contact me at (518) 402-9662.

Sincerely,

Anthony Karwiel

Anthony Karwiel

Ec: J. Edwards, GEI

8404 Six Forks Road, Suite 203, Raleigh, NC 27615-3072
Phone (919) 844-9890 Fax (919) 844-0917 Cell/VM (408) 892-3233
Web site: *www.ishincusa.com* Email: *ishwar@murarka.com*
Serving Electric & Gas utilities since 1998

December 2, 2013

Mr. Anthony Karweil
York State Department of Environmental Conservation
Remediation Action Bureau C
625 Broadway, 11th Floor
Albany, New York 12233-7013

RE: NYSEG 50 Ossian Street, Dansville former MGP Site # 8-26-012
Village of Dansville, Livingston County
100% Remedial Design Report

Dear Mr. Karwiel:

On behalf of our client New York State Electric & Gas Corporation (NYSEG), Ish Inc. is pleased to submit the 100% design report for the Dansville former MGP Site as approved by the Department. We have enclosed two printed copies and two complete CDs of the report pdf file for your use. We have separately sent out the report CD containing the pdf file to the representative from the NYSDOH and have made arrangements to place a printed copy of the report in the public library where site documents are available to the public.

Thanks for sending the approval letter for the Dansville 100% design report which we have included in the printed and CD copies of the report.

If you have any questions or want to discuss further my comments please feel free to contact me at 408-892-3233 or John Ruspantini the NYSEG project manager at 607-762-8787.

Sincerely,

Ishwar P. Murarka, Ph.D., MBA
Executive Scientist and President

cc: John Ruspantini – NYSEG – 3 Hard Copies & 3 CD's
Albert DeMarco – BEEI – 1 CD

REMEDIATION DESIGN REPORT

100% SUBMITTAL

FOR

DANSVILLE FORMER MGP SITE

OPERABLE UNIT 1

NYSDEC SITE NO. 8-26-012

OSSIAN STREET, LIVINGSTON COUNTY

DANSVILLE, NEW YORK

Prepared for:

New York State Electric & Gas Corporation
Kirkwood Industrial Park
Binghamton, NY 13902

Prepared by:

Ish Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

DECEMBER 2013

ENGINEERING CERTIFICATION

I hereby certify that the Remedial Design Report 100% Submittal for the Dansville Former MGP Site Operable Unit 1 [associated with the remediation and restoration of the New York State Electric & Gas Corporation (NYSEG) former manufactured gas plant (MGP) Site No. 8-26-012 Operable Unit-1 (OU-1) located in Dansville, Livingston County, New York (Site)] was prepared in accordance with all applicable statues and regulations and in substantial conformance with the New York State Department of Environmental Conservation (NYSDEC) Division of Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10) and the Record of Decision (ROD) for OU-1 issued by the NYSDEC in March 2008.

Respectfully Submitted,
Ish Inc. Team

12/2/13

Benjamin T. Staud — Date
KE Engineering Services, P.C. (Ish Inc. Team)
Registered Professional Engineer
New York State License No. 086812-1

TABLE OF CONTENTS

LIST OF ATTACHMENTS

Attachment 1 Design Drawings

C-01 – Title Sheet
C-02– Existing Conditions Site Plan
C-03 – General Site Arrangement Plan
C-04 – Site Preparation Plan
C-05 - Soil Excavation Plan
C-06 – North Excavation Area Cross Sections
C-07 - South Excavation Area Cross Sections
C-08 – Phases 1 and 2 Traffic Plan
C-09 – Phases 3 and 4 Traffic Plan
C-10 – Erosion and Sediment Control & Site Security Plan
C-11 – Erosion and Sediment Control & Site Security Detail Sheet 1 of 2
C-12 – Erosion and Sediment Control & Site Security Detail Sheet 2 of 2
C-13 – Water Pre-Treatment System Plan View and Flow Diagram
C-14 – Details
C-15 – Final Site Restoration Plan
C-16 – Enclosure and Air Handling System
SOE-01 – Sheeting Layout Plan
SOE-02 – Excavation Area B Elevation
SOE-03 - Excavation Area C Elevation
SOE-04 - Excavation Area D Elevation
SOE-05 - Excavation Area D Elevation
SOE-06 - Excavation Area E1 Elevation
SOE-07 - Excavation Area E2 Elevation
SOE-08 - Excavation Area E2 Elevation
SOE-09 – Cross Sections
SOE-10 – Berm Details

Attachment 2 Technical Specifications

LIST OF APPENDICES

LIST OF ACRONYMS

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CAMP	Community Air Monitoring Plan
CCR	Construction Completion Report
CFR	Code of Federal Regulations
CPP	Citizens Participation Plan
CQA	Construction Quality Assurance
cy	Cubic Yards
DER	Division of Environmental Remediation
DOT	Department of Transportation
HASP	Health and Safety Plan
MGP	Manufactured Gas Plant
NAPL	Non-Aqueous Phase Liquid
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSEG	New York State Electric & Gas Corporation
OSHA	Occupational Safety and Health Act or Administration
OU	Operable Unit
PAHs	Polycyclic Aromatic Hydrocarbons
PCI	Pre-Characterization Investigation
POTW	Publicly Owned Treatment Works
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RDWP	Remedial Design Work Plan
ROD	Record of Decision
sf	Square Feet
SVOCs	Semi-Volatile Organic Compounds
TEP	Technical Execution Plan
VOCs	Volatile Organic Compounds
WCDs	Work Change Directives

1.0 INTRODUCTION

In March 1994, New York State Electric and Gas (NYSEG) entered into an Order on Consent (Index No. DO-0002-9309, NYSDEC, 1996) with the New York State Department of Environmental Conservation (NYSDEC) to investigate and where necessary remediate 33 former Manufactured Gas Plant (MGP) sites in the State of New York. Dansville former MGP site (NYSDEC Site No. 8-26-012), located at 50 Ossian Street in Dansville, New York (Site) is included on this list of 33 sites. Section VI of the Order on Consent (Order) states that NYSEG shall submit to the NYSDEC a remedial design to implement a NYSDEC-selected remedial alternative for the site. In March 2008, the NYSDEC issued a Record of Decision (ROD) that identified the NYSDEC-selected remedial alternative for Operable Unit 1 (OU1) of the Site.

On August 29, 2008 NYSEG submitted to the NYSDEC a five-phased approach (Approach) to describe the process for developing and completing the remedial design of the NYSDEC-selected remedy described in the OU1 ROD in response to a request by the NYSDEC on a conference call held on August 13, 2008. Appropriate coordination and NYSDEC concurrence would be sought throughout the various phases. The five phases of the Approach are described briefly below.

Phase 1 - (completed) – Pre-Design Work Plan: Phase I consisted of revising and finalizing the Pre-Design Investigation (PDI) Work Plan to support the remedial design activities. The primary focus of the PDI was the performance of soil borings to accomplish the following:

1. Delineate the limits of the source materials requiring remediation to establish the location/alignment of the hydraulic control barrier wall (cement bentonite or steel sheet pile wall);

2. Determine the volume of the source materials to be remediated;

3. Obtain geotechnical data necessary to select the wall installation method and to complete the design of the selected barrier wall method; and,

4. Provide preliminary waste characterization data for the identified source materials.

Phase 2 - (completed) – PDI Implementation and Reporting: This phase consisted of implementing the PDI Work Plan, after approval by the NYSDEC, and submittal of a PDI completion report to the NYSDEC.

Phase 3 - (completed) – Engineering Analysis and Supplemental Pre-Design Investigation Work Plan: Engineering analyses were performed to select the most appropriate type of barrier wall system for site-specific conditions and to determine initial soil volume

estimates for the remediation. In addition, a Supplemental Pre-Design Investigation (SPDI) Work Plan was prepared to complete additional waste pre-characterization work and additional geotechnical testing work to support the final design effort.

Phase 4 - (completed) – SPDI Implementation: This phase consisted of implementation of the SPDI Work Plan, after approval by the NYSDEC and submittal of a SPDI completion report to the NYSDEC.

Phase 5 – (completed) Detailed Design: This phase consisted of remedial design work, submission of a 50% Remedial Design package, and submission of a 95% Remedial Design package.

The submittal of this Remedial Design Report, 100% Design Submission (RDR) to the NYSDEC completed the Approach and fulfills the requirements of Section VI of the Order for the OU1 portion of the Site.

This RDR summarizes the pre-design investigative activities and the remedial design developed to implement the NYSDEC-selected remedy for OU1. A general description of the remedial actions to be completed for implementation of the NYSDEC-selected remedy for OU1 is discussed below:

- Remove and demolish foundations/structures, concrete slabs, and the concrete loading dock. Existing asphalt and existing fence sections, as required, will be removed and transported off-site for recycling or disposal as appropriate;
- Seven (7) monitoring wells and two (2) piezometers that are located within the planned excavation areas will be abandoned in accordance with applicable New York State DEC regulations;
- Selected subsurface drainage features will be demolished and removed to facilitate the remedial activities;
- Remaining utility services to the former NYSEG Service Center will be located and properly terminated outside of the planned excavation areas;
- Two (2) gas mains will be relocated outside of the planned excavation areas;
- Steel sheet piling will be installed, in phases, around the perimeter of the four planned excavation areas;
- A 118’ X 210’ temporary fabric structure, equipped with an air handling system, will be constructed and moved as necessary over the planned excavation areas to provide odor control during all excavation activities;

- A total of approximately 11,700 cubic yards of clean overburden soils will be removed from the four planned excavation areas and stockpiled for reuse as backfill. Soils that have been pre-characterized as "clean soils for re-use" but exhibit visible coal tar or sheens during excavation will be segregated for subsequent off-site treatment/disposal;

- A total of approximately 15,400 cubic yards of coal tar impacted soils will be removed from the four planned excavation areas and transported off-site for treatment/disposal;

- Dewatering of the four OU1 excavation areas prior to and during excavation work will be completed as needed to facilitate excavation, backfilling, and off-Site treatment and disposal of impacted soils and contact water from excavation areas. All fluids removed during dewatering will be transferred to a water pre-treatment system for pre-treatment and discharged to the publicly owned treatment works (POTW) pending the issuance of a discharge permit from the Village of Dansville. The water influent and effluent samples will be collected and analyzed as necessary to meet the Village of Dansville POTW discharge permit requirements;

- A non-woven geotextile (delineation fabric) will be installed over the backfill material prior to installing the Soil Cover; and,

- The Site will be restored by installing approximately 2,030 cubic yards of gravel soil cover and 180 cubic yards of topsoil soil cover. Approximately 14,000 square feet of topsoil cover area will be seeded, conditioned, and mulched on completion of the remedial work at the site.

1.1 SITE LOCATION AND DESCRIPTION

The Site is located at 50 Ossian Street in the Village of Dansville, Livingston County, New York. Land use in the vicinity of the site includes a mix of residential, commercial-industrial and agricultural properties. Immediately surrounding the site, land use is primarily residential with one commercial property to the north on Battle Street and one former commercial property to the southeast on Ossian Street that was historically used as a dry cleaner. The former dry cleaner structure was demolished and the property remediated by sheet-piling and excavation in 2012 by NYSDEC under the New York State superfund program.

The Site is divided into two operable units. OU1 consists of the on-site areas owned by NYSEG, and the second unit (OU2) consists of the off-site areas not owned by NYSEG. This RDR will focus on OU1 only.

The Site encompasses approximately 2.25 acres and was used by NYSEG as an operational service center until 2012. In 2012, service center operations ceased at the Site and the service center building was demolished. Most of the Site surface is currently covered by pavement or concrete (former slab on grade foundation of the service center). The south central part of the Site, which is encompassed by the U-shaped driveway along Ossian Street, is covered with grass

and has unrestricted access. The former pole storage area and the northeastern part of the Site are covered with gravel. The remainder of the Site is fenced and access is restricted to authorized individuals. A general Site map is provided as Drawing C-02.

1.2 SITE HISTORY

The gas works operations on the Site began in 1861 and continued for approximately 70 years, ceasing in January of 1930. During this operational history, there was at least one period (1921 to 1926) when gas manufacturing operations were shut down as a result of the introduction of natural gas to the Dansville area. The gas manufacturing process and the feed fuels were changed several times during the operational life of the MGP. Oil, coal, and coke were used at various times during the plant's operation as feed fuels. Blue gas and later, carbureted water gas were manufactured at the plant. Gas production generally increased during the operating life of the plant. Little is known about the generation and disposal practices of wastes at the site, except that a tar storage vessel was present in the subsurface and rail cars were likely used to transport wastes away from the site for refining or for burning as boiler fuel. Also, purifier wastes were stored in burlap bags along the west side of the gas house for periodic removal. NYSEG acquired the property through its merger with New York Central Electric Company in 1937 (seven years after gas manufacturing operations ceased).

Historical pictures from circa 1933 show a small substation on the Site. In later years, NYSEG used a portion of the eastern part of the central area of the Site for electrical equipment storage including transformers. Electricity was also produced on the Site from 1895 to 1925. A 1938 aerial photograph shows that the gas holders were no longer present but photos from 1930 show that at least two holders were present. Additionally, maps and photos from circa 1930 show a small canal, which was subsequently filled and now exists on the north side of the Site as a weed-choked ditch paralleling the south side of Battle Street. In the years after plant operations had ceased, the gas house was used as a meter department and was later removed in 1958. Also, in later years after gas production ceased, the former electricity generator building was renovated, enlarged, and used as the regional service center for NYSEG. At some point after plant closure, soil was spread over the south end of the property for a lawn. More recently, during a limited site excavation that occurred in 1988, approximately 1,500 yards of surface and shallow subsurface soil were removed for a paving project. In 2012, the service center building was demolished and service center operations at the site ceased.

When the MGP was in operation, an assortment of equipment and structures were utilized to produce gas for lighting and heating homes. The waste generated at OU1 included tar, coal ash, purifier waste, and other liquids and was managed, in part, by the use of an in-ground tar storage vessel. Limited information is available regarding the disposal of gas manufacturing process waste from the Site. In more recent years, two underground storage tanks (USTs) were used at the Site for dispensing motor vehicle fuels. The USTs have since been taken out of service and closed in place in accordance with the NYSDEC regulations.

Based on the previous activities and the history of the Site, it has been determined that the contaminants of concern are MGP related chemicals, including coal tar NAPL, VOCs (BTEX), and SVOCs (PAHs). However there is comingling of chlorinated solvent chemicals which migrated from the former dry cleaner upgradient of the NYSEG site.

1.3 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Several Investigations were conducted at the Site by TRC Environmental Consultants (1986-1991) and by Ish Inc. (2004-2013) in order to delineate MGP-related impacts. In addition, a limited soil excavation was completed in 1988 and a sub-slab depressurization system was installed in 2007 in the former service center building. A description and brief summary of the reports are presented below:

1. *"Investigation of the Former Coal Gasification Site in Dansville, New York; Task 1 Report, Preliminary Site Evaluation." Prepared by TRC Environmental Consultants, Inc., August 20, 1986.*

For the Task 1 investigation, TRC focused on obtaining background information, including the operational history of the MGP, a chronology of events at the MGP, a literature search, conducting interviews with former employees, regional geology, and regional hydrogeological conditions. In addition, an electromagnetic survey and abbreviated soil gas survey on the south lawn were performed and areas of potential contamination were identified, based on the layout and known historical operations at the plant.

This work identified several potential sources of MGP residuals and derived contaminants at the Site, including the gas holders, tar well, materials dumped in the former canal on the north side of the Site, ash disposal, purifier waste storage and disposal, and other associated former MGP structures related to contamination in the subsurface. During Site reconnaissance, no coal tar odors were observed. Several areas of high soil conductivity were observed from the electromagnetic survey, which were targeted in subsequent investigations.

2. *"Investigation of the Former Coal Gasification Site in Dansville, New York; Task 2 Report, Initial Field Investigation Program." Prepared by TRC Environmental Consultants, Inc., December 5, 1988.*

For the Task 2 investigation, TRC excavated 17 test pits and advanced six (6) exploratory soil borings which were completed as 2-inch monitoring wells (three shallow and three deep). During the investigation activities, TRC collected 20 subsurface soil samples, four rounds of groundwater samples at each of the six wells, three storm sewer aqueous grab samples, four surface water samples, four stream sediment samples, and nine composite air samples. These samples were analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs).

Results from the investigation reported that:

- The shallow water table was contained in a thin layer of sand and gravel above the clay and fine sand;
- Based on Town records and observations during TRC's drilling, it was clear that no usable aquifer exists in Dansville;
- Groundwater flow was to the northwest, with a gradient of 0.0045 ft/ft;
- Based on water level measurements between shallow and deep wells, vertical gradients were directed upward;
- Based on subsurface soil sampling observations, a floating hydrocarbon plume extended off-site to the northwest, emanating from former site structures (tar vessel and gas house foundation);
- Benzene, ethylbenzene, toluene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs) and a limited amount of chlorinated solvents were present in the groundwater on-site;
- No cyanide or phenol was detected in groundwater;
- Iron was the only metal showing elevated concentrations in the groundwater;
- The Site was not impacting Canaseraga Creek or Mill Creek sediments or surface water; and,
- Storm sewer samples seem to indicate no impacts from the Site were present in the stormwater discharged from the Site.

3. Limited soil excavation for a paving project, 1988

A limited Site excavation occurred in 1988 when approximately 1,500 yards of surface and shallow subsurface soil were removed from the Site for a paving project. Little information was recorded regarding the soil removal. However, it is known that the excavation may have advanced into the contents and/or surrounding soil of the large subsurface gas holder foundation. A NYSEG employee formerly responsible for the site also reported that a subsurface wooden structure, roughly 6-foot square, was removed in an area west of the service center building. The excavated material was described as lightly contaminated, although 400 yards were disposed of as hazardous waste while the remaining 1,100 yards were sent as non-hazardous waste to an off-site disposal facility.

4. "Investigation of the Former Coal Gasification Site in Dansville, New York; Task 3 Report, Additional Field Investigation Program." Prepared by TRC Environmental Consultants, Inc., June 1990.

For the Task 3 investigation, TRC obtained additional data to determine if the health of nearby residents was at risk from any residues at the Site. The work included the collection of five surface soil samples, 14 subsurface soil gas samples, and 16 ambient air samples from three nearby downgradient residences and one background residence.

The results of the field program determined the following:

- Surface soil samples collected from the Site contained MGP residues, although the soils did not appear to present a significant health risk to on-site personnel. Soils collected at one off-site downgradient residential location did not indicate the presence of contamination related to the MGP site.
- The soil gas survey was unsuccessful in providing further delineation of any volatile organic plume emanating from the Site. The soil gas survey did identify the presence of chlorinated compounds, which could have originated from an upgradient source.
- All indoor air sampling in off-site residential basements showed no detectable VOCs, except in one basement location, where gasoline was stored in the basement.

5. *"Risk Assessment for the Former Coal Gasification Site in Dansville, New York; Task 4 Report." Prepared by TRC Environmental Consultants, Inc., May 1991.*

For the Task 4 investigation, a Risk Assessment was completed by TRC for the Site through selection of specific "chemicals of interest". The chemicals selected were based on those that were measured at elevated concentrations, having the potential for exerting acute or chronic effects, and/or were found to be exceeding established guidelines or standards. The assessment integrated two bodies of information for the chemicals including: site specific exposure analysis, and health and environmental affects data.

Five exposure scenarios were developed for the Site. Each scenario represented a human receptor pathway for the chemicals of interest. Site-specific exposure pathways included inhalation of fugitive dust, skin contact, or incidental ingestion of soil by a Site worker. A third scenario included exposure of a routine grounds maintenance worker from mowing, raking or weeding. Finally, the fourth and fifth scenarios considered dermal contact and ingestion exposure of children to soils on the south lawn of the Site and to the ditch located northwest of the Site, which borders residential properties adjacent to the site.

Based on the results of risk assessment the following recommendations were made:

- As a precaution, development of a site-specific Health and Safety Plan for all intrusive excavation activities at the site was warranted. Special attention should be paid to inhalation, ingestion and dermal contact pathways for workers at the Site including an air monitoring program to screen the air quality for the presence of VOCs during excavation activities; and,

- If changes in site use were contemplated, risk estimates should be developed for future site development or alternative site uses.

6. *"Order on Consent, Index No. DO-0002-9309," between NYSDEC and NYSEG, executed on March 30, 1994.*

   On March 30, 1994, NYSEG entered into an Order on Consent (Index No. DO-0002-9309) with the NYSDEC to investigate and, where necessary, remediate 33 former MGP sites in New York. The Dansville former MGP site (Site No. 8-26-012) is included on this list of 33 sites. Section VI of the Order on Consent (Order) states that NYSEG shall submit to the NYSDEC a remedial design to implement the NYSDEC-selected remedial alternative for the site. The submission of this RDR satisfies Section VI of the Order.

7. *"Supplemental Remedial Investigation Report for Operable Unit 1 at the Former MGP Site in Dansville, New York." Prepared by Ish Inc., January 2006.*

The supplemental remedial investigation conducted by Ish Inc. was completed to provide further characterization of the Site (OU1) and the surrounding areas (OU2), as necessary, such that the nature and extent of impacts related to MGP-residuals were delineated. It was also utilized to develop a high quality data set that was used to evaluate potential remedial alternatives and to lay the foundation for the future remedial design. The investigation included the installation of 15 test pits, 31 soil borings, six monitoring wells, and two piezometers along with analysis of soil and groundwater samples for various parameters including VOCs (90 samples), SVOCs (88 samples), metals (79 samples), cyanide (80 samples), and PCBs (8 samples). The investigation concluded that:

- Shallow groundwater at the Site is impacted by BTEX and SVOCs at concentrations which exceeded the NYSDEC Class GA groundwater standards or guidance values in groundwater at sampling locations across the central portion of the Site extending to the northwest monitoring well locations. At locations where these exceedances were found, usually NAPL globules and sheens had been identified in the shallow sandy gravel layer.
- Chlorinated VOCs were detected in groundwater samples above NYSDEC Class GA standards or guidance values diagonally across the Site from the southeastern border near the former Pappas Cleaners to the northwestern parking lot. The compounds measured in groundwater above their Class GA standards or guidance values included 1,1-dichloroethene, 1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride.
- Many of the soil samples analyzed had concentrations above NYSDEC TAGM #4046 recommended soil cleanup objectives (RSCOs) for BTEX, PAHs and dibenzofuran. These

exceedances corresponded to visual observations of staining, sheens and NAPL globules in the subsurface.

- Many soil samples collected from depths ranging from 10 to 16 feet below grade across the site had concentrations of one or more solvents or chlorinated VOCs measured above RSCOs. The solvents and chlorinated compounds measured above the RSCOs were acetone, 2-butanone (MEK), 1,2-dichloroethene, trichloroethene, and tetrachloroethene. Acetone and 2-butanone were only found in soil at one location each above their RSCOs, however, these two compounds are common laboratory contaminants and the other chlorinated VOCs are not associated with MGP activities.
- A qualitative Human Health Risk Assessment (HHRA) evaluated potential receptors and complete exposure pathways at the Site. Based on current information, the greatest potential for exposure to MGP residuals is via direct contact with subsurface soils encountered during excavation work. This potential exposure could be mitigated by using properly trained personnel and personal protective equipment in accordance with current NYSEG policy. Site data also suggested that vapor intrusion into the service center building was a potentially complete pathway.

8. *"Draft Report Soil Vapor Intrusion Evaluation for Operable Unit 1 at the Former MGP Site in Dansville, New York." Prepared by Ish Inc., May 2006.*

The soil vapor intrusion evaluation was conducted by Ish Inc. to determine the potential presence of indoor air impacts in the NYSEG service center building resulting from MGP residuals present in the subsurface. The investigation included the collection of two indoor air samples, two sub-slab air samples, two soil gas samples (obtained at a depth of approximately 9 feet bgs) and one outdoor air sample which were collected over an 8-hour period in 6-liter Suma Canisters. The canisters were then submitted for laboratory analyses of VOCs via EPA method TO-15. The investigation concluded that:

- A vapor intrusion pathway between the subsurface and the indoor air in the NYSEG Service Center was complete. The primary compounds identified were PCE, TCE and the biological degradation products cis-1,2-dichloroethene and vinyl chloride. Lower concentrations of BTEX compounds were also present in the subsurface and indoor air.

9. *"Draft Report Soil Vapor Intrusion Evaluation for Operable Unit 1 Following the Installation of a Sub-Slab Depressurization System at the Former MGP Site in Dansville, New York." Prepared by Ish Inc., April 2007.*

A second soil vapor intrusion evaluation was conducted by Ish Inc. to determine if the installation of a sub-slab depressurization system by O'Brien and Gere in October 2006 mitigated the vapor intrusion pathway identified during the previous soil vapor sampling event. The investigation included the collection of two indoor air samples, two sub-slab air samples,

and one outdoor air sample which were collected over an 8-hour period in 6-liter Suma Canisters. The canisters were then submitted for laboratory analyses of VOCs via EPA method TO-15. The investigation concluded that:

- The sub-slab vapor mitigation system installed in the NYSEG service center building was effectively abating the migration of soil vapors into the indoor air. The results of the post-installation sampling completed in January 2007 indicate that concentrations of chlorinated volatiles in the indoor air and sub-slab vapor samples were reduced by nearly 100% compared to the concentrations detected in March 2006. BTEX concentrations in indoor air and sub-slab vapor showed both increases (benzene and toluene) and decreases in samples measured after the installation of the sub-slab depressurization system. Similar to the March 2006 results, the January 2007 BTEX concentrations were still substantially below OSHA 8-hour time weighted average permissible exposure limits (PELs) for workers.

10. *"Synoptic Groundwater Sampling Report for OU1 and OU2 at the Dansville Former MGP Site Dansville, New York." Prepared by Ish Inc., April 2006.*

The Synoptic groundwater sampling was conducted by Ish Inc. to obtain concurrent data on the nature and extent of impacts related to MGP-residuals in groundwater and to collect data to evaluate the natural attenuation potential of the aquifer, which can be used to evaluate potential remedial alternatives and to lay the foundation for future remedial design. The investigation determined that the dimensions and extent of the groundwater plume at the site had been adequately delineated and natural attenuation processes were active in the groundwater plume area and anaerobic conditions appeared to be present at the site.

11. *"Feasibility Study Report for Operable Unit 1 and Feasibility Study Report Addendum for Operable Unit 1, NYSEG Former MGP Site Dansville, New York." Prepared by Ish Inc., October 2007.*

The Feasibility Study was conducted by Ish Inc. to evaluate the potential remedial alternatives for OU1. The alternatives evaluation was conducted in accordance with appropriate regulatory guidance, including Technical Guidance for Site Investigation and Remediation (NYSDEC, December 2002). The remedial alternatives identified in the report are as follows:

- Alternative 1 – No Action (With Institutional Controls and Groundwater Monitoring)
- Alternative 2 – Excavation of Subsurface Structures and Visual NAPL in Vadose Zone Soils, Free-Phase NAPL Removal Using Collection Trench, Institutional Controls and Groundwater Monitoring
- Alternative 3 – Excavation of Subsurface Structures and Visual NAPL in Vadose Zone Soils, Downgradient Containment Using Physical Barrier With Limited Total Fluids

Extraction and Disposal, Institutional Controls and Groundwater Monitoring

- Alternative 4 – Excavation of Subsurface Structures and Visual NAPL in Vadose Zone Soils, Containment Using Physical Barrier Around Impacted OU1 Area With Maintenance of Cap/Cover, Institutional Controls and Groundwater Monitoring

- Alternative 5 – Excavation of Subsurface Structures and Visual NAPL in Vadose and Saturated Zone Soils, Institutional Controls and Groundwater Monitoring

- Alternative 6 – Excavation of Subsurface Structures and Visual NAPL in Vadose Zone Soils, In-Situ Treatment of the Saturated Zone Following Excavation, Institutional Controls and Groundwater Monitoring

- Alternative 7 – Excavation of Subsurface Structures and Areas With NAPL Impacts Within the Vadose and Saturated Zones, Groundwater Use Restriction and Groundwater Monitoring

12. *"Record of Decision, NYSEG – Dansville MGP Site Operable Unit No. 1, Dansville, Livingston County, New York, Site Number 8-26-012." Prepared by NYSDEC, March 2008.*

The ROD presents the NYSDEC-selected remedy for OU1. The ROD identified nine components that would be required for the selected remedy which included the partial excavation of contaminated subsurface soil, long term containment, and the implementation of institutional controls to limit the land use and future development of the property. The nine components are as follows:

- "A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Any uncertainty identified during the RI/FS will be resolved, including a more precise delineation of the lateral and vertical extent of the proposed excavation."

- "Installation of a construction barrier and hydraulic control system to ensure a stable excavation and provide groundwater management required to perform the excavation below the water table. The self-hardening slurry wall, or other viable construction barrier, may be left in place following the completion of the soil removal activities, or may be placed temporarily during the excavation work. The groundwater management system will be developed based on site specific information and will be adequate to manage all dewatering handling, treatment, or disposal needs of the site".

- "Demolition of the southern portion of the on-site building as necessary to enable the excavation of contaminated soils. The northern portion of the current site building will remain in place".

- "Excavation of MGP waste, NAPL and contaminated soils meeting one or more of the following criteria: visible tar or oil; the presence of sheens or odors with total PAHs over 1,000 ppm; or total BTEX concentration above 10 ppm. It is estimated that this will result in the excavation of contaminated soils to a depth of 16 feet below the ground surface, however soil excavation will proceed deeper if soils exceed one or more of the above criteria. Treatment and/or disposal of excavated materials meeting the above criteria will occur at an off-site facility".

- "Excavated materials which are below the criteria will be stockpiled and evaluated for reuse onsite. The excavation will be backfilled with stockpiled soils and clean soil (which is soil that meets the Division of Environmental Remediation's criteria for backfill or local site background) and the ground surface will be prepared to meet future land use requirements".

- "A soil cover will be constructed over all vegetated areas to prevent exposure to contaminated soils. The minimum one-foot thick cover would consist of clean soil underlain by an indicator such as orange plastic snow fence to demarcate the cover soil from the subsurface soil. The top six inches of soil will be of sufficient quality to support vegetation. Clean soil will constitute soil that meets the Division of Environmental Remediation's criteria for backfill or local site background. Non-vegetated areas (buildings, roadways, parking lots, etc.) will be covered by a paving system or concrete at least 6 inches thick".

- "Imposition of an institutional control in the form of an environmental easement that will require: (a) commercial use, which will also permit industrial use, (b) compliance with the approved site management plan, and; (c) restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH".

- "Development of a site management plan which will include the following institutional and engineering controls: (a) management of the final cover system to restrict excavation below the soil cover's demarcation layer, pavement, or buildings. Excavated soil will be tested, properly handled to protect the health and safety of workers and the nearby community, and will be properly managed in a manner acceptable to the Department; (b) continued evaluation of the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; (c) identification of any use restrictions on the site; and a monitoring plan to monitor the effectiveness of the remedy".

- "The property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification in no longer needed. This submittal will: (a) contain

certification that the institutional controls and engineering controls put in place are either unchanged from the previous certification or are complient with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department."

13. *"Pre-Design Investigation Report for Operable Unit 1, NYSEG Former MGP Site, Dansville New York." Prepared by Ish Inc., June 2009.*

The pre-design investigation was conducted by Ish Inc. to further delineate the vertical and horizontal extent of the excavation areas tentatively identified in the OU1 ROD, and to obtain geotechnical data required to complete the remedial design of the NYSDEC selected remedy. The investigation included the installation of 49 soil borings and the collection of 59 soil samples for analysis. The investigation concluded that:

- The aerial and vertical extent of impacted soil requiring remediation in OU1 has been fully delineated.
- The geotechnical data obtained provided sufficient information for the development of a hydraulic barrier wall design.
- Preliminary waste characterization data was collected, and depending on the remedial design and treatment facility requirements, additional waste characterization sampling may be required.
- The excavation footprint of the Site was extended to the north, east, and west to include the extent of impacted soils as determined by the PDI.
- The visual observations of NAPL and sheens in the subsurface soil correlate well to what constitutes impacted soils for remediation as defined by the OU1 ROD.

14. *"Letter report, Results from Supplemental Pre-Design Soil Boring Investigation." Prepared by Ish Inc., January 2013.*

The supplemental pre-design investigation was conducted by Ish Inc. to visually and olfactory delineate the vertical and horizontal extent of impacts located under the service center building which was demolished in 2012. The investigation included the installation of 34 soil borings in a grid like pattern throughout the footprint of the former service center. The report concluded that sufficient data was present to begin preparing the 95% remedial design details and to develop a scope of work for the collection of waste pre-characterization and additional geotechnical samples.

15. "Letter report, Results from January 2013 Phase 3 Pre-characterization of wastes and geotechnical investigation for sheet pile design." Prepared by Ish Inc., October 2013.

The pre-characterization of wastes and geotechnical investigation was conducted by Ish Inc. to obtain supplemental geotechnical data to complete the sheet pile design, determine the location of any obstructions located along the proposed sheet pile wall alignment, to provide sufficient data for determining the potential reuse of site soils that do not have visible tar or oil; the presence of sheens or odors with total PAHs over 1,000 mg/kg, or a BTEX concentration above 10 mg/kg, and to provide for waste pre-characterization of the soil layers in the source area for landfill and thermal treatment disposal profiles.

A total of 30 waste pre-characterization soil borings, 7 geotechnical borings, and 18 obstruction borings were installed on the Site during the investigation. In addition, a total of 80 soil samples were collected from the waste characterization borings for analysis. The letter report concluded that:

- Soil within the excavation area from immediately below the asphalt or concrete to 10 feet bgs (with the exception of WPE-11, WPD-8, and WPD-2) contain concentrations of BTEX and PAHs below the ROD requirement cleanup concentrations of total PAHs over 1,000 mg/kg or total BTEX above 10 mg/kg. Therefore, the first 10 feet of soil within this area (with the exception of the soil from the areas surrounding WPE-11, WPD-8, and WPD-2) will be stockpiled and then reused as deep back fill at the Site.

- Soil from the area surrounding WPE-11, WPD-8, and WPD-2 will be excavated and disposed off-Site.

- Soil within the excavation area, located in the 10-15 foot interval (or deeper if evidence of NAPL and/or a sheen is observed), will be excavated and disposed of off-Site.

All of the documents associated with these Investigations and Reports are available for public review at the following document repositories:

New York State Department of Environmental Conservation
Central Office, 625 Broadway 11th Floor
Albany, NY 12333-7014
Attn: Anthony Karwiel
866.530.2334 (by appointment only)

Dansville Public Library
200 Main Street
Dansville, NY 14437
HOURS: Mon - Fri 10 a.m. - 8:30 p.m., Sat 12 p.m. - 4 p.m.

2.0 REMEDIAL ACTION OBJECTIVES

The primary objectives of the remediation project, in accordance with the ROD issued March 2008, include eliminating or reducing to the extent practicable the following:

- Exposures of persons at or around the site to soil contaminated with volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and non-aqueous phase liquid (NAPL);
- The release of contaminants from the soil into groundwater in order to avoid exceeding groundwater quality standards; and,
- The release of contaminants from the soil into indoor air, outside air, or off-site soil and groundwater through soil vapors.

Furthermore, the remediation goals include attaining to the extent practicable the following:

- Soil cleanup objectives; and,
- Ambient water quality standards.

3.0 ORGANIZATIONAL STRUCTURE AND RESPONSIBILITY

NYSEG is responsible for implementation of the remedial actions detailed in this RDR. A remedial contractor (Contractor) will be retained by NYSEG to conduct the remedial actions. In addition, third party consultant (Engineer) will be retained by NYSEG to document the remedial actions and conduct air monitoring.

NYSDEC and NYSDOH personnel will have access the Site for oversight of the remedial actions. The Citizens Participation Plan (CPP), included in Appendix F, will be implemented to allow local residents to be informed about the remedial activities being conducted at the Site.

Key personnel include:

NYSDEC: Mr. Anthony Karwiel
Project Manager
New York State Department Environmental Conservation
625 Broadway, 11th Floor
Albany, NY 12233-7014
alkarwie@gw.dec.state.ny.us
(518) 402-9662

NYSEG: Mr. John Ruspantini
Project Manager
New York State Electric & Gas Corporation
Kirkland Industrial Park
P.O. Box 5224
Binghamton, NY 13902-5224
jjruspantini@nyseg.com
(607) 762-8787

NYSDOH: Mr. Albert DeMarco
Project Manager
Bureau of Environmental Exposure Investigation
ESP, Corning Tower, Room 1787
Albany, NY 12237
BEEI@health.state.ny.us
(518) 402-7860

4.0 REMEDIAL DESIGN

4.1 INTRODUCTION

The work required for implementation of the NYSDEC-selected remedy for OU1 (Work) is shown in the 26 Design Drawings (Attachments A) and the Technical Specifications (Attachment B) created for the project. This RDR is intended to supplement the Design Drawings and Technical Specifications (Contract Documents) by providing the basis of design for the work.

In addition to sound engineering judgment, experience gained by NYSEG and its consultant during the completion of previous MGP remediation projects at other NYSEG owned facilities was utilized in the development and planning for this remedial project and is reflected in this RDR. The following sections detail the various components of the Work and provide the basis of design for the components.

4.2 SUMMARY OF REMEDIAL ACTIVITIES

As previously indicated in Section 1.0, the Work to be completed for implementation of the NYSDEC-selected remedy for OU1 includes the following activities:

- Mobilization of all materials, equipment, and labor, and completion of preconstruction activities;
- Remove and demolish foundations/structures, concrete slabs, and the concrete loading dock. Existing asphalt and existing fence sections, as required, will be removed and transported off-site for recycling or disposal as appropriate;
- Seven (7) monitoring wells and two (2) piezometers that are located within the planned excavation areas will be abandoned in accordance with applicable New York State regulations;
- Selected subsurface drainage features will be demolished and removed to facilitate the remedial activities;
- Remaining utility services to the former NYSEG Service Center will be located and properly terminated outside of the planned excavation areas;
- Two (2) gas mains will be relocated outside of the planned excavation areas;
- Steel sheet piling will be installed, in phases, around the perimeter of the four planned excavation areas;
- A 118’ X 210’ temporary fabric structure, equipped with an air handling system, will be constructed and moved as necessary over the planned excavation areas to provide odor control during all excavation activities;

- A total of approximately 11,700 cubic yards of clean overburden soils will be removed from the four planned excavation areas and stockpiled for reuse as backfill. Soils that have been pre-characterized as "clean soils for re-use" but exhibit visible coal tar or sheens during excavation will be segregated for subsequent off-site treatment/disposal;

- A total of approximately 15,400 cubic yards of impacted soils will be removed from the four planned excavation areas and transported off-site for treatment/disposal;

- Approximately 9500 CY of clean fill material will be imported to the Site for backfilling the balance of the excavation and soil reuse volumes.

- Dewatering of the four OU1 excavation areas prior to and during excavation work will be completed as needed to facilitate excavation, backfilling, and off-Site disposal. All fluids removed during dewatering will be transferred to a water pre-treatment system for pre-treatment and discharged to the publicly owned treatment works (POTW) pending the issuance of a discharge permit from the Village of Dansville. The influent and effluent water will be sampled and analyzed as necessary to meet the Village of Dansville POTW discharge permit requirements;

- A total of approximately 7,450 square yards of non-woven geotextile (delineation fabric) will be installed over the backfill material prior to installing the Soil Cover; and,

- The Site will be restored by installing approximately 2,030 cubic yards of gravel soil cover and 180 cubic yards of topsoil soil cover. Approximately 14,000 square feet of topsoil cover area will be seeded, conditioned, and mulched.

- Demobilization of all materials, equipment, and labor.

The following sections describe these activities in greater detail and present the basis for the remedial design.

4.3 MOBILIZATION AND COMPLETION OF PRECONSTRUCTION ACTIVITIES

The Contractor will mobilize all appropriate labor, materials, and equipment; obtain required permits and services; complete preconstruction activities; and provide submittals/documents (i.e., Health and Safety Plan [HASP]) as required to complete the work. Specifically, the Contractor will complete the following tasks:

- Manage truck traffic in accordance with the plans;
- Mobilize equipment, materials, and personnel;
- Obtain work permits from the Village of Dansville;
- Obtain coverage under the SPDES for storm water discharges;
- Layout support and work areas.
- Construct temporary fencing and visual barriers;

- Relocate existing gas lines (already completed by NYSEG in August 2013);
- Install erosion and sedimentation controls;
- Construct support areas; and,
- Provide the necessary submittals to the Owner and Engineer.

The following sections describe these activities in detail.

4.3.1 MOBILIZATION

The Contractor will mobilize to the Site all equipment, materials, and personnel required to complete the work. Temporary facilities and utility services shall be established by the Contractor to support the remedial activities.

4.3.2 TRAFFIC MANAGEMENT

The Contractor shall manage truck traffic associated with the work in accordance with the Contract Documents specifically, Drawings C—08 and C-09. As the Drawings indicate, truck traffic associate with the work is prohibited from entering or exiting the Site from Battle Street located north of the Site. All truck traffic associate with the work must enter and exit the Site from Ossian Street located south of the Site. The use of Battle Street to access the temporary construction office trailers, by personal vehicles and small delivery vehicles (FedEx, UPS, etc.), is permitted.

In addition, routine truck traffic is not permitted to travel across the Former Papas Cleaners Site to access the Site. All vehicular traffic must enter and exit the Site from the two Stabilized Construction Entrances located on NYSEG property. The Contractor may utilize the Former Papas Cleaners site to facilitate temporary sheet piling and fabric structure work, however, trucks hauling MGP-impacted materials from the Site shall not be permitted to traverse the Former Papas Cleaners site which has been recently cleaned by the NYSDEC at any time.

4.3.3 PERMITTING

The Contractor will obtain from the Village of Dansville all permits necessary to complete the planned work. All permits will be obtained prior to commencing the remedial work.

Since the remedial activities at the Site will involve soil disturbance of one or more acres, the Contractor will obtain coverage under the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity before commencing construction activity. In order to gain coverage under the SPDES General Permit for Stormwater Discharges from Construction Activity, the Contractor will develop a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the requirements in the General Permit for Stormwater Discharges from Construction Activity and submit a completed Notice of Intent (NOI) to the NYSDEC. Provided the Contractor's SWPPP is in conformance with New York

State's technical standards, the Contractor may commence soil disturbance activities five (5) business days from the date the Department receives the completed Notice of Intent (NOI).

4.3.4 TEMPORARY FENCING

The existing perimeter chain link fence at the Site will be expanded, with the use of temporary fencing panels, to enclose the work areas located on the south side of the Site. After expansion of the fencing perimeter, the remaining internal sections of the existing fence will be removed to facilitate the remedial work. In addition, visual barriers will be attached to the existing and temporary perimeter fencing.

4.3.5 GAS MAIN RELOCATION

Prior to mobilization of the Contractor to the Site, NYSEG will reroute the gas mains that are in conflict with the planned excavation areas. The gas mains that conflict with the planned excavation areas were properly abandoned in place by NYSEG in August 2013. The abandoned gas lines within the excavation areas will be removed by the construction contractor during the excavation work to commence in late 2013.

4.3.6 EROSION AND SEDIMENTATION CONTROLS

Prior to any soil disturbance activities, the Contractor shall install erosion and sedimentation controls in accordance with the Design Drawings, Technical Specifications, the Contractor's SWPPP, and the Contractor's SPDES General Permit for Stormwater Discharges from Construction Activity.

4.3.7 SURVEYING

The Contractor shall utilize the services of a surveyor, licensed in the State of New York, to locate and stake out the excavation limits, sheet pile drive lines, and other remedial components. A licensed surveyor shall be utilized to determine the as-built locations of the sheet pile walls, completed excavation limits, and final restoration grades. The as-built information will be submitted to the Engineer and presented in the final Construction Completion Report.

4.3.8 SUPPORT AREAS

The Contractor shall construct all necessary support areas prior to beginning the remedial activities. Temporary office trailers, sanitation facilities, power service, phone service, decontamination facilities, water pre-treatment containment area, and stabilized construction entrances shall be installed at the locations and as specified in the Contract Documents.

4.3.9 SUBMITTALS

The Contract Documents specify a number of submittals that must be provide to the Owner and Engineer prior to beginning certain activities. These submittals will allow the Owner and Engineer to help verify that the materials and methods specified in the Contract Documents are being utilized during the completion of the Work.

4.4 DEMOLITION AND SITE PREPARATION

Prior to beginning sheet pile driving activities, the site will be prepared in accordance with the Contract Documents, specifically Drawing C-04. In order to facilitate sheet pile driving activities, all remaining foundations/structures, concrete slabs, and the existing loading dock will be demolished and transported off-Site for disposal by the Contractor. In addition, the Contractor will pre-trench along the proposed sheet pile drive lines to remove any additional obstructions not currently identified in the Contract Documents. Existing asphalt will be removed and transported off-Site for recycling. Seven monitoring wells and two piezometers, located within the planned excavation areas, will be abandoned in accordance with applicable New York State and local regulations.

The steel sheet pile walls and the planned excavation areas conflict with various portions of the existing stormwater conveyance system on the western portion of the Site. Therefore, portions of the existing stormwater conveyance system will be demolished and removed from the Site prior to beginning sheet pile driving activities and a temporary drainage swale will be constructed to convey stormwater to the remaining catch basin (CB-1). Wall penetrations in CB-1 will be sealed after the completion of the demolition work.

Previously abandoned water, gas, and sanitary sewer services to the Site will be located and properly terminated outside of the sheet pile drive lines and planned excavation areas. Properly terminating previously abandoned utilities outside of the work areas will help prevent damage to active portions of the utility network connected to these abandoned utilities during excavation and sheet pile driving activities. Abandoned piping will be removed and transported off-Site for disposal as needed. A clean-out to the sanitary sewer connection will be installed outside of the sheet pile drive line to facilitate discharge of pre-treated water to the local POTW.

4.5 EXCAVATION SUPPORT AND GROUNDWATER CONTROL

Due to the depth of the planned excavations and the need to control the inflow of groundwater into the planned excavation areas, a steel sheet pile wall will be installed by the Contractor around the perimeter of the excavation areas for excavation support and groundwater control in accordance with the Contract Documents, specifically Drawings SOE-01 through SOE-10. In order to control odors from the excavation of impacted materials, the steel sheet pile walls are configured to allow the soils within the planned excavation areas to be removed in four

separate phases (see Drawing C-03) entirely within a temporary fabric structure (see Section 4.7). The steel sheet pile wall will be extended into the confining clay unit underlying the Site to help prevent the flow of groundwater into the excavation areas.

NYSEG will provide a limited quantity of AZ-48 steel sheets (26,250 sf) from their inventory of sheeting and the Contractor will supply additional AZ-48 sheets, as needed, to perform the remedial work. The Contractor will mobilize and demobilize steel sheets from other NYSEG facilities in Binghamton and Elmira to the Dansville Site. The steel sheet pile wall to be installed by the Contractor will be tied into the existing steel sheet pile wall located on the southeastern portion of the Site. The existing steel sheet pile wall was installed by the NYSDEC during remedial work at the Former Papas Cleaners site utilizing NYSEG owned AZ-48 steel sheets. As indicated previously, the steel sheet pile wall will be installed and removed in phases (i.e., steel sheets are installed around the Phase 1 excavation areas; following excavation and backfill of the excavation areas, the steel sheets are removed and reinstalled around subsequent excavation phase areas). The Contractor will remove and demobilize all steel sheets, including the existing steel sheet pile wall, when excavation activities are completed.

Due to the proximity of the steel sheet pile wall installation to existing off-Site structures and gas distribution lines, vibration monitoring will be conducted during all sheet pile installation activities. The vibration monitoring is described in detail in the Vibration Monitoring Plan (VMP) included as Appendix H. The VMP also establishes monitoring threshold values and response actions for exceeding these values. The Contractor will also install and monitor utility monitoring points on the adjacent gas distribution lines to ensure these lines are not adversely impacted by the sheet pile installation and removal activities. The utility monitoring points are described in the Technical Specifications Section 31 09 13. In addition, pre-construction and post-construction surveys will be performed on selected adjacent structures to document the condition of the structures prior to and following sheet pile installation activities.

4.6 TEMPORARY FABRIC STRUCTURE AND AIR HANDLING SYSTEM

Due to the odoriferous nature of MGP residual impacts, an Odor Management Plan (OMP) will be implemented during the work described in this RDR (see Appendix C). The OMP describes the measures that will be employed during the work to minimize or eliminate nuisance odors and/or fugitive dust. Due to the proximity of the planned excavation areas to residential and commercial properties and the need to control the generation of nuisance odors, all excavation and loading operations will be conducted within a 118-foot by 210-foot fabric structure (see Drawing C-16). The fabric structure will be equipped with an air handling system that will pass the air pulled from the fabric structure through activated carbon adsorption units prior to discharge. The temporary fabric structure (TFS) equipped with air filtration, along with the other suppression techniques discussed in the OMP, will mitigate the potential for release of fugitive dust and organic vapors during the work.

The air handling system was designed such that all air underneath the enclosure will be replaced four (4) times per hour for a total operating flow rate of approximately 49,000 CFM. The system design was based on the industry standard (Encotech Inc.) of 2-5 air exchanges per hour; therefore, the exchange rate of four (4) times per hour is conservative. Based on the required flow rate and the anticipated level of impacts during excavation, the air handling system will utilize three (3) 20,000 pound activated carbon adsorbers. All three (3) units must be operated to maintain adequate flow; however, in the event that one (1) unit fails, construction activities may temporarily continue using two (2) units and continuous air monitoring to ensure a safe working environment. The Contractor will obtain necessary permits and certificates, and procure, mobilize, and erect the enclosure and provide an approved air handling system. The Contractor shall relocate the fabric structure and the air handling system components, as needed, to complete the excavation phases (see Drawing C-03).

The size of the fabric structure was selected to minimize, to the extent practical, both the number of fabric structure moves required to complete the work and the overall size of the structure. As such, a larger structure would not have significantly reduced the number of moves and conversely a smaller structure would have required a disproportionate increase in the number of required fabric structure moves.

At the conclusion of the project, the activated carbon in the air handling system will be removed and transported off-Site for treatment/disposal. The temporary fabric structure and the air handling system will be dismantled and completely demobilized from the Site.

4.7 EXCAVATION AND TRANSPORTATION OF SOILS

The NYSDEC-selected remedy for OU1 identified that MGP waste, non-aqueous phase liquid (NAPL), or contaminated soils with visible tar or oil, the presence of sheens or odors with total polycyclic aromatic hydrocarbons (PAHs) over 1,000 mg/kg or a benzene, toluene, ethylbenzene, xylene (BTEX) concentration above 10 mg/kg, will be excavated and disposed of off-Site. After additional consultation and concurrence with the NYSDEC, it was determined that a 2-foot or greater NAPL and/or NAPL sheen thickness would be used as the criteria to determine the need for excavation of impacted soils in the OU1 area. The excavation limits depicted in the Contract Documents (Drawing C-05) were determined by applying the criteria listed above to the visual observations obtained during previous investigations; and the analytical data and visual observations obtained during the Pre-characterization of Wastes and Geotechnical Investigation completed in 2013. The soils to be excavated were pre-characterized for reuse, landfill disposal, or thermal treatment/disposal (see Tables on Drawing C-05) based on the criteria above and applicable disposal facility requirements. The Contractor will excavate approximately 11,700 cubic yards (cy) of clean soils for on-Site reuse; and excavate, load, and transport approximately 15,400 cy of impacted soils for off-Site treatment/disposal in accordance with the Contract Documents. However, soils that have been

pre-characterized for reuse or landfill disposal that exhibit visible coal tar or sheens during excavation shall be segregated by the Contractor for off-Site thermal treatment/disposal.

The Contractor will directly load soils for landfill disposal or thermal treatment/disposal into trucks within the temporary fabric structure. Excavated soils to be reused will either be temporary stockpiled within the fabric structure or the soils will be directly placed into the bottom of completed excavation areas and compacted with suitable equipment. Soils for reuse will be placed a minimum of 5' below the final restoration grades, as shown in Detail 2 on Drawing C-14.

During intrusive activities the Contractor shall provide real-time continuous air monitoring in accordance with the HASP (Appendix A). The Community Air Monitoring Plan (CAMP) and Noise Monitoring (Appendix B) will be implemented by the Engineer. However, workplace air monitoring in accordance with Occupation Safety and Health Administration (OSHA) requirements will be conducted by the Contractor.

4.8 BACKFILL OPERATIONS

The balance of fill material required to backfill the Site will be obtained from clean off-Site borrow sources. In accordance with the Contract Documents, the Contractor shall submit to the Owner and Engineer submittals documenting the suitability of the fill materials. The materials will be placed, compacted, and tested for proper compaction by the Contractor.

4.9 SITE RESTORATION

In accordance with the ROD, a non-woven geotextile will be installed over the clean backfill material prior to installing a Soil Cover consisting of either 12" of crusher run gravel or 12" of imported clean soils overlain with 4" of clean topsoil (Detail 3 and 4 on Drawing C-14). The final grading plan and the limits of the Soil Cover are depicted in Drawing C-15. At total of approximately 2,030 cy of crusher run gravel and 180 cy of topsoil will be placed to construct the Soil Cover. Approximately 14,000 sf of topsoil Soil Cover will be seeded, conditioned, and mulched. To maintain Site drainage, the temporary surface drainage channel will be extended and converted to a permanent surface drainage channel, as shown on Drawing C-15.

4.10 WASTE MANAGEMENT

The soils to be excavated were pre-characterized for reuse, landfill disposal, or thermal treatment/disposal (see Drawing C-05) based applicable disposal facility requirements. Based on this pre-characterization, the following waste streams will be generated during the remedial work:

- Non-hazardous MGP impacted soils;
- Conditionally exempt MGP impacted soils;
- General construction debris; and,

- Impacted groundwater and decontamination water.

Non-hazardous impacted soils will be transported off-Site for landfill disposal at the Seneca Meadows Landfill in Waterloo New York. Conditionally exempt MGP impacted soils will be transported off-Site for thermal treatment and disposal at ESMI of New York in Fort Edwards New York. However, soils that have been pre-characterized for reuse or landfill disposal that exhibit visible coal tar or sheens during excavation shall be segregated by the Contractor for off-Site thermal treatment/disposal. Prior to mobilization, the Engineer will utilize the pre-characterization data to obtain approval for disposal of the soil materials at these two facilities.

General construction debris will be collected and consolidated into roll-off boxes or dumpsters for landfill disposal. Impacted groundwater collected during dewatering operations will be pre-treated and discharged to the local POTW as described in Section 4.11.1 below.

4.10.1 SOIL HANDLING

As indicated previously, the Contractor will directly load trucks with soils for landfill disposal or thermal treatment/disposal within the temporary fabric structure. The Contractor will utilize all due care to ensure that trucks do not drive over impacted material during loading operations. All impacted soil loading will be completed on plastic sheeting. After loading is completed, the plastic sheeting shall be swept clean or replaced with new clean plastic sheeting prior to moving the truck. In addition, the Contractor shall carefully load truck trailers with impacted soils to prevent contamination of the exterior of the trucks or trailers. However, all trucks leaving the Site with impacted soils for disposal will drive over one of two decontamination pads for inspection and decontamination if required. All trucks carrying soils for off-Site disposal will be lined with plastic sheeting, covered, and will be equipped with rubber gasket sealed tailgates. Soils will be conditioned with cement kiln dust (CKD) to reduce the moisture content of the soils, if required, for off-Site transportation and treatment/disposal. If required to control odors, soils within the trucks leaving the Site will be foamed prior to leaving the temporary fabric structure. All trucks leaving the Site with impacted material for treatment/disposal will follow the NYSDEC approved trucking routes to the designated facilities.

4.10.2 WATER PRE-TREATMENT SYSTEM

In order to facilitate removal of the soils from the excavation areas, meet off-Site transportation requirements, and to meet disposal and/or treatment facility moisture content requirements, the excavation areas will be continuously dewatered by the Contractor during excavation and backfilling operations (see Detail 1 on Drawing C-14). The Contractor will construct a Water Pre-treatment System (WPTS) in accordance with the Contract Documents (see Drawing C-13). Waste water generated during dewatering operations, in addition to decontamination activities, will be pre-treated by the WPTS and discharged to the local Publicly-Owned Treatment Works (POTW) for final treatment and disposal. The WPTS will be operated and maintained by the Contractor for the duration of the project work.

The WPTS was designed to pre-treat all potentially-impacted water generated as a result of dewatering operations during excavation and backfilling operations. The WPTS has been conservatively designed to result in an effluent which meets typical pre-treatment and flow requirements for POTWs. The maximum design flow rate of the treatment system is 150 gallons per minute. The treatment system consists of the following major components:

- One 20,000 gallon weir tank for solids settling and free-phase liquid separation;
- One 20,000 gallon surge tank for storage of excess water (additional tanks if necessary);
- One 75 gallon per minute transfer pump to feed downstream pressure vessels;
- Two 75 gallon per minute bag filters operated in parallel for suspended solids removal;
- One 3,000 pound organoclay adsorber for removal of entrained oils;
- Two 3,000 pound granular activated carbons adsorbers in series for organics removal;
- One effluent line totalizing flow meter and appropriate valves and gauges throughout.

The water pre-treatment system is equipped with sampling ports throughout to facilitate collection of samples for: 1) onsite analysis using test kits, or: 2) analysis at offsite fixed-based laboratories. Sampling and analysis is completed to determine compliance with POTW pre-treatment requirements and to identify the need for filter replacement or change-out of the organoclay or carbon. The weir tank and surge tank are covered and are equipped with off-gas controls in the form of two 175 pound vapor phase carbon adsorbers operated in parallel.

This specific water pre-treatment system has been used by NYSEG's consultant Ish Inc. for previous projects, and has it has been demonstrated that the units are conservatively designed and are highly effective in meeting local POTW pre-treatment requirements. However, as an added precaution, the influent and effluent shall be sampled and analyzed by the Contractor as necessary to meet the local POTW discharge permit requirements.

At the conclusion of the project, the WPTS will be drained and the residual water will be pumped into the POTW discharge point for treatment and disposal. All remaining solids within the WPTS (organo clay, activated carbon, and settled weir tank solids) will be incorporated into the soils being transported off-Site for treatment/disposal. Used filter bags generated during WPTS operation will be placed into dumpsters for appropriate landfill disposal.

4.11 ENVIRONMENTAL MONITORING

The Contractor and Engineer will provide the following environmental monitoring and inspections during the project:

- Perimeter air monitoring and noise monitoring in accordance with the Community Air Monitoring Plan & Noise Monitoring Plan (CAMP & NMP) included in Appendix B;

- Vibration Monitoring in accordance with the Vibration Monitoring Plan (VMP) included in Appendix H;

- Work zone air monitoring in accordance with the Site Specific HASP (Appendix A) and the Contractors site specific HASP; and,

- Erosion and sedimentation controls inspections in accordance with the SPDES permit to be obtained by the Contractor.

The Community Air Monitoring Plan & Noise Monitoring Plan (CAMP & NMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the perimeter of the Site when remedial activities are in progress.. The CAMP is not intended for worker respiratory protection, rather, it is 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 the remedial work activities. The action levels specified in the CAMP require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP will help to confirm that work activities do not spread contamination off-site through the air.

The CAMP & NMP also includes a noise monitoring plan to provide information to assess noise impacts to potential off-site receptors and to initiate corrective actions to mitigate these impacts, if required.

Details regarding the implementation of the VMP are included in Section 4.6 and Appendix H.

Work zone air monitoring will be conducted by the Contractor in accordance with Occupation Safety and Health Administration (OSHA) requirements and the Site Specific HASP (Appendix A) and/or the Contractor's HASP.

Inspection of the erosion and sedimentation controls will be conducted by the Engineer and the Contractor in accordance with the SPDES permit obtained by the Contractor. Deficiencies noted during these inspections will be promptly repaired or replaced as needed by the Contractor.

4.12 DEMOBILIZATION

The Contractor will demobilize all materials, equipment, and labor mobilized to the Site. All temporary erosion and sedimentation controls will be removed from the Site after all areas of the Site have been stabilized in accordance with the SWPPP. Temporary fencing panels will be removed and permanent fences will be erected by NYSEG following the completion of the remedial action at the Site.

5.0 DOCUMENTATION OF SITE ACTIVITIES

5.1 DAILY FIELD REPORT

A report documenting the construction activities and other on-Site activities will be prepared daily on-Site by the Engineer. The daily field reports will be submitted at the end of each week to Mr. John Ruspantini, NYSEG project manager.

5.2 TRANSPORTATION LOG

A transportation log documenting any and all waste material transported off-Site for treatment and/or disposal will be prepared and maintained on-Site by the Engineer. The transportation log will be submitted at the end of each week to Mr. John Ruspantini, NYSEG project manager.

5.3 DAILY COMMUNITY AIR MONITORING REPORT

An air monitoring report documenting the on-Site air monitoring results will be prepared daily by the Engineer. The daily air monitoring reports will be submitted at the end of each week to Mr. Albert DeMarco, NYSDOH, Mr. Anthony Karwiel, NYSDEC project manager, and Mr. John Ruspantini, NYSEG project manager.

5.4 MASTER SAMPLE LOG

All samples collected on-Site, including those sent off-Site for laboratory analysis, will be logged in a laboratory notebook on-Site by the Engineer.

5.5 CHAIN-OF-CUSTODY

Chain-of-Custody forms documenting custody of all samples from the field to the laboratory will be prepared and maintained on-Site.

5.6 WAYBILLS

At the time sample shipments are accepted by courier or Federal Express, a waybill receipt will be obtained and attached to the Master Sample Log.

5.7 NYSEG'S PUBLIC LIABILITY ACCIDENT REPORT, NYSEG'S REPORT OF EMPLOYEE INJURY, AND NYSEG'S INCIDENT REPORT

NYSEG's Public Liability Accident Report, NYSEG's Report of Employee Injury, and NYSEG's Incident Report forms will be kept on-Site and will be used to document any injury that occurs on-Site during the remedial project.

5.8 CONSTRUCTION COMPLETION REPORT

A Construction Completion Report (CCR) will be prepared, in accordance with NYSDEC DER-10, upon completion of the remedial project. The CCR will be sealed and signed by a registered Professional Engineer certified in the State of New York. The CCR will describe the remedial work completed and identify any variances to this RDR or the ROD. The CCR will also include the Daily Field Reports, Community Air Monitoring Reports, the Master Sample Log, Material Disposal Logs, Material Disposal Manifests, photographic documentation, and as-built drawings of the completed work.

6.0 PERMITTING AND REGULATORY REQUIREMENTS

6.1 PERMITTING

The Contractor is responsible for obtaining the following permits prior to the commencement of any remedial action activities at the Site, and for ensuring the requirements of these permits are upheld for the duration of the project activities:

- Village of Dansville – General Construction Permit;
- Village of Dansville Building permit for the use of Sprung Structure;
- SPDES General Permit for Stormwater Discharges from Construction Activity (being obtained by the engineering consultant for NYSEG); and,
- POTW – Temporary Discharge Permit (obtained by NYSEG from the village).

6.2 REGULATORY REQUIREMENTS

The work associated with this remedial project will be completed in a manner adherent to the applicable environmental regulations concerning hazardous and non-hazardous waste management. These regulations include general provisions for managing waste that are reflected in the project specifications.

The work will also be conducted in a manner pursuant to the health and safety requirements put forth by OSHA, specifically those detailed in 29 CFR 1910.120 concerning work at hazardous waste sites. OSHA regulations include such requirements as preparation of a site specific HASP, training of personnel who may be exposed to hazardous substances, medical monitoring of personnel on hazardous waste sites, air monitoring, respiratory protection, and personal protective equipment (PPE).

The HASP prepared for this remedial project (Appendix A) outlines general safe work policies, proper use of safety and mechanical equipment, proper material handling and decontamination procedures, emergency procedures, and other related policies to ensure worker safety and health. The Contractor will prepare a separate HASP in accordance with OSHA 29 CFR 1910.120, and must adhere to its requirements throughout the duration of the work.

The HASP furthermore states that on-Site employees must have a current medical screening and approval for work at hazardous waste sites in accordance with 29 CFR 1910.120(f) and the company's medical screening policies and procedures. This screening includes:

- Medical history and occupational history;
- Physical examination;
- Determination of fitness to work wearing protective equipment;
- Baseline laboratory studies; and,
- Medical evaluation to determine employee's ability to wear a respirator (for those employees who may wear a respirator).

6.3 TRANSPORTATION REQUIREMENTS

Based on existing analytical data, all waste materials to be transported off-site for disposal or treatment are expected to be non-hazardous and consequently will be shipped off-Site utilizing non-hazardous manifests. Applicable United States Department of Transportation (DOT) and New York State requirements regarding the transportation of non-hazardous wastes will be enforced throughout the work associated with this remedial project. In the unlikely event that materials are encountered that classify has hazardous waste, the materials will be handled and transported off-Site for disposal in accordance with applicable federal regulations and state regulations.

7.0 QUALITY ASSURANCE

Quality assurance procedures set forth below and included in the Construction Quality Assurance Plan (Appendix E) and the Quality Assurance Project Plan (Appendix G) will be implemented throughout the work associated with this remedial project. These quality assurance procedures have been developed and will be enforced to ensure that work is conducted in a manner pursuant to the Remedial Design.

7.1 GENERAL QUALITY ASSURANCE PROCEDURES

The following quality assurance procedures will be implemented:

- Facilitation by the Contractor and inspection by the Engineer of Site preparation activities, including demolition of existing obstructions as needed, protection of existing utilities and structures according to the project specifications, abandonment of specified wells and piezometers, and construction of a temporary surface drainage channel to ensure proper drainage during the work;
- Verification by the Engineer of the Contractor's installation of the steel sheet pile wall in accordance with project documents and applicable regulations;
- Verification by the Engineer of the Contractor's pre-excavation survey of the excavation limits, excavation activities, and facilitation of loading, transport, and disposal of excavated materials in conformance with project specifications;
- Evaluation by the Engineer of the Contractor's performance of backfill and Site restoration activities pursuant to project documents; and,
- Verification by the Engineer of the Contractor's implementation of air monitoring, noise and dust control, utility monitoring, and water pre-treatment system discharge sampling in accordance with project specifications and applicable regulations.

7.2 CONTINGENCY PLAN

In the event of a spill, fire, explosion, severe weather conditions, medical emergency, or other Site emergency, personnel on-Site should immediately inspect the Site, evacuate the Site if needed, call 911, or respond to the emergency in accordance with the level of their training. Additional instruction and requirements can be found in the Construction Contingency Plan (Appendix D).

8.0 PROJECT REPORTING

This RDR provides a mechanism to document the planned construction activities and to evaluate the adequacy of construction, approve payments to the Contractor, and supplements the final completion report.

8.1 DAILY REPORTS

The Engineer will prepare a Daily Report which will include the following information:

- Date, project name, location, and other identifications;
- Description of weather conditions, including temperature, cloud cover, and precipitation;
- Equipment and personnel working on-Site, including all Subcontractors;
- Written description and location references for the work activities completed each day;
- Copies (8.5" X 11" or 11" X 17") of the Contract Drawings, as needed, with sufficient markings and notes to depict the work completed each day.
- Description of off Site materials received, including any quality verification documentation;
- A summary of Construction Quality Assurance (CQA) tests performed and results;
- A summary of the review of the Construction Quality Control (CQC) information (provided by the Contractor);
- A summary of any meetings held and actions recommended and/or taken;
- Decisions regarding approval of units of material or of work;
- Deficient test results or construction activities requiring corrective action and the location of the deficiencies;
- Corrective actions to be taken in instances of substandard quality; and,
- Summary of any conflicts, and/or resolutions.

The Engineer will submit the Daily Reports to the NYSEG project manager in an electronic format.

8.2 WEEKLY SUMMARY REPORTS

The Engineer will prepare a Weekly Summary Report that summarizes the results of all inspections, CQA activities, and corrective actions (if any). The Weekly Summary Report will be forwarded to key personnel, as required, and will include the following information:

- Summary of weekly construction activities and CQC test results;
- Corrective actions taken, or to be taken, in instances of substandard or suspect quality;

- CQA test results, including those in support of determination of substandard quality and proposed corrective measures;
- Details and reason for delays (that pertain to CQA) experienced by the Contractor; and,
- Status of comments on the submittals and Work Change Directives (WCDs).

8.3 COMPLETION REPORT

A Construction Completion Report (CCR) will be prepared, in accordance with NYSDEC DER-10, by the Engineer upon completion of the work. The CCR will be sealed and signed by a registered Professional Engineer certified in the State of New York. At a minimum, the CCR will contain the following:

- A general history of the Site;
- A description of the physical setting of the Site;
- A summary of the remedial construction activities completed including soil removal and Site restoration activities completed;
- A description of approved construction modifications;
- As-built drawings, sealed and signed by a registered Professional Surveyor certified in the State of New York;
- The volume of impacted soil addressed;
- Quality Assurance/Quality Control (QA/QC) data;
- Copies of waste material disposal manifests;
- Copies of CQA Inspection Forms;
- Copies of Daily Logs and Progress Reports;
- Air monitoring results;
- Water Pre-Treatment System discharge monitoring results;
- Monitoring Well Abandonment Reports;
- Photographic documentation;
- Laboratory test results; and,
- Conclusions and recommendations.

The CCR will be submitted to the NYSDEC following completion of the remedial activities at the Site.

9.0 SCHEDULE AND HOURS OF OPERATION

The remedial activities are planned to begin in the fall/winter of 2013/2014. The work is expected to be completed within approximately seven months. Unless otherwise authorized by NYSEG, allowable hours of equipment operation during the remedial activities will be daylight hours between 7 a.m. and 5 p.m., Monday through Friday. However, the Contractor may be on-Site at times outside of these hours for planning and meetings associated with the project work. A schedule of activities is included in Appendix I.

10.0 BID PACKAGE/TECHNICAL EXECUTION PLAN

Prior to beginning the remedial activities at the Site, the Contractor shall prepare and submit a Technical Execution Plan (TEP) for this work to NYSEG for review and approval. At a minimum, the TEP will include the following:

- Resumes of personnel that will play a key role in the project execution;
- The equipment, materials, and methods to be used to conduct the work;
- Specifications and a layout sequence for the odor, vapor, dust, and noise controls to be implemented during the work;
- The proposed schedule for completing the work; and,
- Other TEP requirements included in the project specifications.

The Contractor may be required to provide additional information at any time by NYSEG prior to and during the course of the work.

11.0 REFERENCES

"Investigation of the Former Coal Gasification Site in Dansville, New York; Task 1 Report, Preliminary Site Evaluation." Prepared by TRC Environmental Consultants, Inc., August 20, 1986.

"Investigation of the Former Coal Gasification Site in Dansville, New York; Task 2 Report, Initial Field Investigation Program." Prepared by TRC Environmental Consultants, Inc., December 5, 1988.

"Investigation of the Former Coal Gasification Site in Dansville, New York; Task 3 Report, Additional Field Investigation Program." Prepared by TRC Environmental Consultants, Inc., June 1990.

"Risk Assessment for the Former Coal Gasification Site in Dansville, New York; Task 4 Report." Prepared by TRC Environmental Consultants, Inc., May 1991.

"Order on Consent, Index No. DO-0002-9309," between NYSDEC and NYSEG, executed on March 30, 1994.

"Supplemental Remedial Investigation Report for Operable Unit 1 at the Former MGP Site in Dansville, New York." Prepared by Ish Inc., January 2006.

"Draft Report Soil Vapor Intrusion Evaluation for Operable Unit 1 at the Former MGP Site in Dansville, New York." Prepared by Ish Inc., May 2006.

"Draft Report Soil Vapor Intrusion Evaluation for Operable Unit 1 Following the Installation of a Sub-Slab Depressurization System at the Former MGP Site in Dansville, New York." Prepared by Ish Inc., April 2007.

"Synoptic Groundwater Sampling Report for OU1 and OU2 at the Dansville Former MGP Site Dansville, New York." Prepared by Ish Inc., April 2006.

"Feasibility Study Report for Operable Unit 1 and Feasibility Study Report Addendum for Operable Unit 1, NYSEG Former MGP Site Dansville, New York." Prepared by Ish Inc., October 2007.

"Record of Decision, NYSEG – Dansville MGP Site Operable Unit No. 1, Dansville, Livingston County, New York, Site Number 8-26-012." Prepared by NYSDEC, March 2008.

"Pre-Design Investigation Report for Operable Unit 1, NYSEG Former MGP Site, Dansville New York." Prepared by Ish Inc., June 2009.

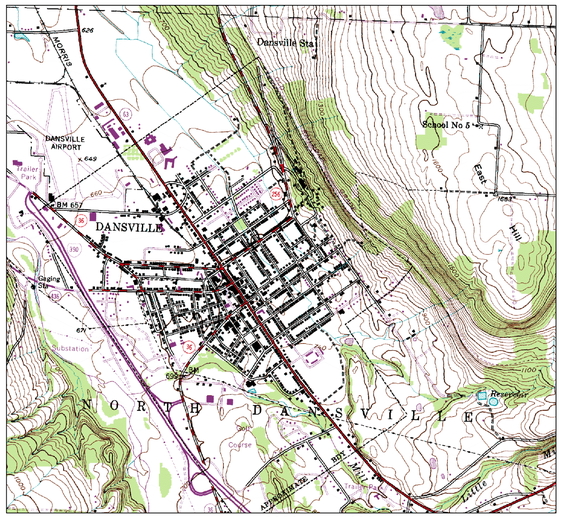
"Letter report, Results from Supplemental Pre-Design Soil Boring Investigation." Prepared by Ish Inc., January 2013.

"Letter report, Results from January 2013 Phase 3 Pre-characterization of wastes and geotechnical investigation for sheet pile design." Prepared by Ish Inc., October 2013.

ATTACHMENT 1

DESIGN DRAWINGS

C-01 – TITLE SHEET
C-02– EXISTING CONDITIONS SITE PLAN
C-03 – GENERAL SITE ARRANGEMENT PLAN
C-04 – SITE PREPARATION PLAN
C-05 - SOIL EXCAVATION PLAN
C-06 – NORTH EXCAVATION AREA CROSS SECTIONS
C-07 - SOUTH EXCAVATION AREA CROSS SECTIONS
C-08 – PHASES 1 AND 2 TRAFFIC PLAN
C-09 – PHASES 3 AND 4 TRAFFIC PLAN
C-10 – EROSION AND SEDIMENT CONTROL & SITE SECURITY PLAN
C-11 – EROSION AND SEDIMENT CONTROL & SITE SECURITY DETAIL SHEET 1 OF 2
C-12 – EROSION AND SEDIMENT CONTROL & SITE SECURITY DETAIL SHEET 2 OF 2
C-13 – WATER PRE-TREATMENT SYSTEM PLAN VIEW AND FLOW DIAGRAM
C-14 – DETAILS
C-15 – FINAL SITE RESTORATION PLAN
C-16 – ENCLOSURE AND AIR HANDLING SYSTEM
SOE-01 –SHEETING LAYOUT PLAN
SOE-02 –EXCAVATION AREA B ELEVATION
SOE-03 - EXCAVATION AREA C ELEVATION
SOE-04 - EXCAVATION AREA D ELEVATION
SOE-05 - EXCAVATION AREA D ELEVATION
SOE-06 - EXCAVATION AREA E1 ELEVATION
SOE-07 - EXCAVATION AREA E2 ELEVATION
SOE-08 - EXCAVATION AREA E2 ELEVATION
SOE-09 –CROSS SECTIONS
SOE-10 –BERM DETAILS



VICINITY MAP

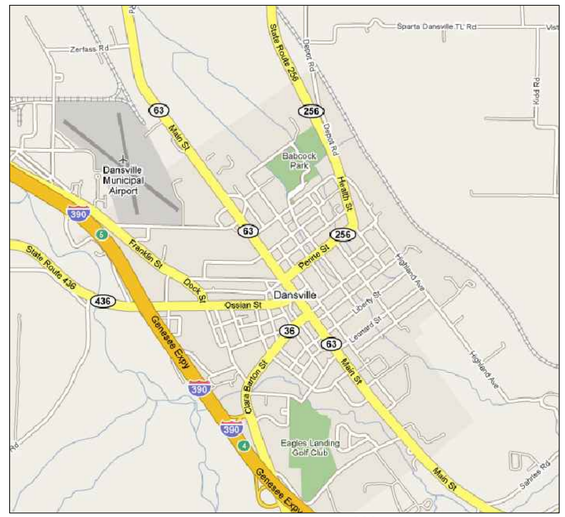
100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

Property Owner:

NEW YORK STATE
ELECTRIC AND GAS CORPORATION

Prepared for:

ISH INCORPORATED



LOCATION MAP

DRAWING N0.	DRAWING TITLE
C-01	TITLE SHEET
C-02	EXISTING CONDITIONS SITE PLAN
C-03	GENERAL SITE ARRANGEMENT PLAN
C-04	SITE PREPARATION PLAN
C-05	SOIL EXCAVATION PLAN
C-06	NORTH EXCAVATION AREA CROSS SECTIONS
C-07	SOUTH EXCAVATION AREA CROSS SECTIONS
C-08	PHASES 1 & 2 TRAFFIC PLAN
C-09	PHASES 3 & 4 TRAFFIC PLAN
C-10	EROSION AND SEDIMENT CONTROL AND SITE SECURITY PLAN
C-11	EROSION AND SEDIMENT CONTROL AND SITE SECURITY DETAILS SHEET 1 OF 2
C-12	EROSION AND SEDIMENT CONTROL AND SITE SECURITY DETAILS SHEET 2 OF 2
C-13	WATER PRE-TREATMENT SYSTEM PLAN VIEW AND FLOW DIAGRAM
C-14	DETAILS
C-15	SITE RESTORATION PLAN
C-16	ENCLOSURE AND AIR HANDLING SYSTEM
SOE-01	SHEETING LAYOUT PLAN
SOE-02	EXCAVATION AREA B ELEVATION
SOE-03	EXCAVATION AREA C ELEVATION
SOE-04	EXCAVATION AREA D ELEVATION
SOE-05	EXCAVATION AREA D ELEVATION
SOE-06	EXCAVATION AREA E1 ELEVATION
SOE-07	EXCAVATION AREA E2 ELEVATION
SOE-08	EXCAVATION AREA E3 ELEVATION
SOE-09	CROSS SECTIONS
SOE-10	BERM DETAILS

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

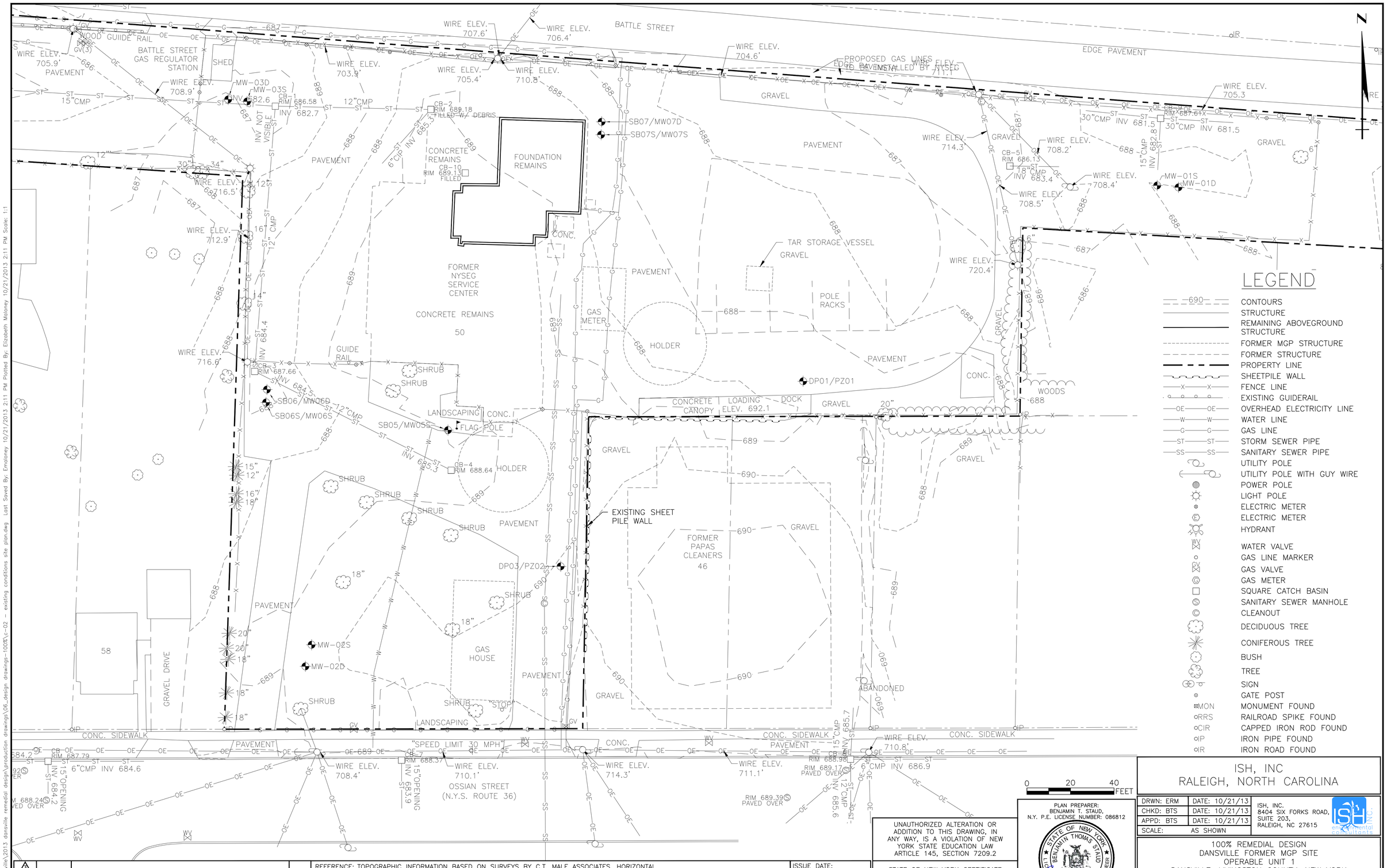
DRWN: ERM	DATE: 10/21/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: BTS	DATE: 10/21/13	
APPD: BTS	DATE: 10/21/13	
SCALE:	AS SHOWN	

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

TITLE SHEET

PROJECT NO: 08-717

C-01



LEGEND

- CONTOURS
- STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- SHEETPILE WALL
- FENCE LINE
- EXISTING GUIDERAIL
- OVERHEAD ELECTRICITY LINE
- WATER LINE
- GAS LINE
- STORM SEWER PIPE
- SANITARY SEWER PIPE
- UTILITY POLE
- UTILITY POLE WITH GUY WIRE
- POWER POLE
- LIGHT POLE
- ELECTRIC METER
- ELECTRIC METER
- HYDRANT
- WATER VALVE
- GAS LINE MARKER
- GAS VALVE
- GAS METER
- SQUARE CATCH BASIN
- SANITARY SEWER MANHOLE
- CLEANOUT
- DECIDUOUS TREE
- CONIFEROUS TREE
- BUSH
- TREE
- SIGN
- GATE POST
- MON MONUMENT FOUND
- RRS RAILROAD SPIKE FOUND
- CIR CAPPED IRON ROD FOUND
- IP IRON PIPE FOUND
- IR IRON ROAD FOUND

REV #	DATE	DESCRIPTION	APPD
1			
2			
3			

REFERENCE: TOPOGRAPHIC INFORMATION BASED ON SURVEYS BY C.T. MALE ASSOCIATES. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE (FIPSZONE: 3102), NORTH AMERICAN DATUM 1983 (NAD83(86)) AND VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88), US SURVEY FEET.

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

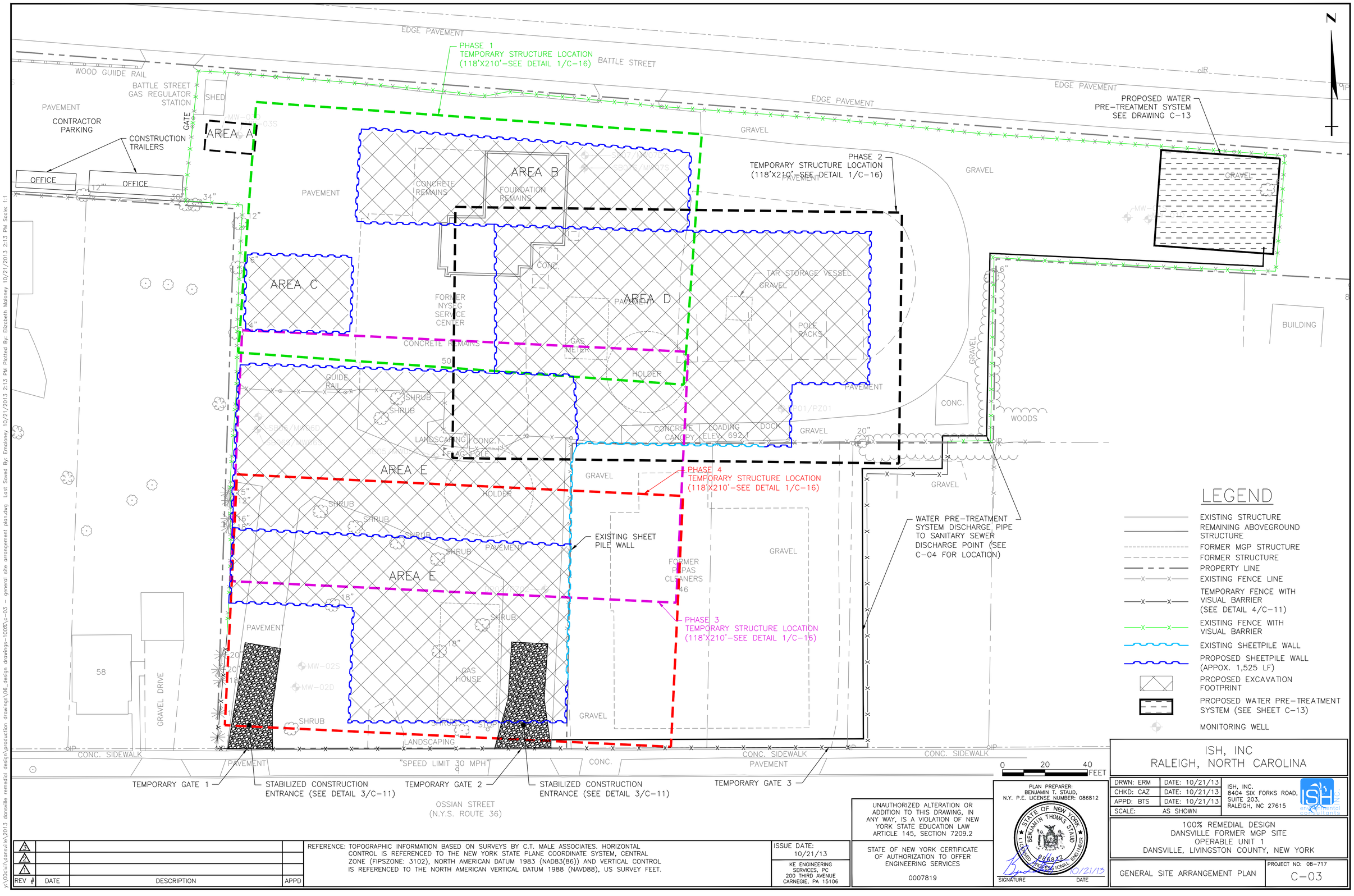
DRWN: ERM	DATE: 10/21/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: BTS	DATE: 10/21/13	
APPD: BTS	DATE: 10/21/13	
SCALE: AS SHOWN		

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

EXISTING CONDITIONS SITE PLAN

PROJECT NO: 08-717

C-02



LEGEND

- EXISTING STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- EXISTING FENCE LINE
- TEMPORARY FENCE WITH VISUAL BARRIER (SEE DETAIL 4/C-11)
- EXISTING FENCE WITH VISUAL BARRIER
- EXISTING SHEETPILE WALL
- PROPOSED SHEETPILE WALL (APPOX. 1,525 LF)
- PROPOSED EXCAVATION FOOTPRINT
- PROPOSED WATER PRE-TREATMENT SYSTEM (SEE SHEET C-13)
- MONITORING WELL

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE: TOPOGRAPHIC INFORMATION BASED ON SURVEYS BY C.T. MALE ASSOCIATES. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE (FIPSZONE: 3102), NORTH AMERICAN DATUM 1983 (NAD83(86)) AND VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88), US SURVEY FEET.

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

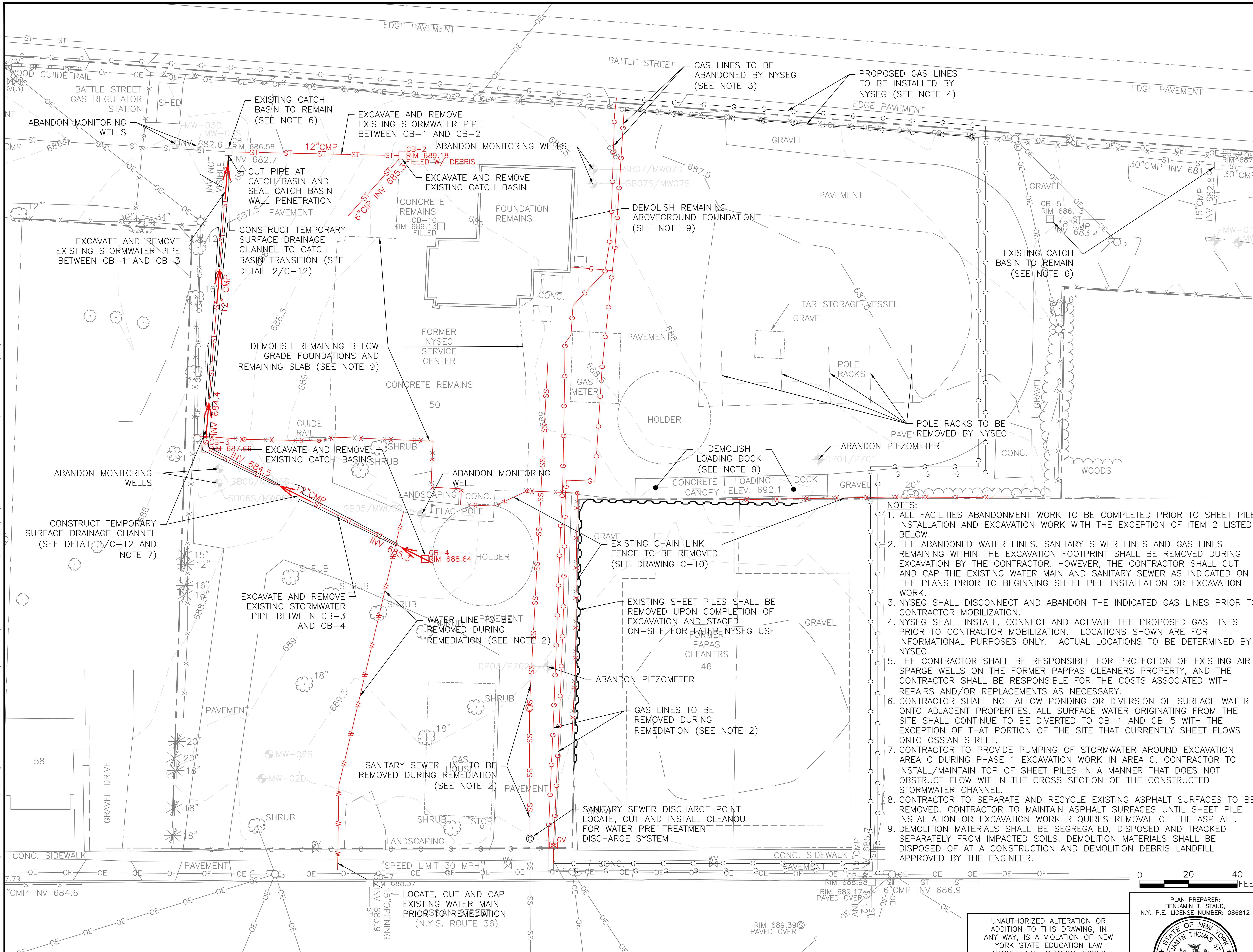
DRWN: ERM	DATE: 10/21/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615	
CHKD: CAZ	DATE: 10/21/13		
APPD: BTS	DATE: 10/21/13		
SCALE: AS SHOWN			

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

GENERAL SITE ARRANGEMENT PLAN

PROJECT NO: 08-717

C-03



NOTES:

1. ALL FACILITIES ABANDONMENT WORK TO BE COMPLETED PRIOR TO SHEET PILE INSTALLATION AND EXCAVATION WORK WITH THE EXCEPTION OF ITEM 2 LISTED BELOW.
2. THE ABANDONED WATER LINES, SANITARY SEWER LINES AND GAS LINES REMAINING WITHIN THE EXCAVATION FOOTPRINT SHALL BE REMOVED DURING EXCAVATION BY THE CONTRACTOR. HOWEVER, THE CONTRACTOR SHALL CUT AND CAP THE EXISTING WATER MAIN AND SANITARY SEWER AS INDICATED ON THE PLANS PRIOR TO BEGINNING SHEET PILE INSTALLATION OR EXCAVATION WORK.
3. NYSEG SHALL DISCONNECT AND ABANDON THE INDICATED GAS LINES PRIOR TO CONTRACTOR MOBILIZATION.
4. NYSEG SHALL INSTALL, CONNECT AND ACTIVATE THE PROPOSED GAS LINES PRIOR TO CONTRACTOR MOBILIZATION. LOCATIONS SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. ACTUAL LOCATIONS TO BE DETERMINED BY NYSEG.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF EXISTING AIR SPARGE WELLS ON THE FORMER PAPPAS CLEANERS PROPERTY, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS ASSOCIATED WITH REPAIRS AND/OR REPLACEMENTS AS NECESSARY.
6. CONTRACTOR SHALL NOT ALLOW PONDING OR DIVERSION OF SURFACE WATER ONTO ADJACENT PROPERTIES. ALL SURFACE WATER ORIGINATING FROM THE SITE SHALL CONTINUE TO BE DIVERTED TO CB–1 AND CB–5 WITH THE EXCEPTION OF THAT PORTION OF THE SITE THAT CURRENTLY SHEET FLOWS ONTO OSSIAN STREET.
7. CONTRACTOR TO PROVIDE PUMPING OF STORMWATER AROUND EXCAVATION AREA C DURING PHASE 1 EXCAVATION WORK IN AREA C. CONTRACTOR TO INSTALL/MAINTAIN TOP OF SHEET PILES IN A MANNER THAT DOES NOT OBSTRUCT FLOW WITHIN THE CROSS SECTION OF THE CONSTRUCTED STORMWATER CHANNEL.
8. CONTRACTOR TO SEPARATE AND RECYCLE EXISTING ASPHALT SURFACES TO BE REMOVED. CONTRACTOR TO MAINTAIN ASPHALT SURFACES UNTIL SHEET PILE INSTALLATION OR EXCAVATION WORK REQUIRES REMOVAL OF THE ASPHALT.
9. DEMOLITION MATERIALS SHALL BE SEGREGATED, DISPOSED AND TRACKED SEPARATELY FROM IMPACTED SOILS. DEMOLITION MATERIALS SHALL BE DISPOSED OF AT A CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL APPROVED BY THE ENGINEER.

LEGEND

Symbol	Description
—690—	EXISTING CONTOURS
	PROPOSED CONTOURS
	EXISTING STRUCTURE
	REMAINING ABOVEGROUND STRUCTURE
	FORMER MGP STRUCTURE
	FORMER STRUCTURE
	PROPERTY LINE
	EXISTING SHEETPILE WALL
—X—X—	EXISTING FENCE LINE
—X—X—	FENCE LINE TO BE ABANDONED
	EXISTING GUIDERAIL
—OE—OE—	EXISTING OVERHEAD ELECTRICITY LINES
—W—W—	EXISTING WATER LINE
—G—G—	EXISTING GAS LINE
—ST—ST—	EXISTING STORM SEWER PIPE
—SS—SS—	EXISTING SANITARY SEWER PIPE
—W—W—	WATER LINE TO BE ABANDONED
—G—G—	GAS LINE TO BE ABANDONED
—ST—ST—	STORM SEWER PIPE TO BE ABANDONED
—SS—SS—	SANITARY SEWER PIPE TO BE ABANDONED
—G—G—	PROPOSED GAS LINE (SUBJECT TO CHANGE)
	EXISTING UTILITY POLE
	EXISTING UTILITY POLE WITH GUY WIRE
	EXISTING LIGHT POLE
	EXISTING ELECTRIC METER
Ⓔ	EXISTING ELECTRIC METER
WV	EXISTING WATER VALVE
GV	EXISTING GAS VALVE
GV	GAS VALVE TO BE ABANDONED
□	EXISTING SQUARE CATCH BASIN
□	SQUARE CATCH BASIN TO BE ABANDONED
Ⓢ	EXISTING SANITARY SEWER MANHOLE
©	CLEANOUT TO BE ABANDONED
©	PROPOSED CLEANOUT
	EXISTING DECIDUOUS TREE
	EXISTING CONIFEROUS TREE
	EXISTING BUSH
	EXISTING TREE
	EXISTING SIGN
	EXISTING GATE POST
	MONITORING WELL
	TEMPORARY SURFACE DRAINAGE CHANNEL (SEE DETAIL 1/C–12)

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE: TOPOGRAPHIC INFORMATION BASED ON SURVEYS BY C.T. MALE ASSOCIATES. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE (FIPSZONE: 3102), NORTH AMERICAN DATUM 1983 (NAD83(86)) AND VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88), US SURVEY FEET.

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING, IN ANY WAY, IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 145, SECTION 7209.2

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES
0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · LICENSED PROFESSIONAL ENGINEER · 086812

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 10/21/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: CAZ	DATE: 10/21/13	
APPD: BTS	DATE: 10/21/13	
SCALE:	AS SHOWN	

ISH INC. environmental consultants

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

SITE PREPARATION PLAN

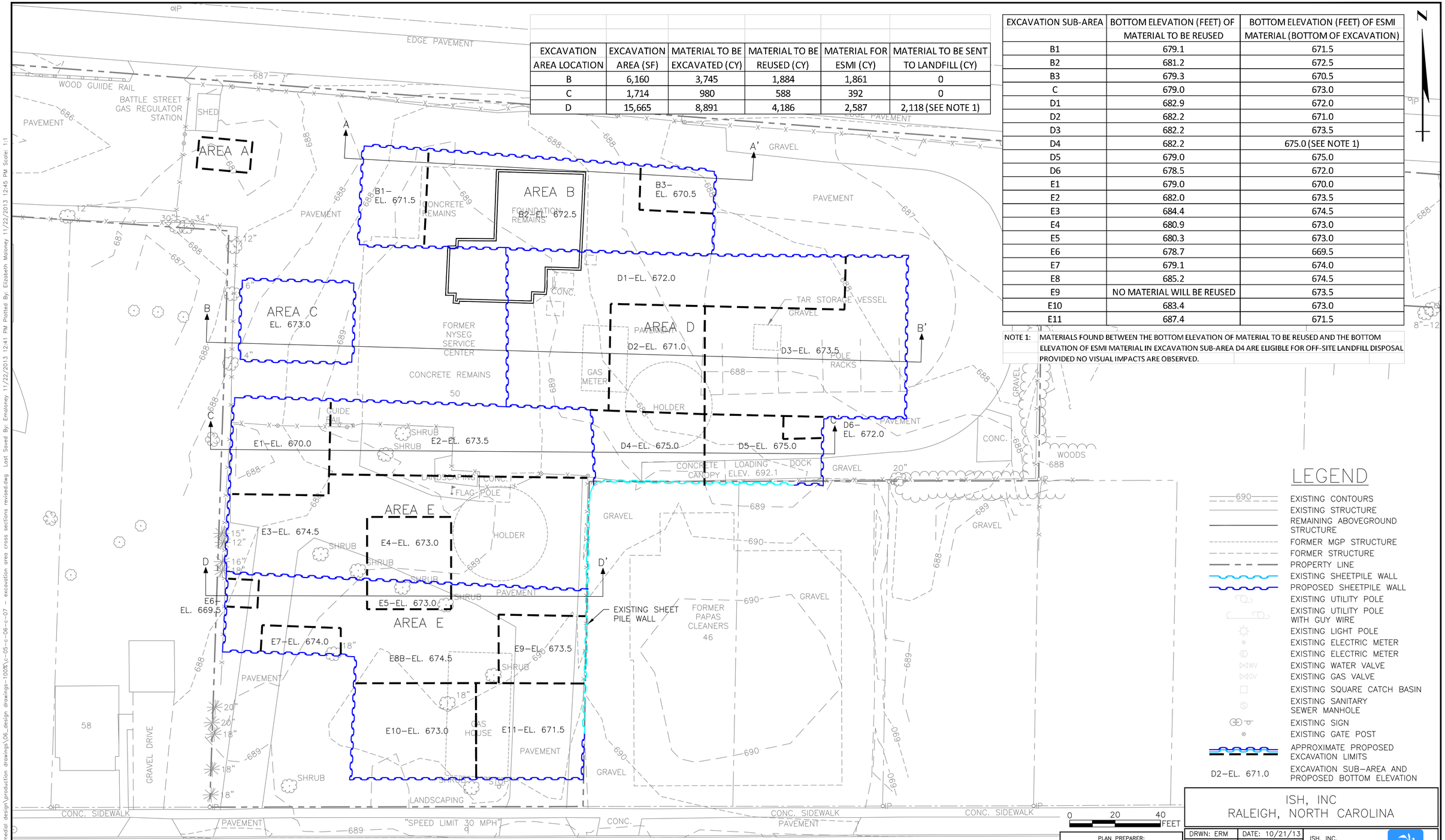
PROJECT NO: 08–717

C–04

EXCAVATION AREA LOCATION	EXCAVATION AREA (SF)	MATERIAL TO BE EXCAVATED (CY)	MATERIAL TO BE REUSED (CY)	MATERIAL FOR ESMI (CY)	MATERIAL TO BE SENT TO LANDFILL (CY)
B	6,160	3,745	1,884	1,861	0
C	1,714	980	588	392	0
D	15,665	8,891	4,186	2,587	2,118 (SEE NOTE 1)

EXCAVATION SUB-AREA	BOTTOM ELEVATION (FEET) OF MATERIAL TO BE REUSED	BOTTOM ELEVATION (FEET) OF ESMI MATERIAL (BOTTOM OF EXCAVATION)
B1	679.1	671.5
B2	681.2	672.5
B3	679.3	670.5
C	679.0	673.0
D1	682.9	672.0
D2	682.2	671.0
D3	682.2	673.5
D4	682.2	675.0 (SEE NOTE 1)
D5	679.0	675.0
D6	678.5	672.0
E1	679.0	670.0
E2	682.0	673.5
E3	684.4	674.5
E4	680.9	673.0
E5	680.3	673.0
E6	678.7	669.5
E7	679.1	674.0
E8	685.2	674.5
E9	NO MATERIAL WILL BE REUSED	673.5
E10	683.4	673.0
E11	687.4	671.5

NOTE 1: MATERIALS FOUND BETWEEN THE BOTTOM ELEVATION OF MATERIAL TO BE REUSED AND THE BOTTOM ELEVATION OF ESMI MATERIAL IN EXCAVATION SUB-AREA D4 ARE ELIGIBLE FOR OFF-SITE LANDFILL DISPOSAL PROVIDED NO VISUAL IMPACTS ARE OBSERVED.



LEGEND

- 690 — EXISTING CONTOURS
- EXISTING STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- EXISTING SHEETPILE WALL
- PROPOSED SHEETPILE WALL
- EXISTING UTILITY POLE
- EXISTING UTILITY POLE WITH GUY WIRE
- EXISTING LIGHT POLE
- EXISTING ELECTRIC METER
- EXISTING ELECTRIC METER
- WV — EXISTING WATER VALVE
- GV — EXISTING GAS VALVE
- EXISTING SQUARE CATCH BASIN
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SIGN
- EXISTING GATE POST
- APPROXIMATE PROPOSED EXCAVATION LIMITS
- D2–EL. 671.0 — EXCAVATION SUB-AREA AND PROPOSED BOTTOM ELEVATION

0 20 40 FEET

NOTE:
1. AREA A WILL NOT BE EXCAVATED DUE TO ITS CLOSE PROXIMITY TO THE GAS REGULATOR STATION.
2. FOR CROSS SECTIONS SEE DRAWINGS C–06 AND C–07.

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 10/21/13
CHKD: BSR	DATE: 10/21/13
APPD: BTS	DATE: 10/21/13
SCALE: AS SHOWN	

ISH, INC.
8404 SIX FORKS ROAD,
SUITE 203,
RALEIGH, NC 27615

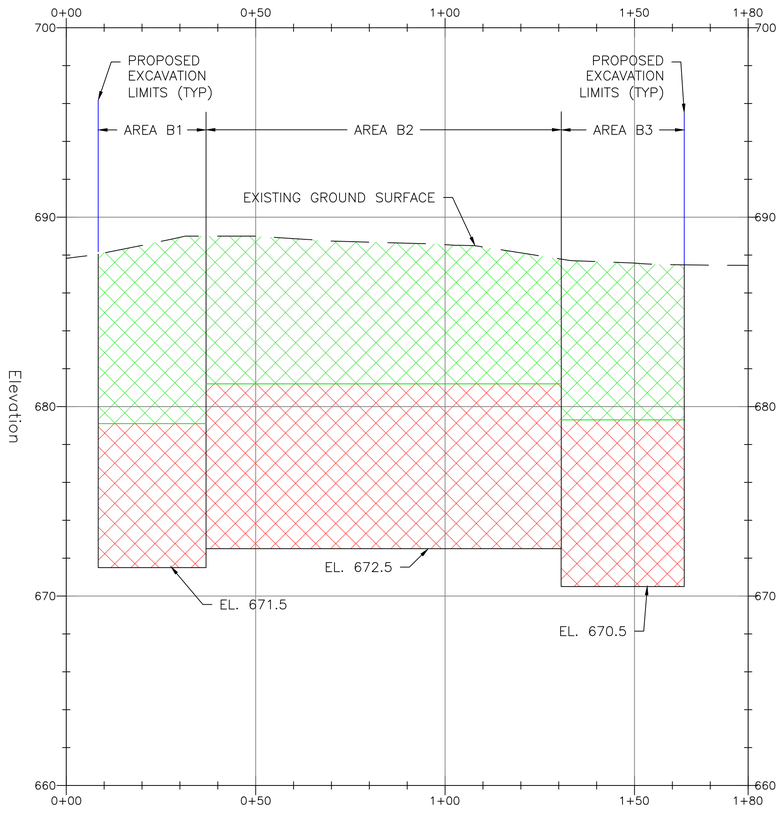
100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

SOIL EXCAVATION PLAN

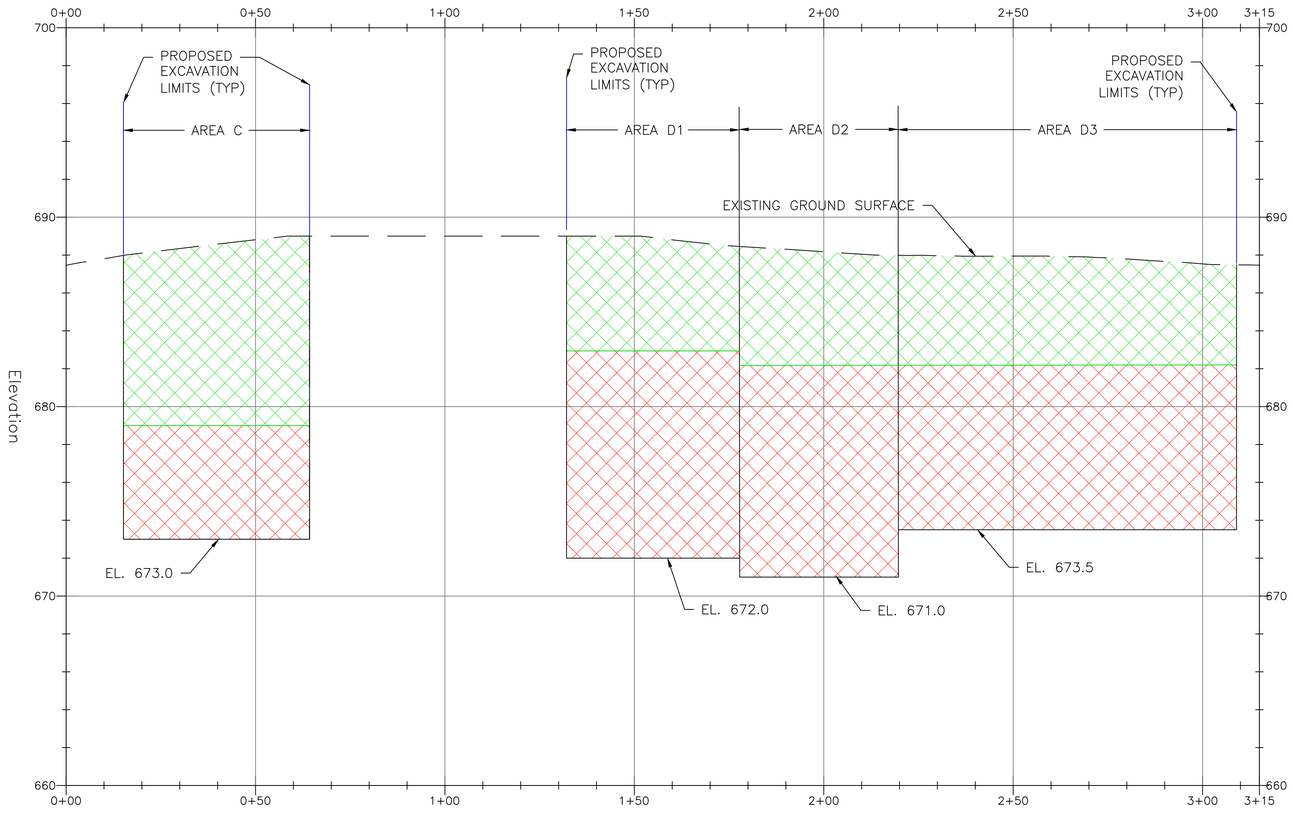
PROJECT NO: 08–717

C–05

A – A'



B – B'



LEGEND

- EXISTING GROUND SURFACE
- PROPOSED BOTTOM OF EXCAVATION
- PROPOSED SOIL EXCAVATION FOR ON–SITE REUSE
- PROPOSED SOIL EXCAVATION FOR OFF–SITE LANDFILL DISPOSAL
- PROPOSED SOIL EXCAVATION FOR OFF–SITE THERMAL TREATMENT AND DISPOSAL

V: 0 4 8 FEET

H: 0 20 40 FEET

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: JDC	DATE: 10/21/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: BSR	DATE: 10/21/13	
APPD: BTS	DATE: 10/21/13	
SCALE: AS SHOWN		

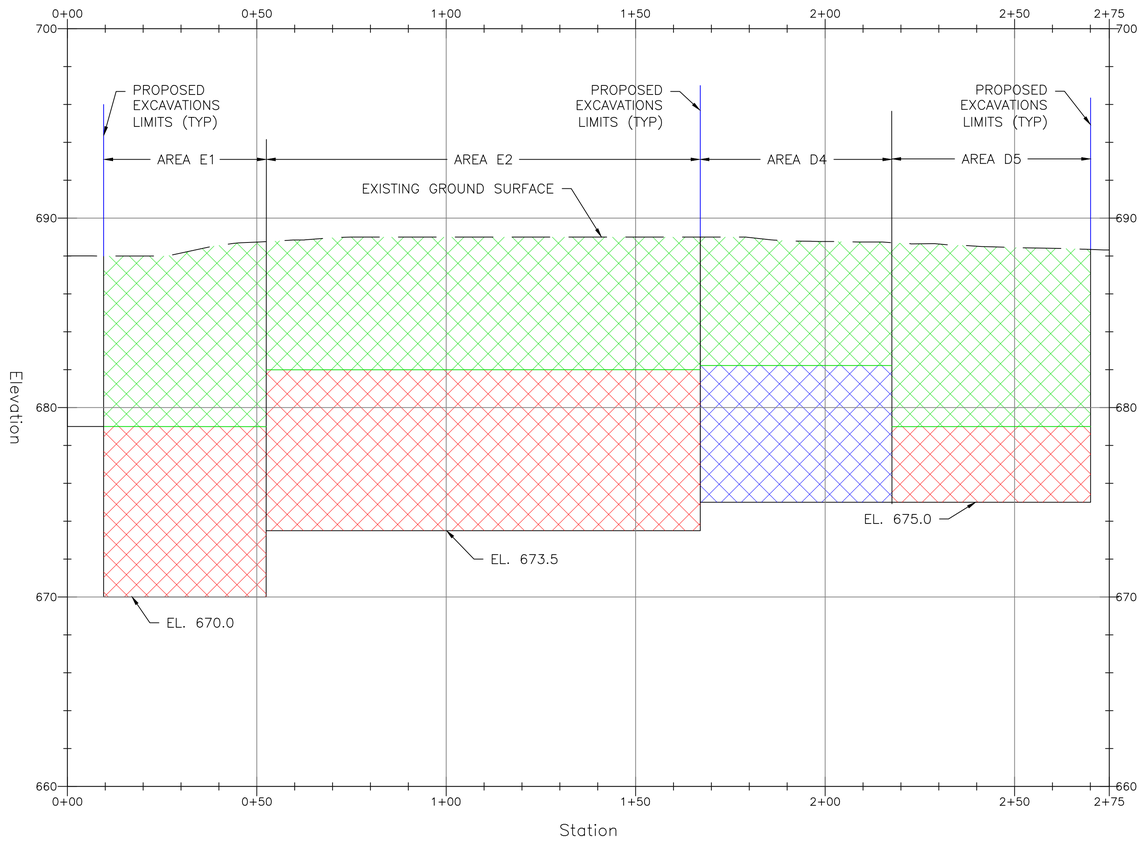
100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

NORTH EXCAVATION AREA CROSS SECTIONS

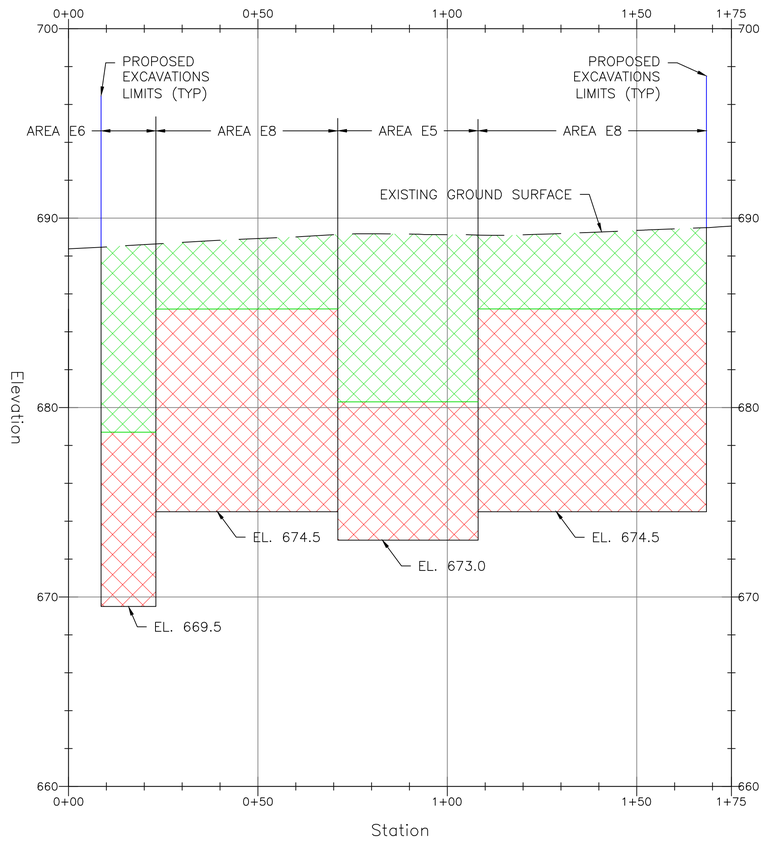
PROJECT NO: 08–717

C–06

C – C'



D – D'



LEGEND

- EXISTING GROUND SURFACE
- PROPOSED BOTTOM OF EXCAVATION
- PROPOSED SOIL EXCAVATION FOR ON–SITE REUSE
- PROPOSED SOIL EXCAVATION FOR OFF–SITE LANDFILL DISPOSAL
- PROPOSED SOIL EXCAVATION FOR OFF–SITE THERMAL TREATMENT AND DISPOSAL

V: 0 4 8 FEET

H: 0 20 40 FEET

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: JDC	DATE: 10/21/13
CHKD: BSR	DATE: 10/21/13
APPD: BTS	DATE: 10/21/13
SCALE:	AS SHOWN

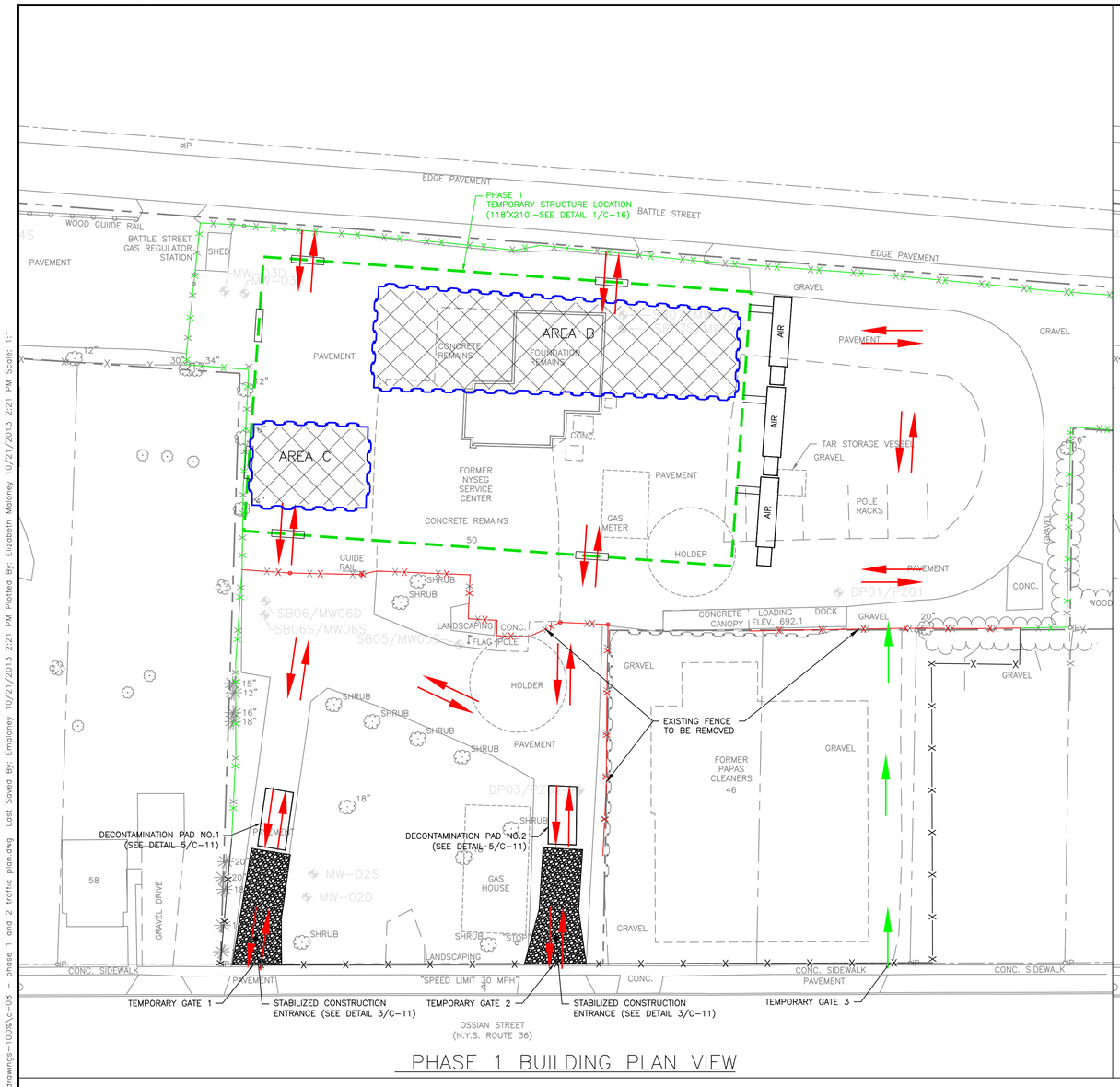
ISH, INC.
8404 SIX FORKS ROAD,
SUITE 203,
RALEIGH, NC 27615

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

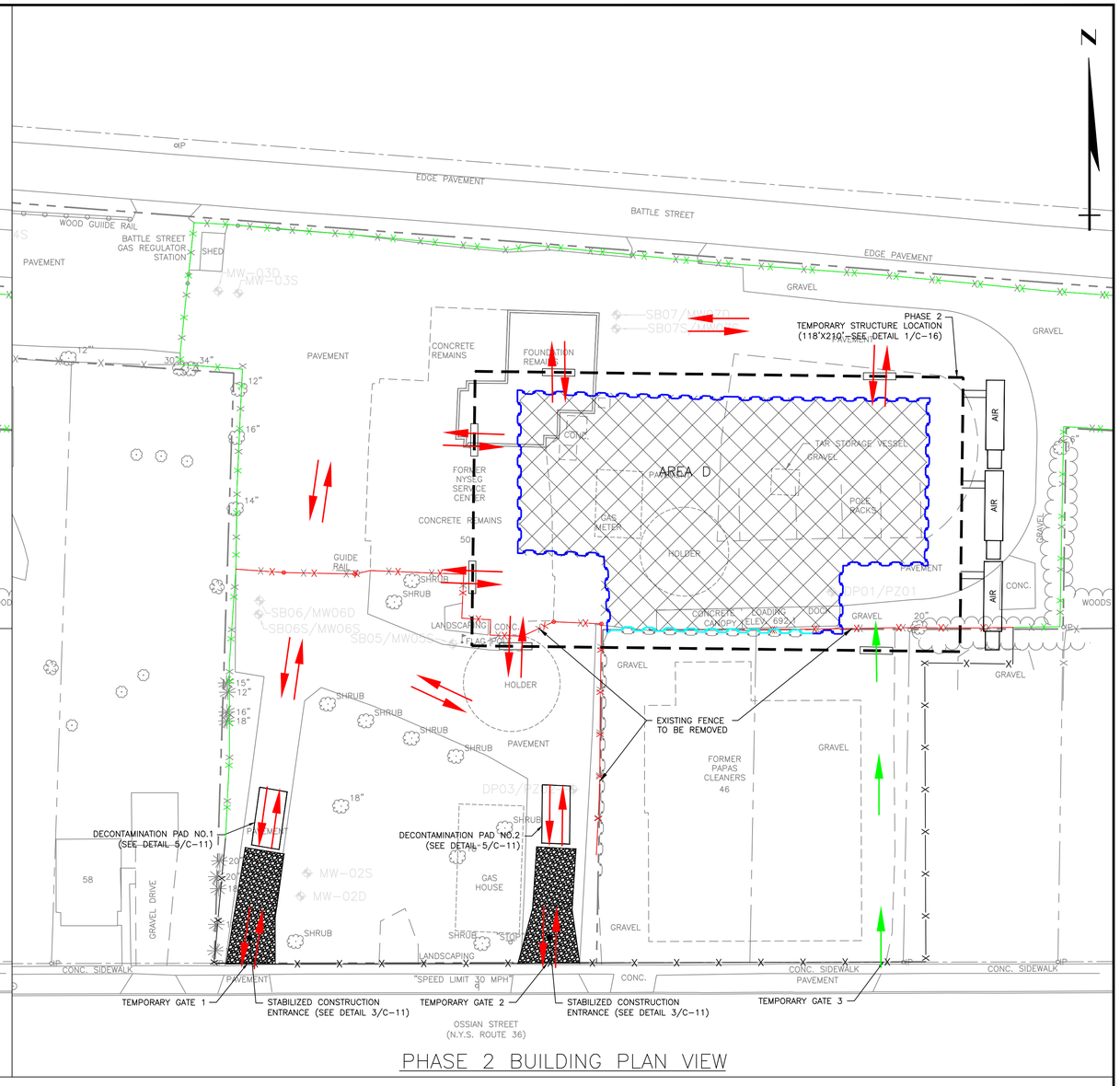
SOUTH EXCAVATION AREA
CROSS SECTIONS

PROJECT NO: 08–717

C–07



PHASE 1 BUILDING PLAN VIEW



PHASE 2 BUILDING PLAN VIEW

LEGEND

- EXISTING STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- EXISTING FENCE LINE
- TEMPORARY FENCE WITH VISUAL BARRIER (SEE DETAIL 4/C-11)
- EXISTING FENCE WITH VISUAL BARRIER
- EXISTING FENCE LINE TO BE REMOVED
- EXISTING SHEETPILE WALL
- PROPOSED SHEETPILE WALL (APPOX. 1,525 LF)
- PROPOSED EXCAVATION FOOTPRINT (SEE NOTE 1)
- PHASE 1 TEMPORARY STRUCTURE (118'x210')
- PHASE 2 TEMPORARY STRUCTURE (118'x210')
- MONITORING WELL
- AIR — AIR HANDLING SYSTEM (SEE DETAIL 2/C-16)
- TRAFFIC FLOW DIRECTION FOR ANY VEHICLE
- TRAFFIC FLOW DIRECTION FOR CLEAN BACKFILL TRUCKS/CLEAN EQUIPMENT ONLY
- 14'x14' OVERHEAD DOOR

NOTES:
1. DEWATERING SUMP PITS (SEE DETAIL 1/C-14) TO BE CONSTRUCTED IN EACH AREA.

0 30 60 FEET

REV #	DATE	DESCRIPTION	APPD
2			
1	06/11/13	GENERAL LAYOUT CHANGES INCLUDING TRAFFIC FLOW, SITE ENTRANCE LOCATIONS, TEMPORARY STRUCTURE DOOR LOCATIONS, AND AIR HANDLING UNIT LOCATIONS, ETC.	BTS

REFERENCE: TOPOGRAPHIC INFORMATION BASED ON SURVEYS BY C.T. MALE ASSOCIATES. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE (FIPSZONE: 3102), NORTH AMERICAN DATUM 1983 (NAD83(86)) AND VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88), US SURVEY FEET.

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 10/21/13
CHKD: CAZ	DATE: 10/21/13
APPD: BTS	DATE: 10/21/13
SCALE:	AS SHOWN

ISH, INC.
8404 SIX FORKS ROAD,
SUITE 203,
RALEIGH, NC 27615

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

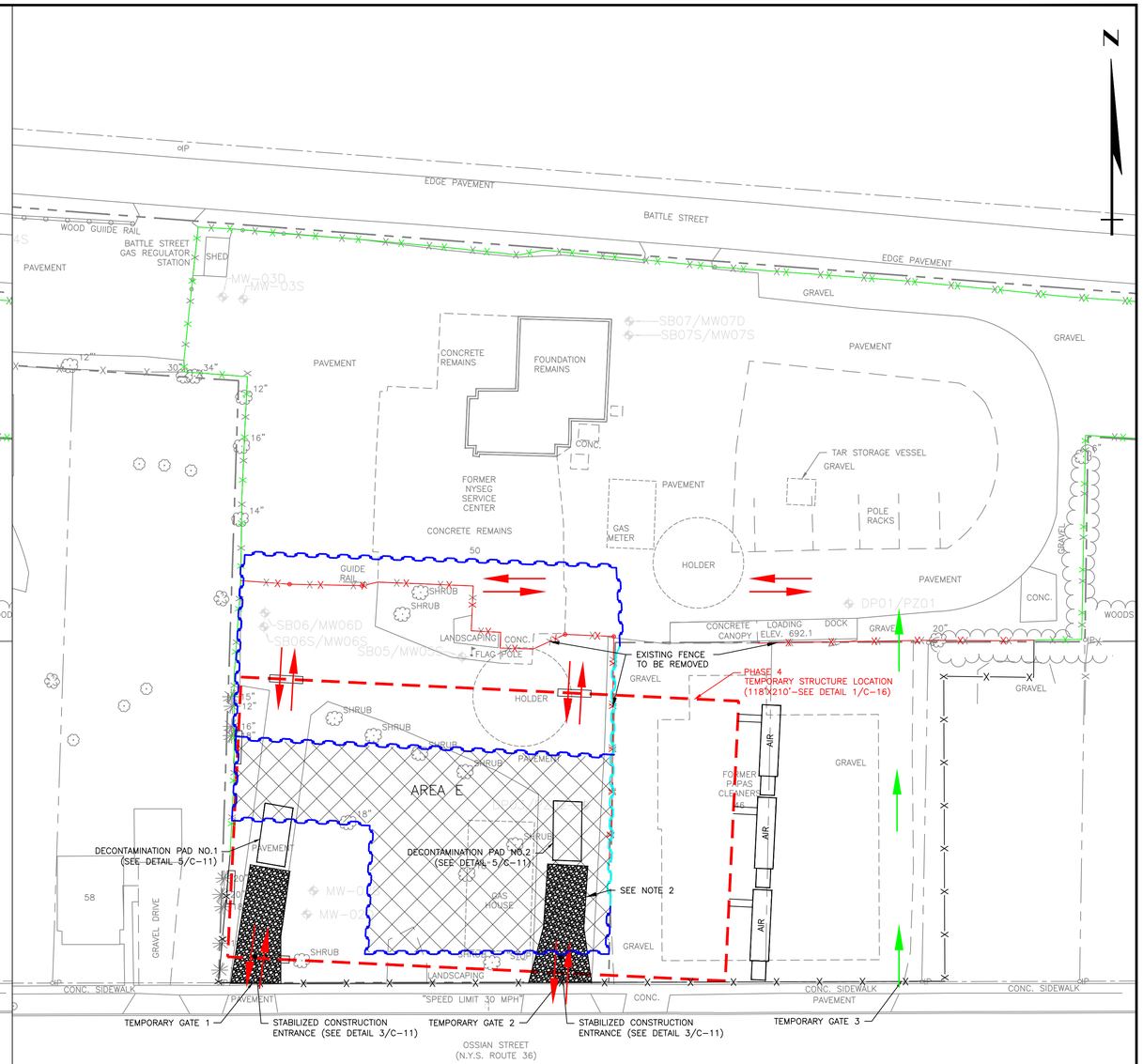
PHASES 1 AND 2
TRAFFIC PLAN

PROJECT NO: 08-717

C-08

y:\05civil\dansville\2013 dansville remedial design\production drawings\06_design drawings-100%\c-08 - phase 1 and 2 traffic plan.dwg Last Saved By: Emaloney 10/21/2013 2:21 PM Plotted By: Elizabeth Maloney 10/21/2013 2:21 PM Scale: 1:1

PHASE 3 BUILDING PLAN VIEW



PHASE 4 BUILDING PLAN VIEW

LEGEND

- EXISTING STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- EXISTING FENCE LINE
- TEMPORARY FENCE WITH VISUAL BARRIER (SEE DETAIL 4/C-11)
- EXISTING FENCE WITH VISUAL BARRIER
- EXISTING FENCE LINE TO BE REMOVED
- EXISTING SHEETPILE WALL
- PROPOSED SHEETPILE WALL (APPOX. 1,525 LF)
- PROPOSED EXCAVATION FOOTPRINT (SEE NOTE 1)
- PHASE 3 TEMPORARY STRUCTURE (118'x210')
- PHASE 4 TEMPORARY STRUCTURE (118'x210')
- MONITORING WELL
- AIR — AIR HANDLING SYSTEM (SEE DETAIL 2/C-16)
- TRAFFIC FLOW DIRECTION FOR ANY VEHICLE
- TRAFFIC FLOW DIRECTION FOR CLEAN BACKFILL TRUCKS/CLEAN EQUIPMENT ONLY
- 14'x14' OVERHEAD DOOR

NOTES:
1. DEWATERING SUMP PITS (SEE DETAIL 1/C-14) TO BE CONSTRUCTED IN EACH AREA.
2. TEMPORARY GATE 2 WILL NOT BE UTILIZED BY TRUCKS TRANSPORTING SOIL OFF-SITE FOR DISPOSAL AFTER REMOVAL OF THE DECONTAMINATION PAD DURING AREA E EXCAVATION.

REV #	DATE	DESCRIPTION	APPD
2			
1	06/11/13	GENERAL LAYOUT CHANGES INCLUDING TRAFFIC FLOW, SITE ENTRANCE LOCATIONS, TEMPORARY STRUCTURE DOOR LOCATIONS, AND AIR HANDLING UNIT LOCATIONS, ETC.	BTS

REFERENCE: TOPOGRAPHIC INFORMATION BASED ON SURVEYS BY C.T. MALE ASSOCIATES. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE (FIPSZONE: 3102), NORTH AMERICAN DATUM 1983 (NAD83(86)) AND VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88), US SURVEY FEET.

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

0 30 60 FEET

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

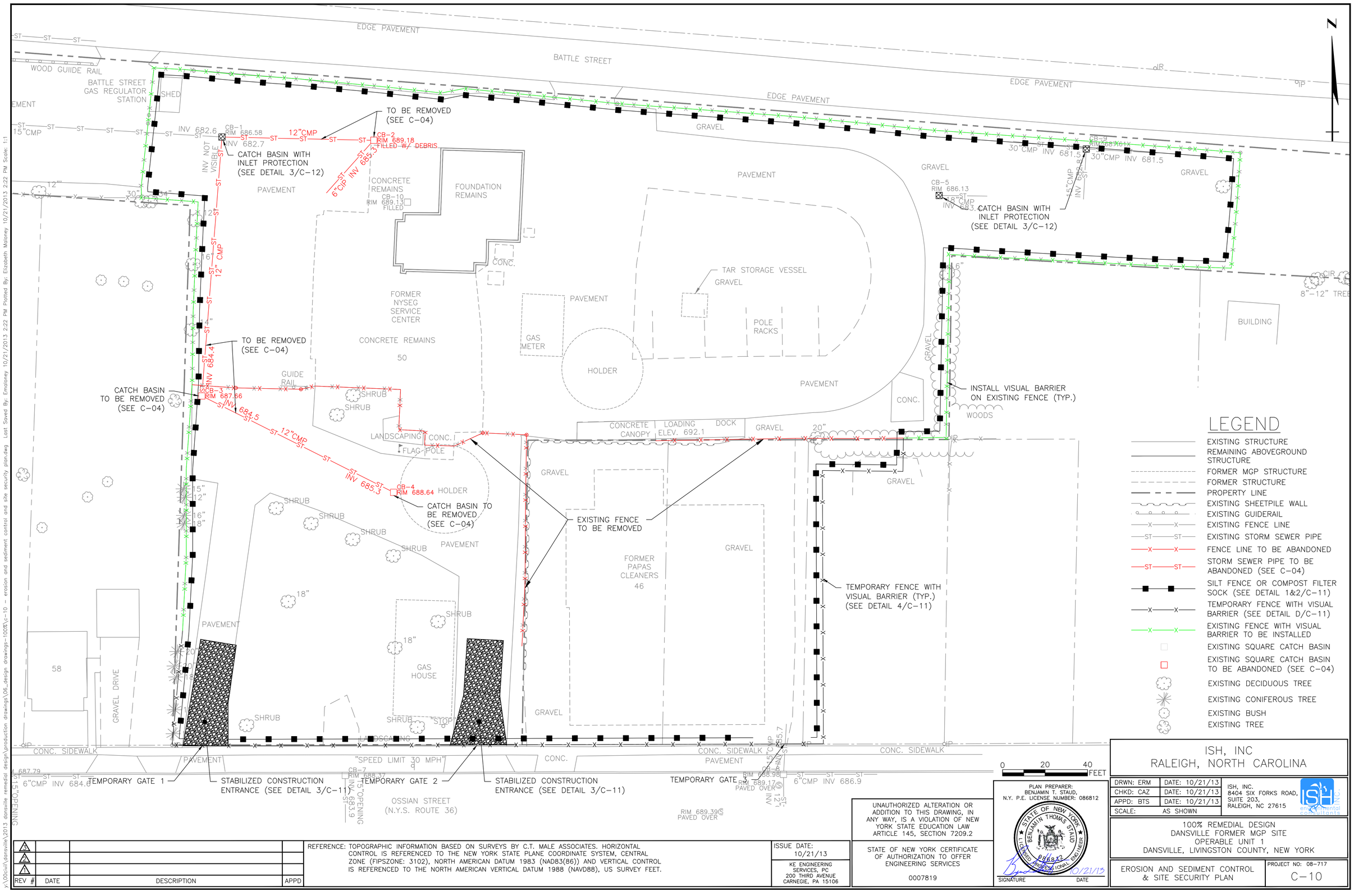
DRWN: ERM	DATE: 10/21/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: CAZ	DATE: 10/21/13	
APPD: BTS	DATE: 10/21/13	
SCALE:	AS SHOWN	

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

PHASES 3 AND 4 TRAFFIC PLAN

PROJECT NO: 08-717

C-09



LEGEND

- EXISTING STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- EXISTING SHEETPILE WALL
- EXISTING GUIDERAIL
- EXISTING FENCE LINE
- EXISTING STORM SEWER PIPE
- FENCE LINE TO BE ABANDONED
- STORM SEWER PIPE TO BE ABANDONED (SEE C-04)
- SILT FENCE OR COMPOST FILTER SOCK (SEE DETAIL 1&2/C-11)
- TEMPORARY FENCE WITH VISUAL BARRIER (SEE DETAIL D/C-11)
- EXISTING FENCE WITH VISUAL BARRIER TO BE INSTALLED
- EXISTING SQUARE CATCH BASIN
- EXISTING SQUARE CATCH BASIN TO BE ABANDONED (SEE C-04)
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- EXISTING BUSH
- EXISTING TREE

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE: TOPOGRAPHIC INFORMATION BASED ON SURVEYS BY C.T. MALE ASSOCIATES. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE (FIPSZONE: 3102), NORTH AMERICAN DATUM 1983 (NAD83(86)) AND VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88), US SURVEY FEET.

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

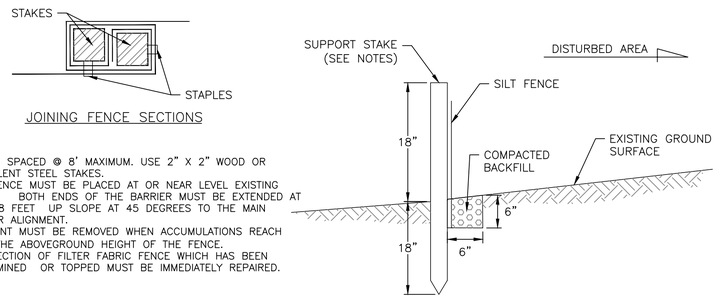
DRWN: ERM	DATE: 10/21/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615	
CHKD: CAZ	DATE: 10/21/13		
APPD: BTS	DATE: 10/21/13		
SCALE:	AS SHOWN		

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

EROSION AND SEDIMENT CONTROL & SITE SECURITY PLAN

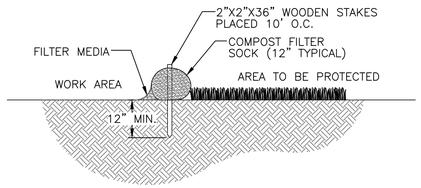
PROJECT NO: 08-717

C-10

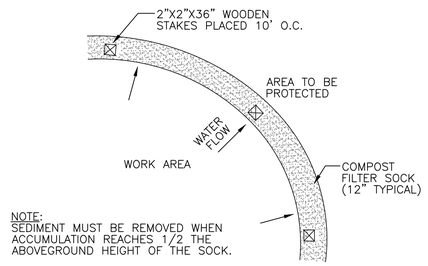


NOTES:
1. STAKES SPACED @ 8' MAXIMUM. USE 2" X 2" WOOD OR EQUIVALENT STEEL STAKES.
2. SILT FENCE MUST BE PLACED AT OR NEAR LEVEL EXISTING GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT.
3. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVEGROUND HEIGHT OF THE FENCE.
4. ANY SECTION OF FILTER FABRIC FENCE WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPAIRED.

1 / C-11 SILT FENCE DETAIL
N.T.S.



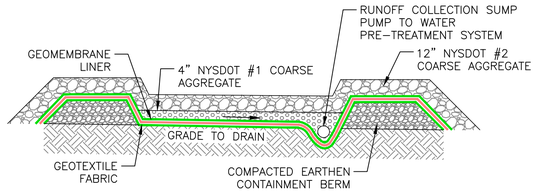
SECTION VIEW



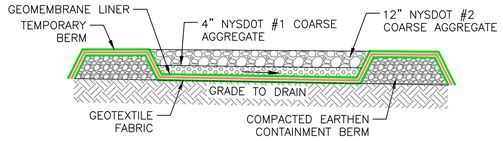
NOTE:
SEDIMENT MUST BE REMOVED WHEN ACCUMULATION REACHES 1/2 THE ABOVEGROUND HEIGHT OF THE SOCK.

PLAN VIEW

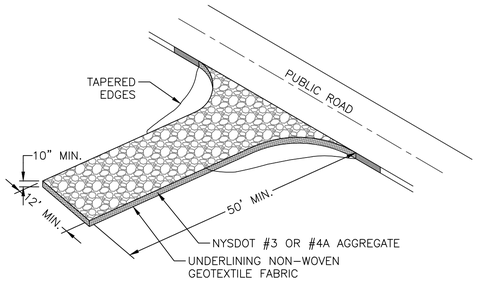
2 / C-11 COMPOST FILTER SOCK DETAIL
N.T.S.

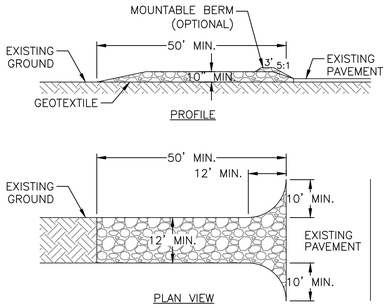


SECTION A–A

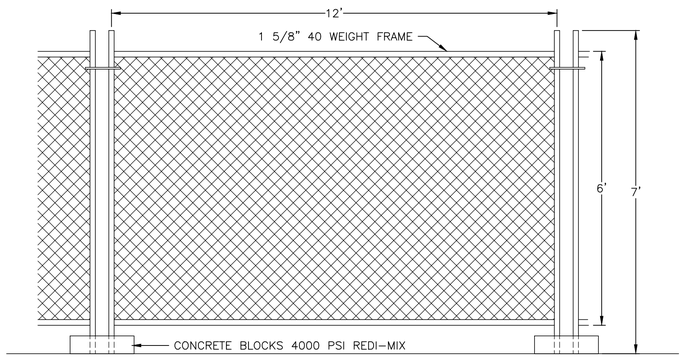


SECTION B–B

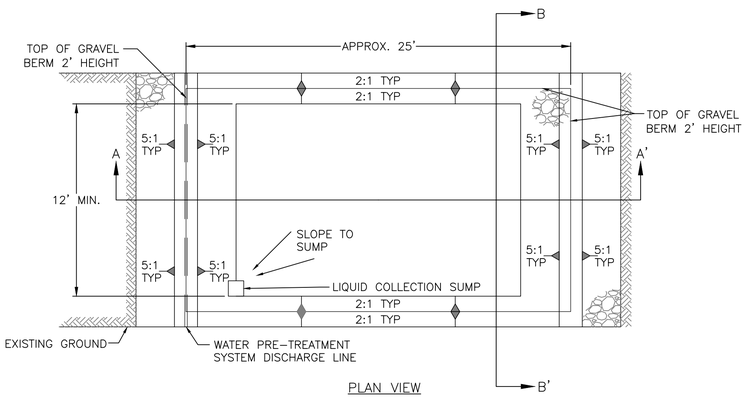




3 / C-11 STABILIZED CONSTRUCTION ENTRANCE
N.T.S.



4 / C-11 TEMPORARY FENCE DETAIL
N.T.S.



PLAN VIEW

NOTES:
WIDTH – TWELVE (12) FOOT MINIMUM.

MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.

WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

CONTRACTOR SHALL SUBMIT SHOP DRAWING FOR ENGINEER APPROVAL.

5 / C-11 DECONTAMINATION PAD
N.T.S.

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

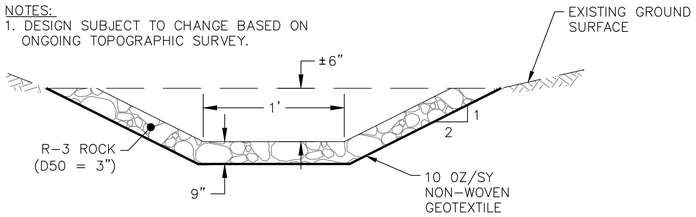
ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 10/21/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: CAZ	DATE: 10/21/13	
APPD: BTS	DATE: 10/21/13	
SCALE: AS SHOWN		

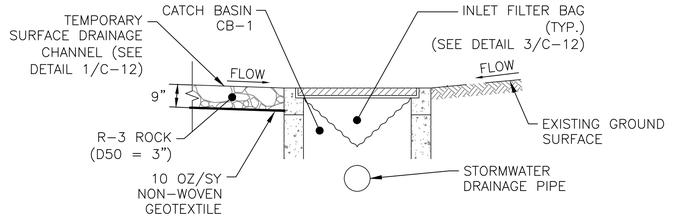
100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

EROSION AND SEDIMENT CONTROL AND SITE SECURITY DETAIL
SHEET 1 OF 2

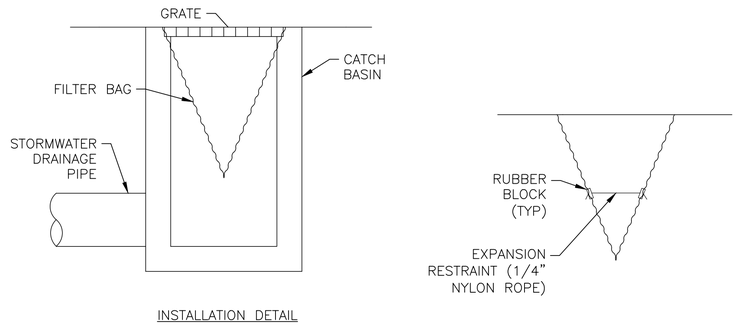
PROJECT NO: 08-717
C-11



1 C-12 **TEMPORARY SURFACE DRAINAGE CHANNEL DETAIL**
N.T.S.



2 C-12 **TEMPORARY SURFACE DRAINAGE CHANNEL TO CATCH BASIN TRANSITION DETAIL**
N.T.S.

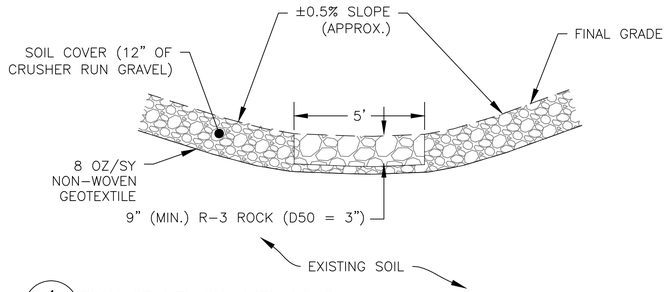


INSTALLATION DETAIL

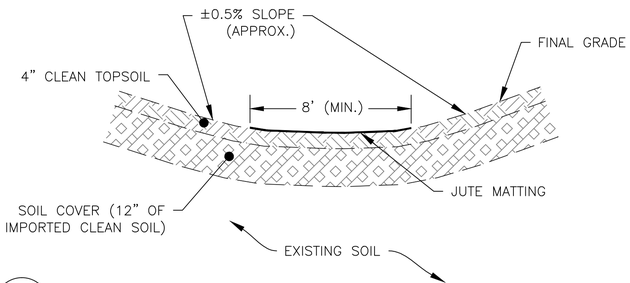
3 C-12 **CATCH BASIN INLET PROTECTION - INLET FILTER BAG (TYPE 'M' INLET)**
N.T.S.

NOTES:

1. MAXIMUM DRAINAGE AREA = ½ ACRE.
2. AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI., AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.
3. STORMWATER INLETS SHALL BE PROTECTED UNTIL THE TRIBUTARY AREAS ARE STABILIZED.
4. SEDIMENT SHALL BE REMOVED FROM INLET PROTECTION AFTER EACH RUNOFF EVENT.
5. CONTRACTOR TO REMOVE ALL INLET FILTER BAGS AFTER COMPLETION OF FINAL SITE RESTORATION AND PRIOR TO DEMOBILIZATION FROM SITE.



4 C-12 **FINAL GRAVEL CHANNEL LINING**
N.T.S.



5 C-12 **FINAL GRASS CHANNEL LINING**
N.T.S.

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES
0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

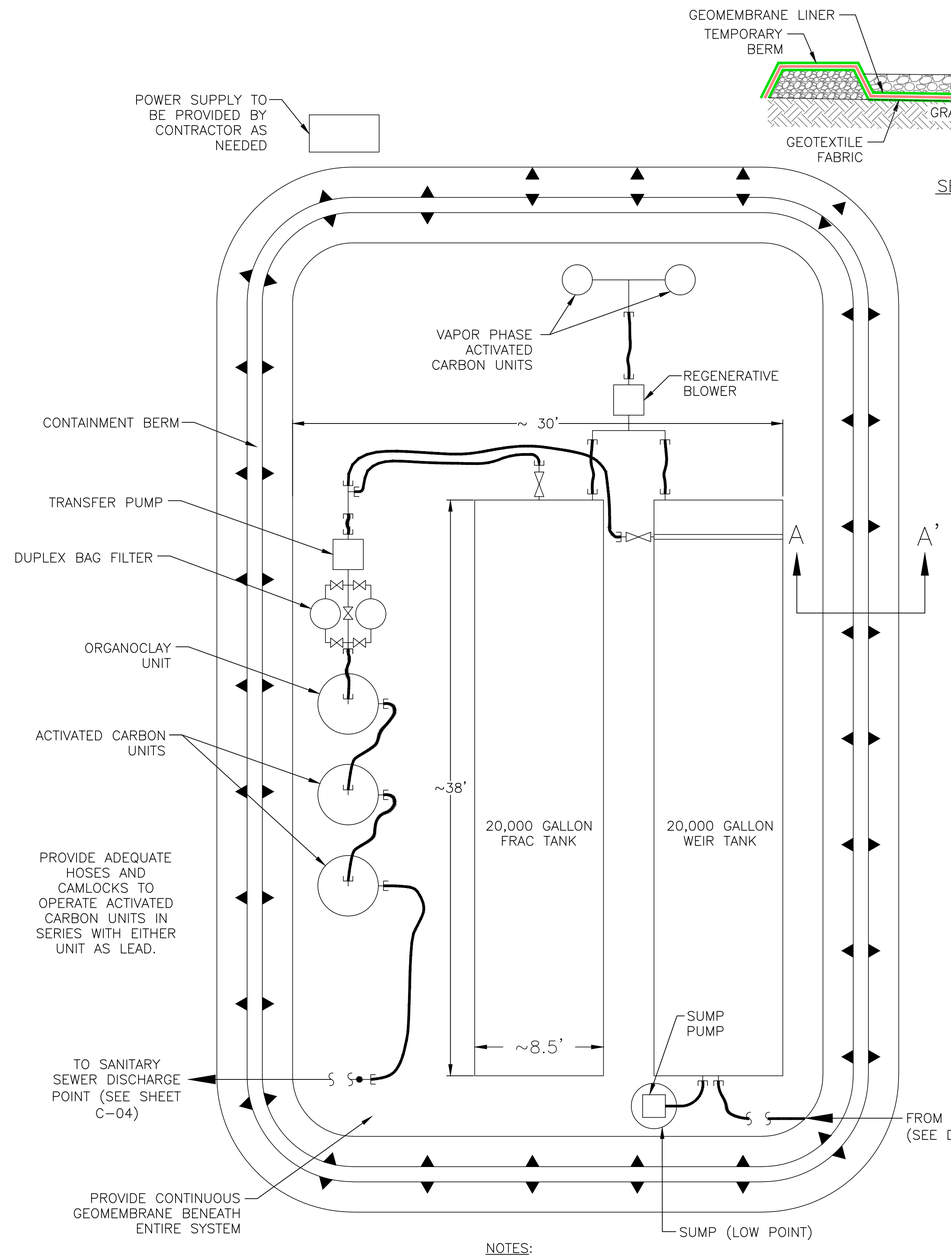
ISH, INC
RALEIGH, NORTH CAROLINA

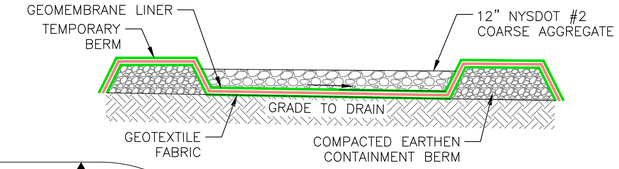
DRWN: ERM	DATE: 10/21/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: CAZ	DATE: 10/21/13	
APPD: BTS	DATE: 10/21/13	
SCALE:	AS SHOWN	

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

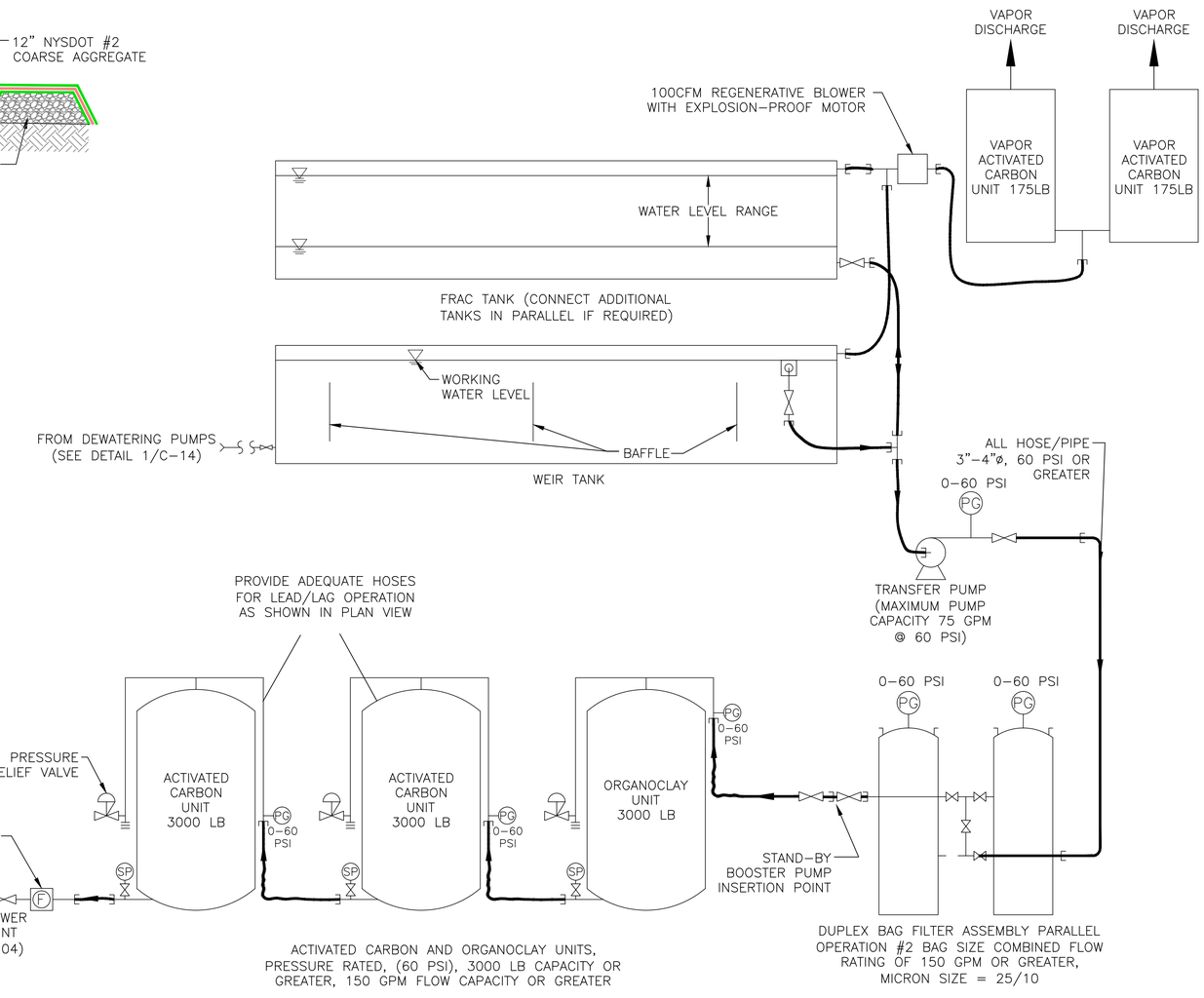
EROSION AND SEDIMENT CONTROL AND SITE SECURITY DETAILS
SHEET 2 OF 2

PROJECT NO: 08-717
C-12





SECTION A–A



ACTIVATED CARBON AND ORGANOCLAY UNITS, PRESSURE RATED, (60 PSI), 3000 LB CAPACITY OR GREATER, 150 GPM FLOW CAPACITY OR GREATER

DUPLEX BAG FILTER ASSEMBLY PARALLEL OPERATION #2 BAG SIZE COMBINED FLOW RATING OF 150 GPM OR GREATER, MICRON SIZE = 25/10

1 / C-13 PRE-TREATMENT SYSTEM LAYOUT PLAN
N.T.S.

3 / C-13 PROCESS FLOW DIAGRAM
N.T.S.

BOOSTER PUMP IF REQUIRED, PUMP CAPACITY 75 GPM @ 30 PSIG

2 / C-13 BOOSTER PUMP DETAIL
N.T.S.

LEGEND

- BALL VALVE
- CAMLOCK
- PG PRESSURE GAUGE
- F FLOW METER
- RUPTURE DISK
- PRESSURE RELIEF VALVE
- SP SAMPLING PORT

NOTES:
1. SYSTEM COMPONENTS AND OPERATION ARE SUBJECT TO POTW REQUIREMENTS.
2. CONTRACTOR TO MAINTAIN AN OPERATIONAL LOG FOR THE PRE-TREATMENT SYSTEM. CONTRACTOR SHALL RECORD TIMES OF OPERATION AND TOTALIZER READINGS.
3. TOTALIZING FLOW METER SHALL BE CAPABLE OF MEASURING FLOW RATES FOR 1 – 150 GPM. FLOW METER SHALL BE INSTALLED BETWEEN STRAIGHT PIPE RUNS (10 PIPE DIAMETERS UPSTREAM; 5 PIPE DIAMETERS DOWNSTREAM).
4. THE CONTRACTOR SHALL PROVIDE A PLAN THAT DESCRIBES PROCEDURES FOR MANAGEMENT AND DISPOSAL OF SPENT ACTIVATED CARBON AND ORGANOCLAY, INCLUDING IDENTIFICATION OF PROPOSED DISPOSAL FACILITIES. PROPOSED DISPOSAL FACILITIES ARE SUBJECT TO APPROVAL BY THE ENGINEER.
5. THE WEIR TANK AND FRAC TANK SHALL BE COVERED AT ALL TIMES.

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · LICENSED PROFESSIONAL ENGINEER

SIGNATURE DATE 10/21/13

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 10/21/13
CHKD: CAZ	DATE: 10/21/13
APPD: BTS	DATE: 10/21/13
SCALE:	AS SHOWN

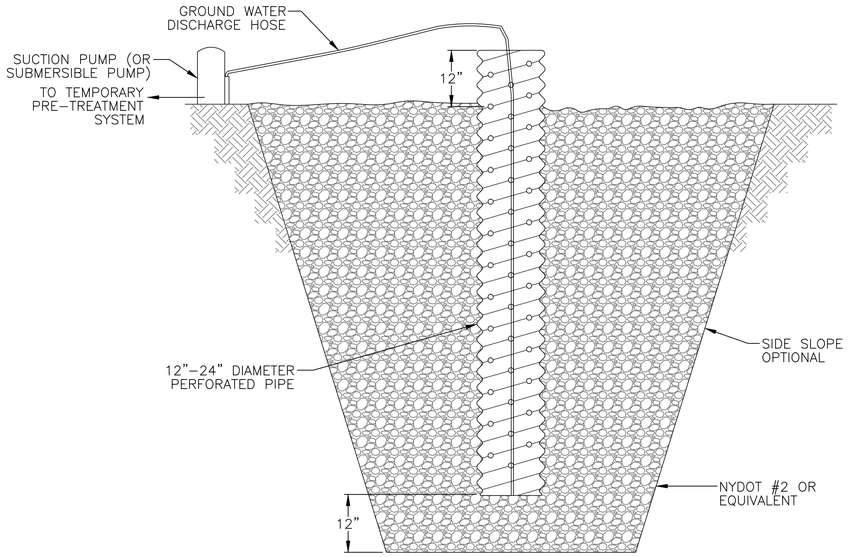
ISH, INC.
8404 SIX FORKS ROAD,
SUITE 203,
RALEIGH, NC 27615

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

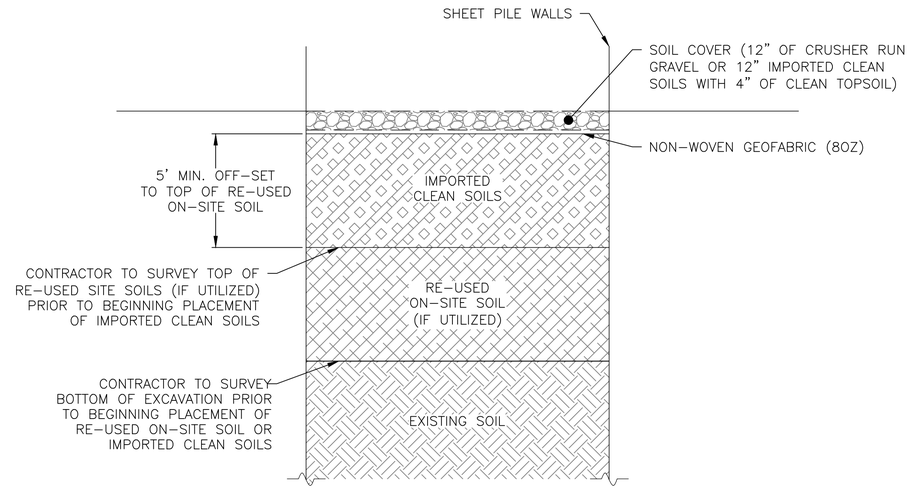
WATER PRE-TREATMENT SYSTEM PLAN VIEW & FLOW DIAGRAM

PROJECT NO: 08-717

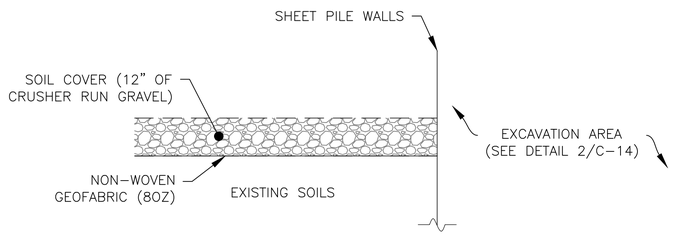
C-13



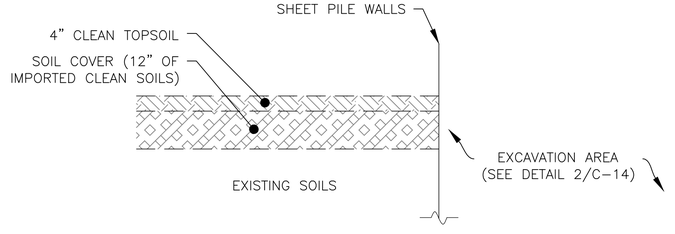
1 / C-14 DEWATERING SUMP PIT DETAIL
N.T.S.



2 / C-14 EXCAVATION AREA BACKFILL DETAIL
N.T.S.



3 / C-14 GRAVEL SOIL COVER
N.T.S.



4 / C-14 TOPSOIL SOIL COVER
N.T.S.

DEWATERING SUMP PIT NOTES

1. PIT DIMENSIONS ARE OPTIONAL.
2. THE STANDPIPE SHOULD BE CONSTRUCTED BY PERFORATING A 12-24" DIAMETER PIPE WITH 3/4" HOLES (4" CENTER TO CENTER SPACING).
3. A BASE OF NYDOT #2 OR EQUIVALENT AGGREGATE SHOULD BE PLACED IN THE PIT TO A DEPTH OF 12". AFTER INSTALLING THE STANDPIPE, THE PIT SURROUNDING THE STANDPIPE SHOULD BE BACKFILLED WITH NYDOT #2 AGGREGATE OR EQUIVALENT.
4. THE STANDPIPE SHOULD EXTEND 12-18" ABOVE THE LIP OF THE PIT.
5. THE STANDPIPE SHOULD BE WRAPPED WITH FILTERCLOTH BEFORE INSTALLATION. IF DESIRED, 1/4"-1/2" HARDWARE CLOTH MAY BE PLACED AROUND THE STANDPIPE, PRIOR TO ATTACHING THE FILTERCLOTH.
6. A DEWATERING SUMP (MINIMUM OF ONE) SHALL BE INSTALLED IN EACH AREA OF EXCAVATION (B-E), AT LOCATIONS THAT WILL BE SUBJECT TO APPROVAL BY THE ENGINEER. SUMPS SHALL EXTEND TO A DEPTH OF ONE FOOT BELOW THE BOTTOM OF THE OVERALL EXCAVATION AREA, AND WILL BE INSTALLED PRIOR TO THE COMMENCEMENT OF EXCAVATION.

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK BENJAMIN THOMAS STAUD 086812 LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 10/21/13
CHKD: CAZ	DATE: 10/21/13
APPD: BTS	DATE: 10/21/13
SCALE: AS SHOWN	

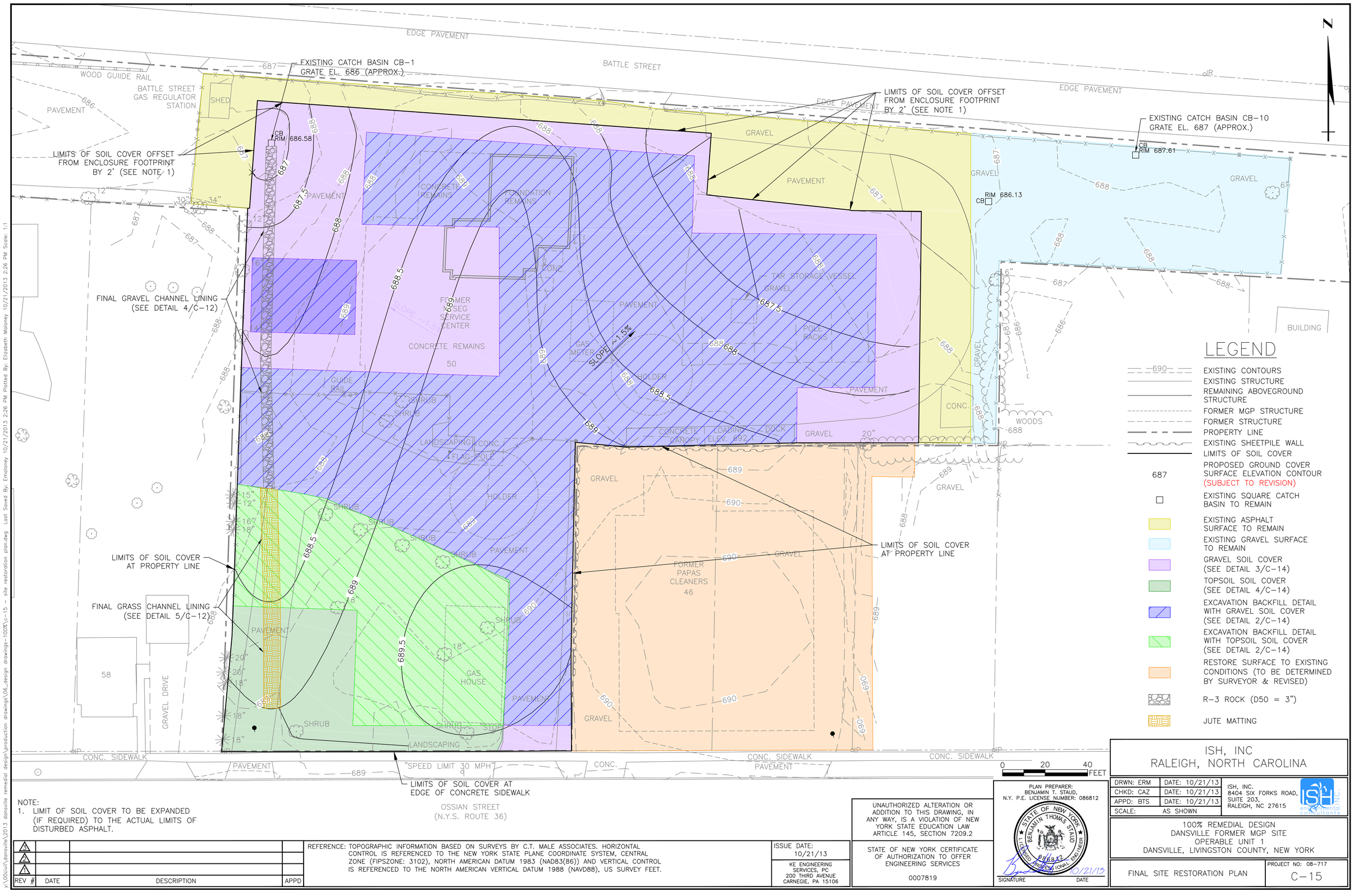
ISH, INC.
8404 SIX FORKS ROAD,
SUITE 203,
RALEIGH, NC 27615

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

DETAILS

PROJECT NO: 08-717

C-14



LEGEND

- EXISTING CONTOURS (690)
- EXISTING STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- EXISTING SHEETPILE WALL
- LIMITS OF SOIL COVER
- 687 — PROPOSED GROUND COVER SURFACE ELEVATION CONTOUR (SUBJECT TO REVISION)
- EXISTING SQUARE CATCH BASIN TO REMAIN
- EXISTING ASPHALT SURFACE TO REMAIN
- EXISTING GRAVEL SURFACE TO REMAIN
- GRAVEL SOIL COVER (SEE DETAIL 3/C-14)
- TOPSOIL SOIL COVER (SEE DETAIL 4/C-14)
- EXCAVATION BACKFILL DETAIL WITH GRAVEL SOIL COVER (SEE DETAIL 2/C-14)
- EXCAVATION BACKFILL DETAIL WITH TOPSOIL SOIL COVER (SEE DETAIL 2/C-14)
- RESTORE SURFACE TO EXISTING CONDITIONS (TO BE DETERMINED BY SURVEYOR & REVISED)
- R-3 ROCK (D50 = 3")
- JUTE MATTING

NOTE:
1. LIMIT OF SOIL COVER TO BE EXPANDED (IF REQUIRED) TO THE ACTUAL LIMITS OF DISTURBED ASPHALT.

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE: TOPOGRAPHIC INFORMATION BASED ON SURVEYS BY C.T. MALE ASSOCIATES. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE (FIPSZONE: 3102), NORTH AMERICAN DATUM 1983 (NAD83(86)) AND VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88), US SURVEY FEET.

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK BENJAMIN THOMAS STAUD LICENSED PROFESSIONAL ENGINEER 086812

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 10/21/13
CHKD: CAZ	DATE: 10/21/13
APPD: BTS	DATE: 10/21/13
SCALE:	AS SHOWN

ISH, INC.
8404 SIX FORKS ROAD,
SUITE 203,
RALEIGH, NC 27615

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

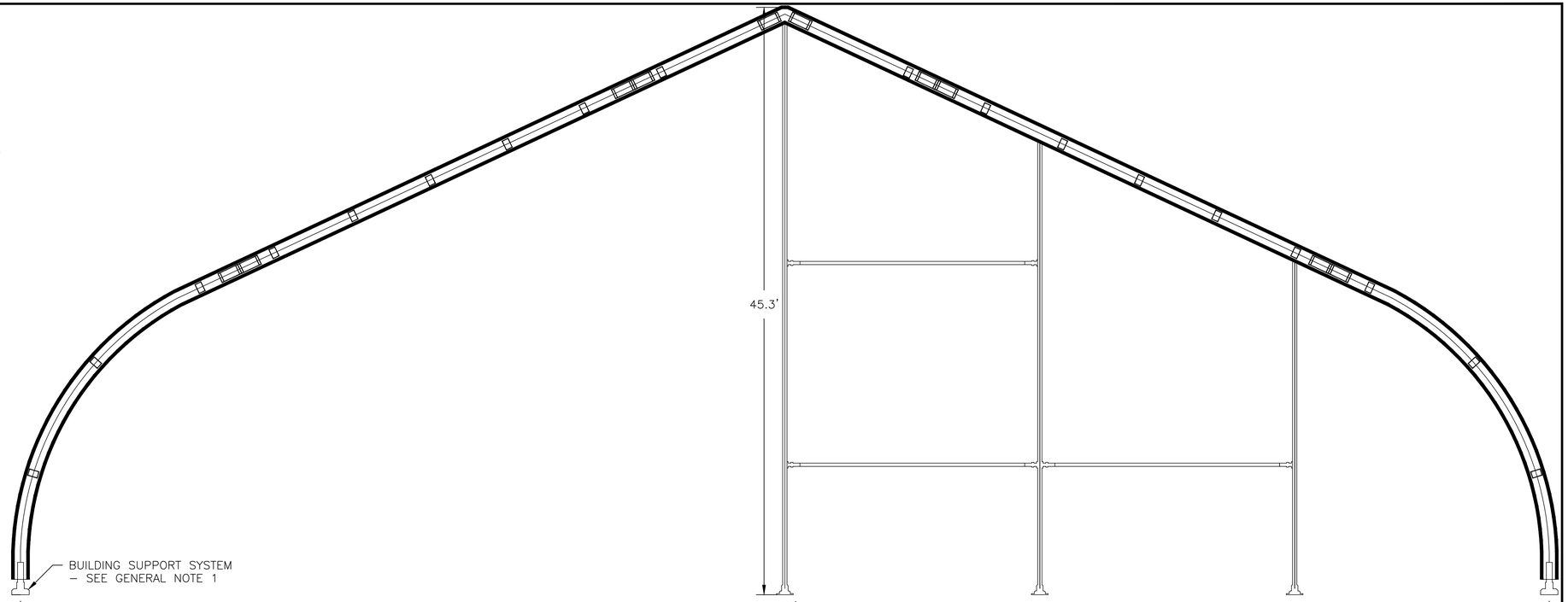
FINAL SITE RESTORATION PLAN

PROJECT NO: 08-717

C-15

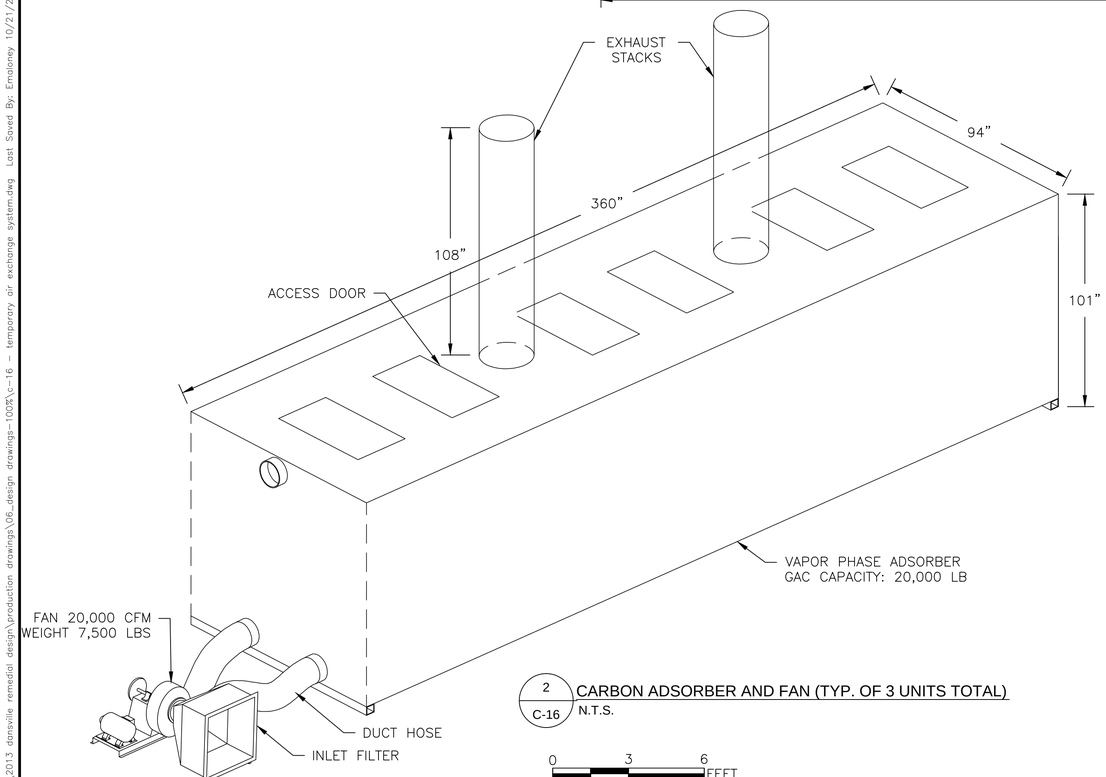
GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF AN INDEPENDENT HORIZONTAL/VERTICAL SUPPORT SYSTEM (FOUNDATION) FOR THE PORTABLE BUILDING ENCLOSURE (ENCLOSURE). AT LEAST 2 WEEKS PRIOR TO COMMENCEMENT OF CONSTRUCTION THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER APPROPRIATE DRAWINGS AND SPECIFICATIONS THAT FULLY DEPICT THE FOUNDATION. THE FOUNDATION SHALL INCLUDE MATERIALS AND METHODS REQUIRED TO SUPPORT THE ENCLOSURE WITHOUT LOAD TRANSFER TO THE ADJACENT TEMPORARY EXCAVATION SUPPORT SYSTEM (I.E., STEEL SHEET PILE WALL), WHICH SHALL BE DEMONSTRATED IN THE SUBMITTAL THROUGH ENGINEERING CALCULATIONS. THE SUBMITTAL SHALL BE PREPARED AND STAMPED BY A PROFESSIONAL ENGINEER CURRENTLY LICENSED IN THE STATE OF NEW YORK. THIS SUBMITTAL SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER, AND CONSTRUCTION SHALL NOT COMMENCE UNTIL SUCH APPROVAL IS ISSUED TO THE CONTRACTOR.
2. THE CONTRACTOR SHALL BE ADDITIONALLY RESPONSIBLE FOR VERIFICATION THAT THE PROPOSED LOCATION OF THE STEEL SHEET PILE WALL WILL NOT OBSTRUCT OR OTHERWISE INTERFERE WITH THE FOUNDATION OF THE ENCLOSURE (TO BE DESIGNED AND INSTALLED BY THE CONTRACTOR). THE CONTRACTOR SHALL IDENTIFY IN WRITING ANY SUCH OBSTRUCTIONS / INTERFERENCES TO THE ENGINEER AT LEAST ONE WEEK PRIOR TO BUILDING AND STEEL SHEET PILE WALL INSTALLATION.



1 / C-16 ALLSITE ENCLOSURE TFS R36M (118'X210')
N.T.S.

0 5 10 FEET



2 / C-16 CARBON ADSORBER AND FAN (TYP. OF 3 UNITS TOTAL)
N.T.S.

0 3 6 FEET

AIR HANDLING NOTES:

1. THE CONTRACTOR SHALL INSTALL A PORTABLE BUILDING ENCLOSURE (ENCLOSURE) AS MANUFACTURED BY ALLSITE STRUCTURES (MODEL TSF R36M 118'), OR AN ENGINEER APPROVED EQUAL. THE ENCLOSURE SHALL BE 210 FEET LONG. REFER TO DETAIL 1/C–16 AND MANUFACTURES INFORMATION FOR ADDITIONAL DETAILS.
2. AIR HANDLING OPERATIONS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT CONSISTING OF THREE (3) NB–20 NIXTOX BOXES, AS MANUFACTURED BY TIGG CORPORATION, OR AN ENGINEER APPROVED EQUAL. THE MAXIMUM FLOW FOR EACH NIXTOX BOX IS 20,000 CFM, THE MAXIMUM OPERATING PRESSURE IS ONE (1) PSIG, AND THE MAXIMUM CARBON USED IN EACH BOX SHALL BE 20,000 POUNDS, AND THE MINIMUM CARBON USED IN EACH BOX SHALL BE 15,000 POUNDS.
3. ALL THREE (3) NIXTOX BOXES MUST BE OPERATED TO MAINTAIN ADEQUATE FLOW; HOWEVER, IN THE EVENT THAT ONE (1) BOX FAILS, CONSTRUCTION ACTIVITIES MAY CONTINUE TEMPORARILY USING TWO (2) BOXES PROVIDED THE REAL–TIME CONTINUOUS AREA AIR MONITORING INSIDE THE ENCLOSURE INDICATES WORKING CONDITIONS ARE SAFE.
4. EACH NIXTOX BOX SHALL BE OPERATED BY A 100HP BLOWER AND THE CONTRACTOR IS ADVISED TO MINIMIZE THE SUCTION LOCATION TO MAXIMIZE THE PERFORMANCE OF THE BLOWER. THE CONTRACTOR SHALL PROVIDE ALL ELECTRICAL EQUIPMENT REQUIRED TO OPERATE EACH BLOWER. CONTRACTOR SHALL BARE ALL COSTS ASSOCIATED WITH INSTALLATION, OPERATION AND REMOVAL OF ALL ELECTRICAL SERVICES REQUIRED TO COMPLETE THE REMEDIATION WORK.
5. THE AIR HANDLING SYSTEM HAS BEEN DESIGNED TO ACHIEVE FOUR (4) COMPLETE AIR EXCHANGES WITHIN THE ENCLOSURE PER HOUR FOR A TOTAL OPERATING FLOW RATE OF APPROXIMATELY 49,000 CFM.
6. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING REAL–TIME CONTINUOUS AREA AIR MONITORING INSIDE THE ENCLOSURE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL PROVIDE AREA AIR MONITORING FOR CARBON MONOXIDE, PARTICULATES, AND VOLATILE ORGANIC CHEMICALS (VOC). THE CONTRACTOR MUST COMPLETE PERSONNEL MONITORING FOR CARBON MONOXIDE, PARTICULATES AND VOCS INITIALLY AND PERIODICALLY THROUGHOUT THE PROJECT.
7. IF ACTION LEVELS SET FORTH IN THE HEALTH AND SAFETY PLAN ARE EXCEEDED, CONSTRUCTION ACTIVITIES MUST STOP UNTIL CONCENTRATIONS HAVE DECREASED TO OPERATING LEVELS.
8. THE CONTRACTOR MUST IMPLEMENT WORK PROCEDURES AND CONTROLS TO MAINTAIN CARBON MONOXIDE, PARTICULATES, VOCS, AND OTHER POTENTIAL SUBSTANCES BELOW REGULATORY AND SOUND INDUSTRIAL HYGIENE BASED CONCENTRATIONS.

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

ISSUE DATE: 10/21/13

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

STATE OF NEW YORK · BENJAMIN THOMAS STAUD · 086812 · LICENSED PROFESSIONAL ENGINEER

SIGNATURE 10/21/13 DATE

ISH, INC
RALEIGH, NORTH CAROLINA

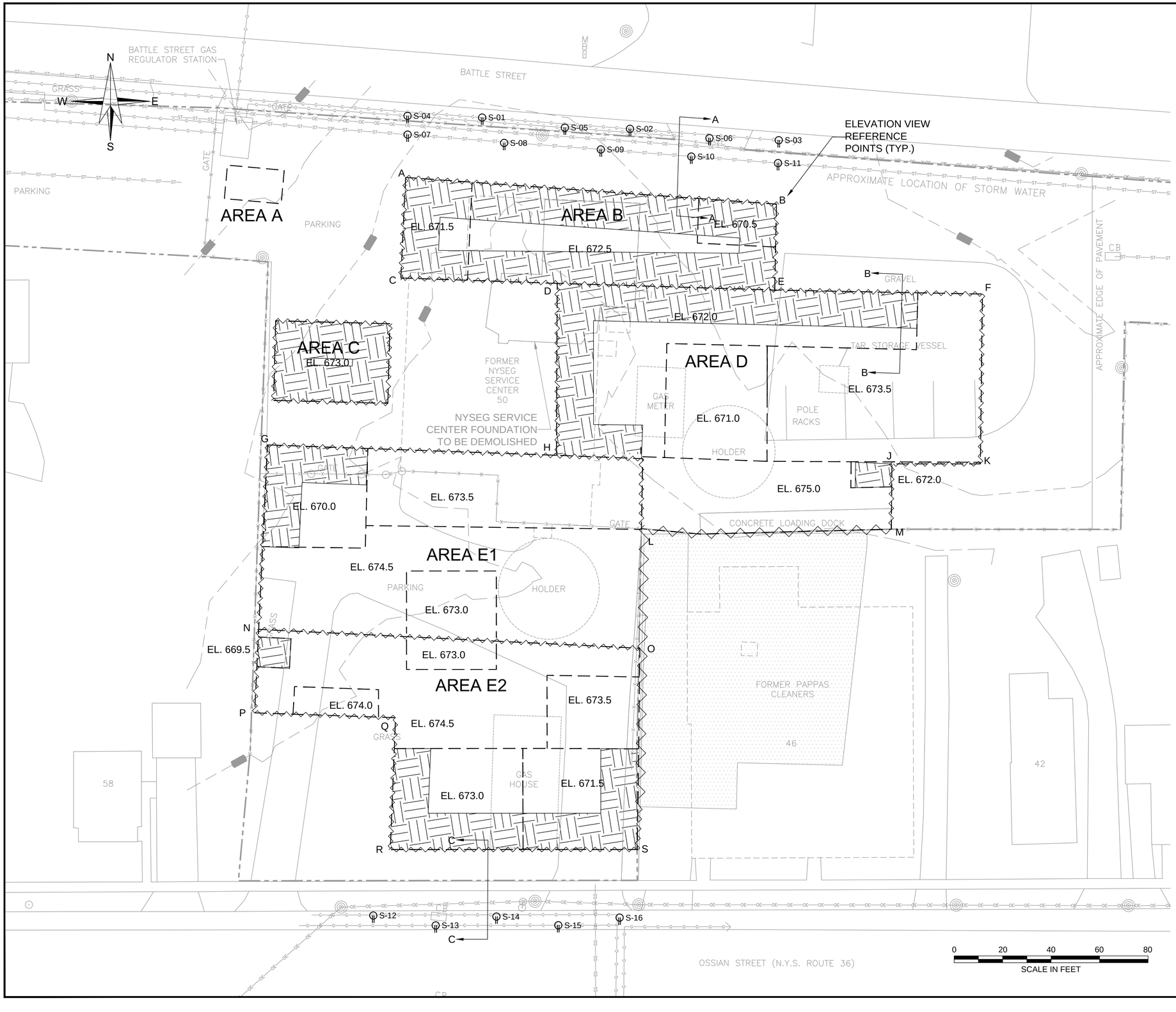
DRWN: SCC	DATE: 10/21/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: PAS	DATE: 10/21/13	
APPD: BTS	DATE: 10/21/13	
SCALE: AS SHOWN		

100% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

ENCLOSURE AND AIR HANDLING SYSTEM

PROJECT NO: 08–717

C–16



LEGEND

- POWER POLE
- HYDRANT
- FORMER STRUCTURES
- EXISTING STRUCTURES
- PROPERTY LINE
- 688 — EXISTING GROUND SURFACE CONTOUR LINES
- EXISTING SHEETPILE WALL
- PROPOSED SUPPORT OF EXCAVATION SYSTEM
- 673.5 — PROPOSED EXCAVATION AREA; NUMBER INDICATES MAXIMUM EXCAVATION ELEVATION
- S-01 — UTILITY MONITORING POINT
- BERM AREA

NOTES:

1. THE BASE PLAN WAS TAKEN FROM A DRAWING ENTITLED "PRELIMINARY REMEDIAL REDESIGN DRAWING, C03" PREPARED BY KEY ENVIRONMENTAL, INC. AND DATED 7 JANUARY 2013.

2. HORIZONTAL AND VERTICAL CONTROL ARE REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983/1986 AND THE NORTH AMERICAN VERTICAL DATUM OF 1988, U.S. SURVEY FEET.

3. NO LOADS SHALL BE PLACED WITHIN 10 FEET OF THE EXCAVATION SUPPORT SYSTEM. CONTRACTOR SHALL DELINEATE THIS IN FIELD WITH FENCING AND SIGNS INDICATING NO LOADS AND/OR TRAFFIC ARE PERMITTED. SURCHARGE LOADS SHALL BE LIMITED T0 200 PSF BETWEEN 10 AND 30 FEET FROM THE EDGE OF EXCAVATION.

4. GENERAL SEQUENCE OF CONSTRUCTION:
   a. INSTALL UTILITY MONITORING POINTS
   b. ABANDON UTILITIES CROSSING THE EXCAVATION SUPPORT ALIGNMENT AND PRE-EXCAVATE ALONG THE EXCAVATION SUPPORT ALIGNMENT
   c. INSTALL SUPPORT OF EXCAVATION SYSTEM
   d. INSTALL SURVEY REFERENCE POINTS ON TOP OF SUPPORT OF EXCAVATION SYSTEM
   e. EXCAVATE TO INDICATED ELEVATIONS
   f. BACKFILL

5. VERTICAL AND HORIZONTAL MONITORING POINTS SHALL BE INSTALLED AT THE TOP OF SUPPORT OF EXCAVATION AT 25' ON CENTER.

6. ALL EXCAVATION SHALL BE IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE DEPARTMENT OF LABOR OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION (OSHA).

7. THE CONTRACTOR SHALL DETERMINE THE ELEVATION, TOTAL LENGTH, AND CONDITION OF THE EXISTING AZ-48 SHEET PILES LOCATED IN THE SOUTHEASTERN PORTION OF THE SITE THAT WERE PREVIOUSLY USED TO PERFORM THE PAPPAS CLEANERS EXCAVATION. THE CONTRACTOR MAY RE-USE THESE SHEETS IF IT IS DETERMINED BY THE ENGINEER THAT THEY ARE SUFFICIENT TO RESIST THE DESIGN LOADS.

8. GROUNDWATER SHALL BE MAINTAINED 2 FEET BELOW THE BASE OF EXCAVATION IN ACCORDANCE WITH THE APPROVED EXCAVATION DEWATERING PLAN.

9. ALL STEEL SHALL CONFORM TO A572 (50 GRADE)

10. STEEL SHEET PILES SHALL BE AZ-48 SECTIONS.

11. SEE LIMITATIONS ON TEMPORARY STRUCTURE FOUNDATIONS ON DRAWING SOE-09.

12. REFER TO SOE-10 FOR BERM REQUIREMENTS.

HALEY& ALDRICH
Haley & Aldrich of New York
112 West 34th Street
17th and 18th Floors
New York, NY 10120
Tel: 212.946.2694
Fax: 212.946.2808
HaleyAldrich.com

ish inc. environmental consultants
Ish, Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

Project No.:	39618-000
Scale:	AS SHOWN
Date:	5 SEPTEMBER 2013
Autocad File:	39618-000-SOE
Drawn By:	PGL/SMB
Designed By:	JDS
Checked By:	DRS
Approved By:	BPS

Stamp:

STATE OF NEW YORK
BRYAN P. SWEENEY
LICENSED PROFESSIONAL ENGINEER
No. 083993-1
4/5/13

Rev.	Description	By	Date

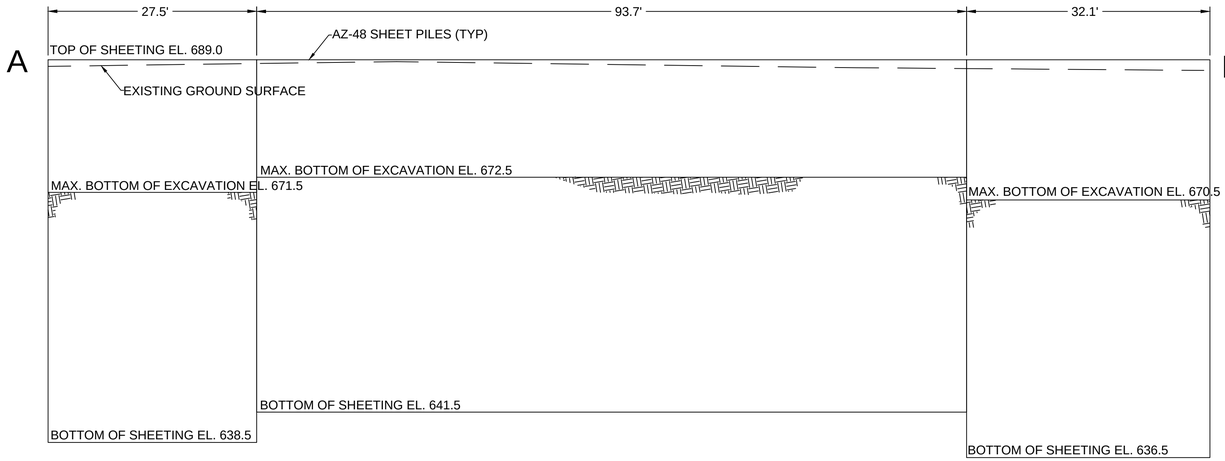
NYSEG OPERABLE UNIT 1
FORMER MGP SITE
DANSVILLE, NEW YORK

SHEETING LAYOUT PLAN

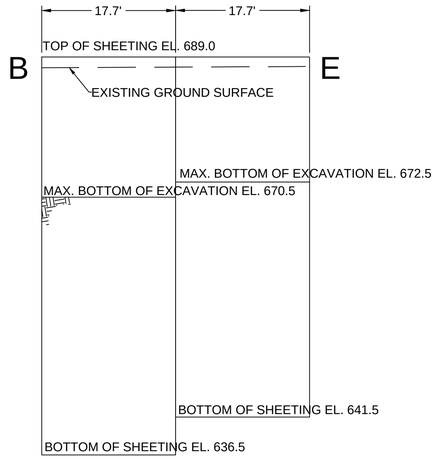
Sheet: 1 OF 10

SOE-01

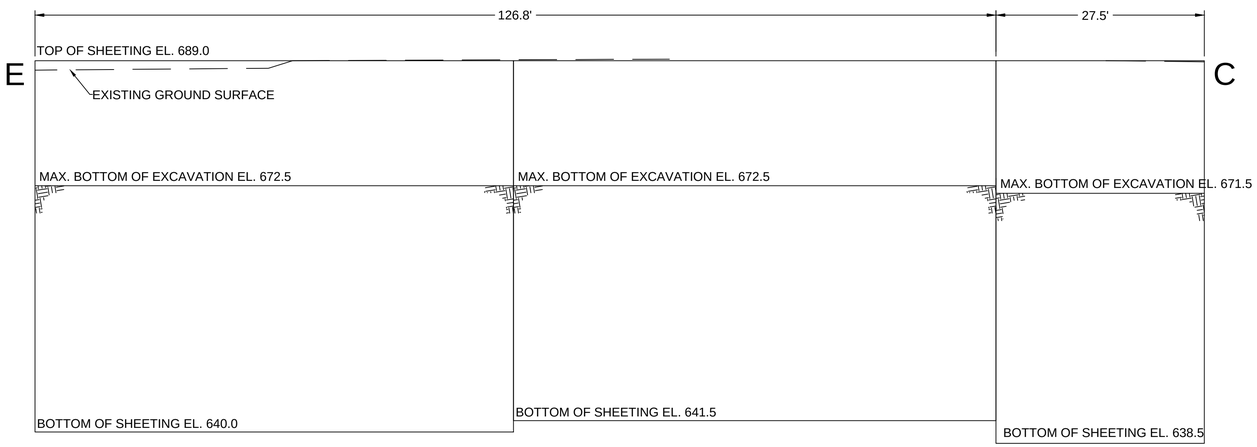
G:\39618\Drawings\2013-04\02-39618-000-SOE.dwg



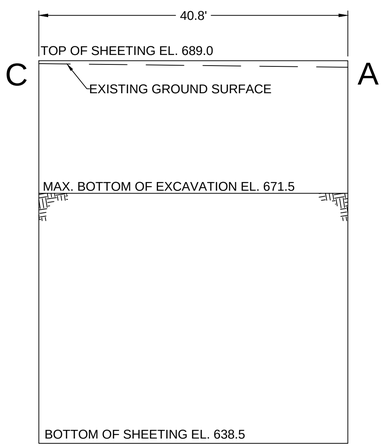
EXCAVATION AREA B ELEVATION
WALL A-B



EXCAVATION AREA B ELEVATION
WALL B-E



EXCAVATION AREA B ELEVATION
WALL E-C



EXCAVATION AREA B ELEVATION
WALL C-A

NOTES:
1. BOTTOM OF SHEETING ELEVATIONS ARE MINIMUM REQUIRED FOR INDICATED DEPTH.
2. STEEL SHEET PILES SHALL BE AZ-48 SECTIONS.

HORIZ. 0 10 20 30 40
VERT. 0 10 20 30 40
SCALE IN FEET

HALEY& ALDRICH
Haley & Aldrich of New York
112 West 34th Street
17th and 18th Floors
New York, NY 10120
Tel: 212.946.2694
Fax: 212.946.2808
HaleyAldrich.com

ish, inc. environmental consultants
Ish, Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

Project No.:	39618-000
Scale:	AS SHOWN
Date:	5 SEPTEMBER 2013
Autocad File:	39618-000-SOE
Drawn By:	PGL/SMB
Designed By:	JDS
Checked By:	DRS
Approved By:	BPS

Stamp:

Rev.	Description	By	Date

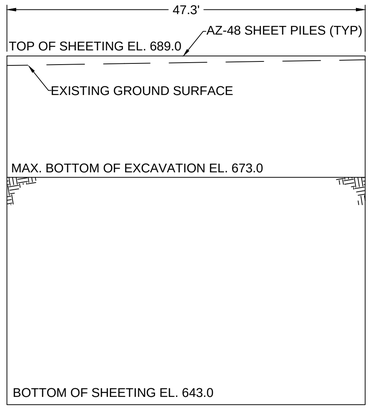
NYSEG OPERABLE UNIT 1
FORMER MGP SITE
DANSVILLE, NEW YORK

EXCAVATION AREA B ELEVATION

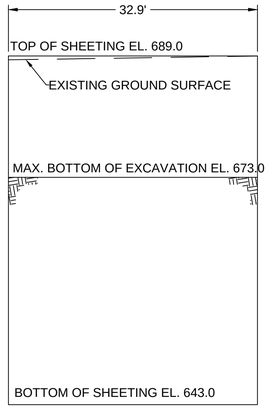
Sheet: 2 OF 10

SOE-02

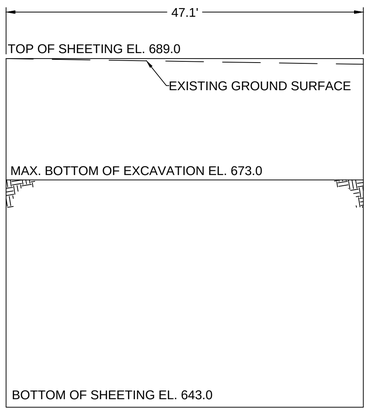
G:\39618\Drawings\2013-0402-39618-000-SOE.dwg



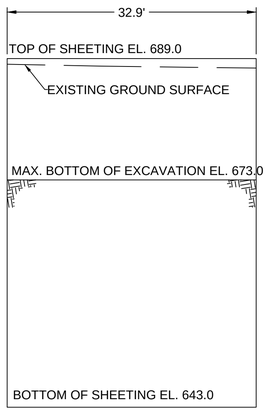
EXCAVATION AREA C ELEVATION
NORTH WALL



EXCAVATION AREA C ELEVATION
EAST WALL



EXCAVATION AREA C ELEVATION
SOUTH WALL



EXCAVATION AREA C ELEVATION
WEST WALL

NOTES:
1. BOTTOM OF SHEETING ELEVATIONS ARE MINIMUM REQUIRED FOR INDICATED DEPTH.
2. STEEL SHEET PILES SHALL BE AZ-48 SECTIONS.

HORIZ. 0 10 20 30 40
VERT. 0 10 20 30 40
SCALE IN FEET

G:\39618\Drawings\2013-0402-39618-000-SOE.dwg

HALEY& ALDRICH
Haley & Aldrich of New York
112 West 34th Street
17th and 18th Floors
New York, NY 10120
Tel: 212.946.2694
Fax: 212.946.2808
HaleyAldrich.com

ish, inc. environmental consultants
Ish, Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

Project No.:	39618-000
Scale:	AS SHOWN
Date:	5 SEPTEMBER 2013
Autocad File:	39618-000-SOE
Drawn By:	PGL/SMB
Designed By:	JDS
Checked By:	DRS
Approved By:	BPS

Stamp:

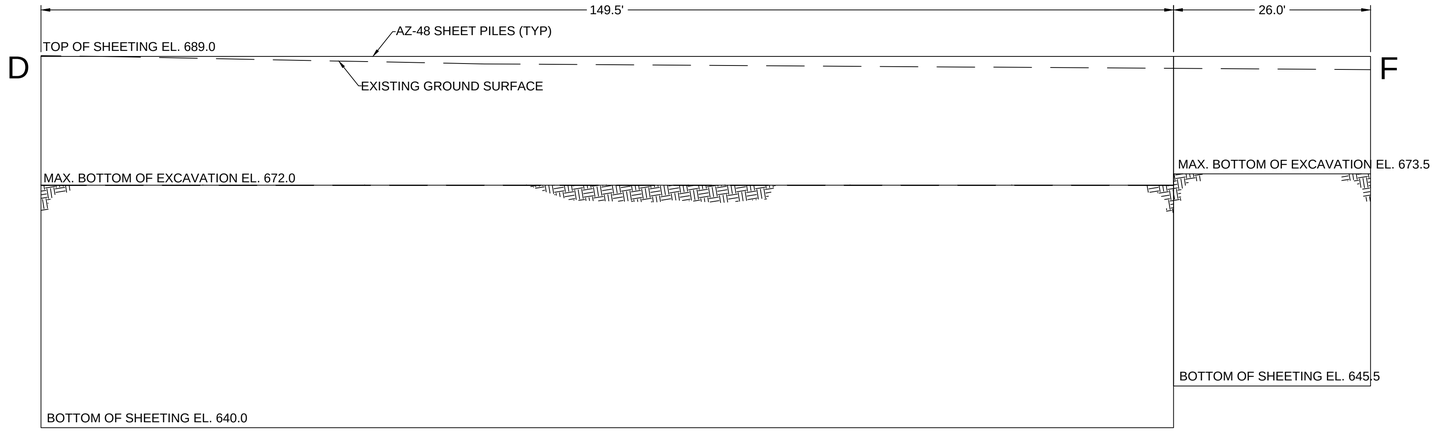
Rev.	Description	By	Date

NYSEG OPERABLE UNIT 1
FORMER MGP SITE
DANSVILLE, NEW YORK

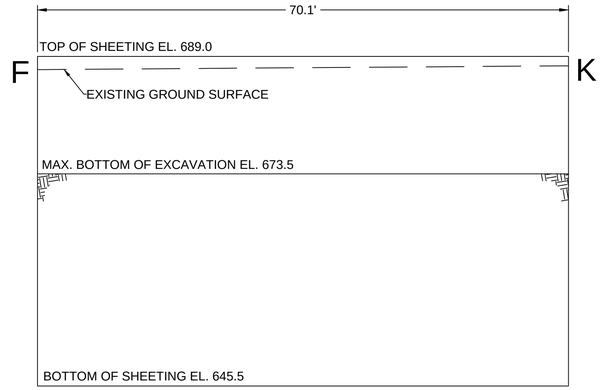
EXCAVATION AREA C ELEVATION

Sheet: 3 OF 10

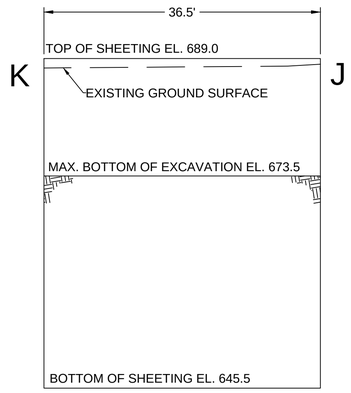
SOE-03



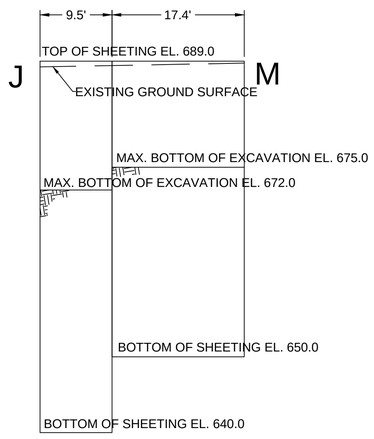
EXCAVATION AREA D ELEVATION
WALL D-F



EXCAVATION AREA D ELEVATION
WALL F-K



EXCAVATION AREA D ELEVATION
WALL K-J



EXCAVATION AREA D ELEVATION
WALL J-M

NOTES:
1. BOTTOM OF SHEETING ELEVATIONS ARE MINIMUM REQUIRED FOR INDICATED DEPTH.
2. STEEL SHEET PILES SHALL BE AZ-48 SECTIONS.

HORIZ. 0 10 20 30 40
VERT. 0 10 20 30 40
SCALE IN FEET

HALEY& ALDRICH
Haley & Aldrich of New York
112 West 34th Street
17th and 18th Floors
New York, NY 10120
Tel: 212.946.2694
Fax: 212.946.2808
HaleyAldrich.com

ish, inc. environmental consultants
Ish, Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

Project No.:	39618-000
Scale:	AS SHOWN
Date:	5 SEPTEMBER 2013
Autocad File:	39618-000-SOE
Drawn By:	PGL/SMB
Designed By:	JDS
Checked By:	DRS
Approved By:	BPS

Stamp:

Rev.	Description	By	Date

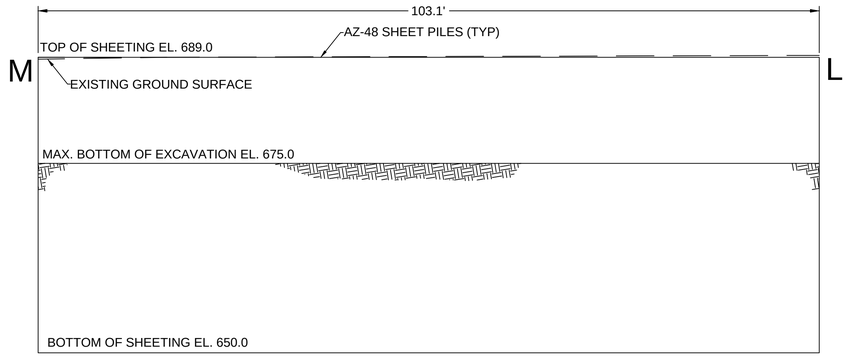
NYSEG OPERABLE UNIT 1
FORMER MGP SITE
DANSVILLE, NEW YORK

EXCAVATION AREA D ELEVATION

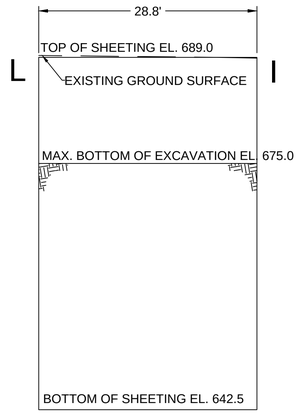
Sheet: 4 OF 10

SOE-04

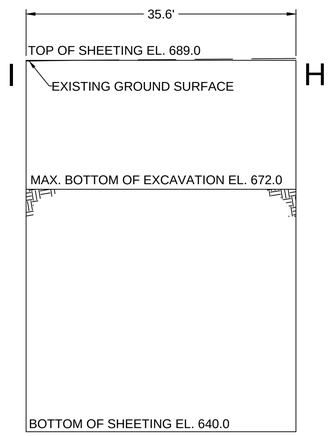
G:\39618\Drawings\2013-0402-39618-000-SOE.dwg



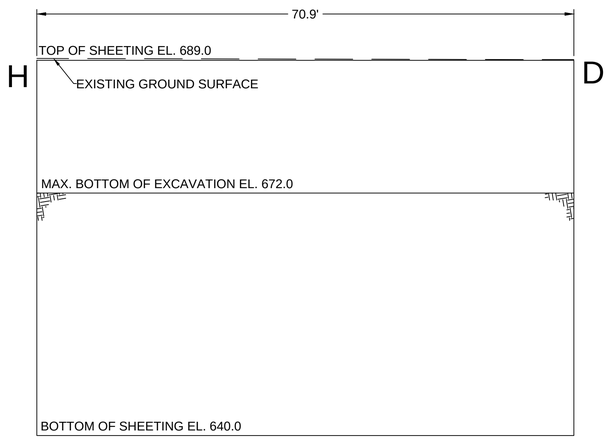
EXCAVATION AREA D ELEVATION
WALL M-L



EXCAVATION AREA D ELEVATION
WALL L-I



EXCAVATION AREA D ELEVATION
WALL I-H



EXCAVATION AREA D ELEVATION
WALL H-D

NOTES:
1. BOTTOM OF SHEETING ELEVATIONS ARE MINIMUM REQUIRED FOR INDICATED DEPTH.
2. STEEL SHEET PILES SHALL BE AZ-48 SECTIONS.

HORIZ. 0 10 20 30 40
VERT. 0 10 20 30 40
SCALE IN FEET

HALEY& ALDRICH
Haley & Aldrich of New York
112 West 34th Street
17th and 18th Floors
New York, NY 10120
Tel: 212.946.2694
Fax: 212.946.2808
HaleyAldrich.com

ish, inc. environmental consultants
Ish, Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

Project No.:	39618-000
Scale:	AS SHOWN
Date:	5 SEPTEMBER 2013
Autocad File:	39618-000-SOE
Drawn By:	PGL/SMB
Designed By:	JDS
Checked By:	DRS
Approved By:	BPS

Stamp:

Rev.	Description	By	Date

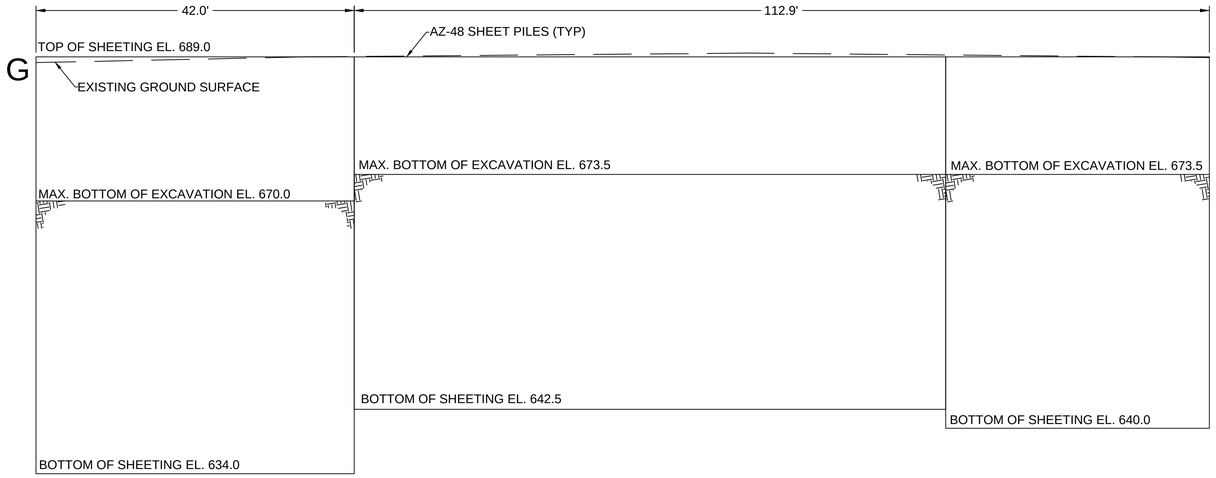
NYSEG OPERABLE UNIT 1
FORMER MGP SITE
DANSVILLE, NEW YORK

EXCAVATION AREA D ELEVATION

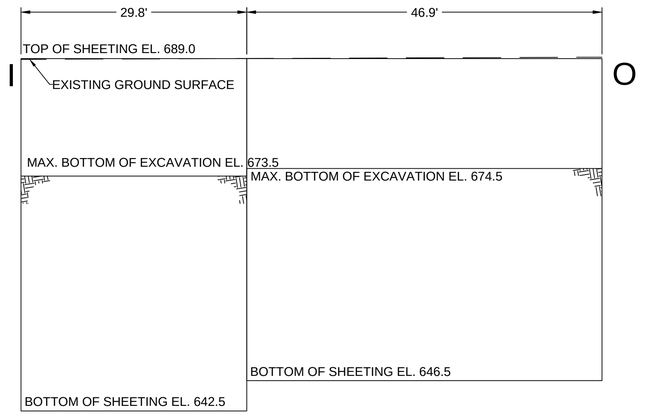
Sheet: 5 OF 10

SOE-05

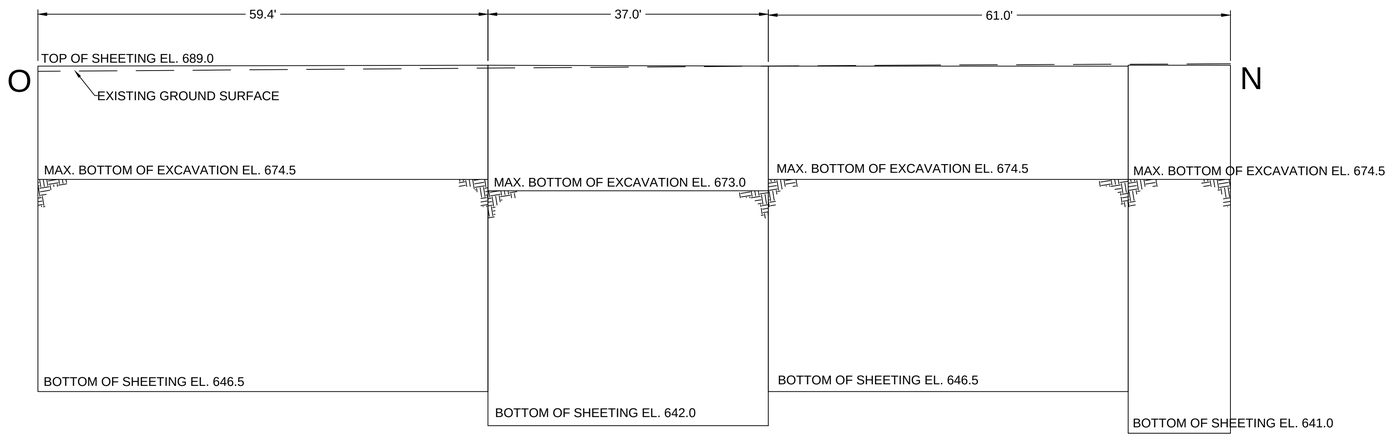
G:\39618\Drawings\2013-0402-39618-000-SOE.dwg



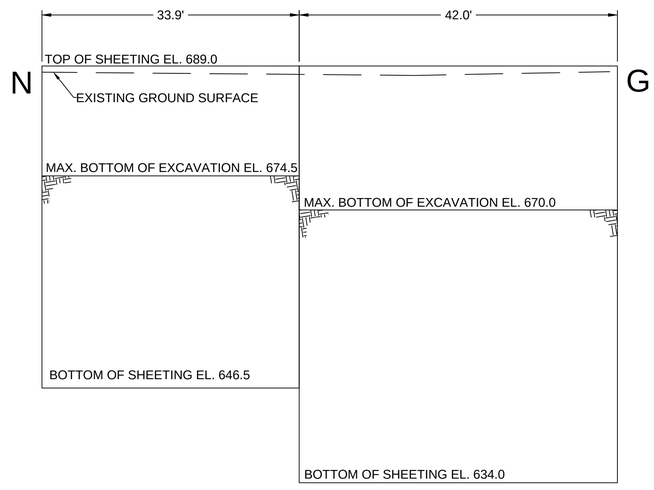
EXCAVATION AREA E1 ELEVATION
WALL G-I



EXCAVATION AREA E1 ELEVATION
WALL I-O



EXCAVATION AREA E1 ELEVATION
WALL O-N



EXCAVATION AREA E1 ELEVATION
WALL N-G

NOTES:
1. BOTTOM OF SHEETING ELEVATIONS ARE MINIMUM REQUIRED FOR INDICATED DEPTH.
2. STEEL SHEET PILES SHALL BE AZ-48 SECTIONS.

HORIZ. 0 10 20 30 40
VERT. 0 10 20 30 40
SCALE IN FEET

HALEY& ALDRICH
Haley & Aldrich of New York
112 West 34th Street
17th and 18th Floors
New York, NY 10120
Tel: 212.946.2694
Fax: 212.946.2808
HaleyAldrich.com

ish, inc. environmental consultants
Ish, Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

Project No.:	39618-000
Scale:	AS SHOWN
Date:	5 SEPTEMBER 2013
Autocad File:	39618-000-SOE
Drawn By:	PGL/SMB
Designed By:	JDS
Checked By:	DRS
Approved By:	BPS

Stamp:

Rev.	Description	By	Date

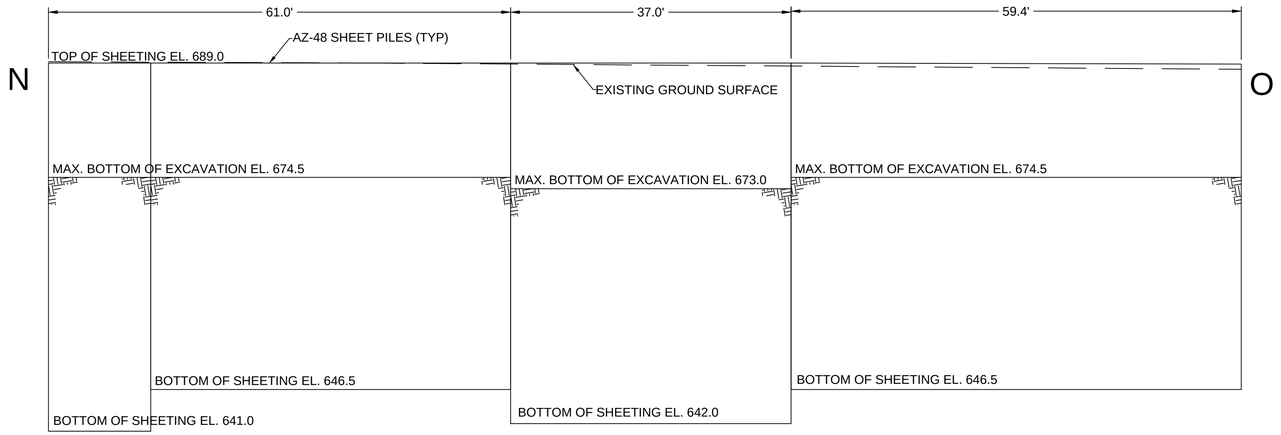
NYSEG OPERABLE UNIT 1
FORMER MGP SITE
DANSVILLE, NEW YORK

EXCAVATION AREA E1 ELEVATION

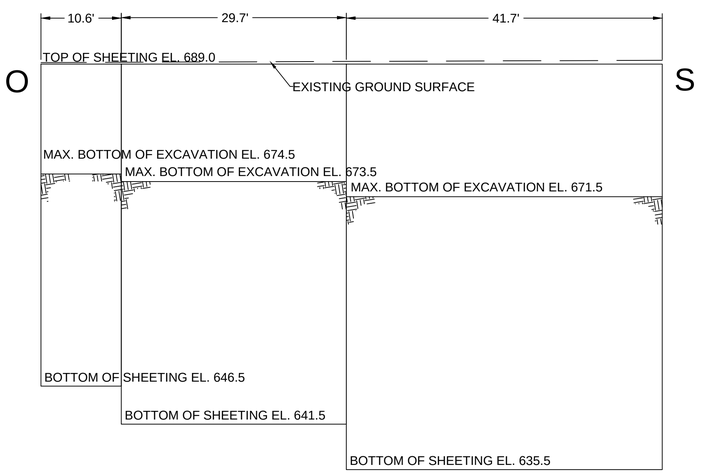
Sheet: 6 OF 10

SOE-06

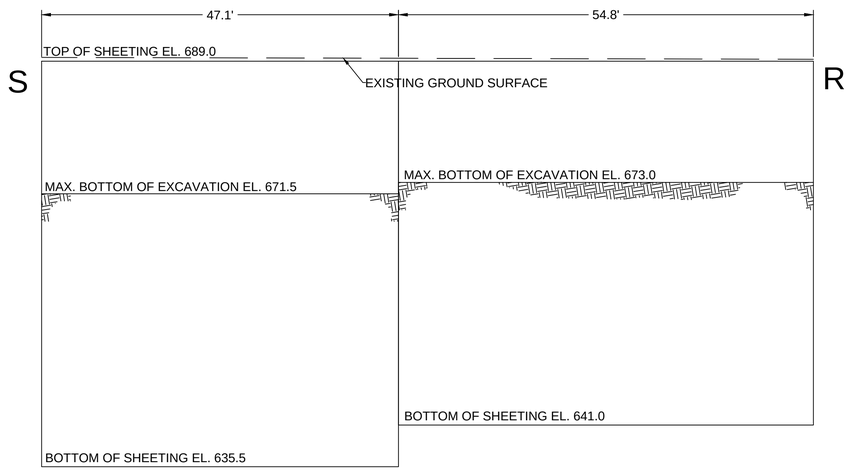
G:\39618\Drawings\2013-04\02-39618-000-SOE.dwg



EXCAVATION AREA E2 ELEVATION
WALL N-O



EXCAVATION AREA E2 ELEVATION
WALL O-S



EXCAVATION AREA E2 ELEVATION
WALL S-R

NOTES:
1. BOTTOM OF SHEETING ELEVATIONS ARE MINIMUM REQUIRED FOR INDICATED DEPTH.
2. STEEL SHEET PILES SHALL BE AZ-48 SECTIONS.

HORIZ. 0 10 20 30 40
VERT. 0 10 20 30 40
SCALE IN FEET

HALEY& ALDRICH
Haley & Aldrich of New York
112 West 34th Street
17th and 18th Floors
New York, NY 10120
Tel: 212.946.2694
Fax: 212.946.2808
HaleyAldrich.com

ish INC environmental consultants
Ish, Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

Project No.:	39618-000
Scale:	AS SHOWN
Date:	5 SEPTEMBER 2013
Autocad File:	39618-000-SOE
Drawn By:	PGL/SMB
Designed By:	JDS
Checked By:	DRS
Approved By:	BPS

Stamp:

STATE OF NEW YORK BRYAN P. SWEENEY LICENSED PROFESSIONAL ENGINEER No. 083883-1 4/5/13

Rev.	Description	By	Date

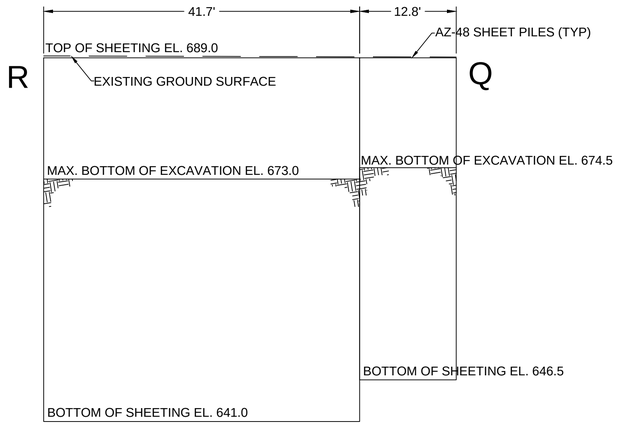
NYSEG OPERABLE UNIT 1
FORMER MGP SITE
DANSVILLE, NEW YORK

EXCAVATION AREA E2 ELEVATION

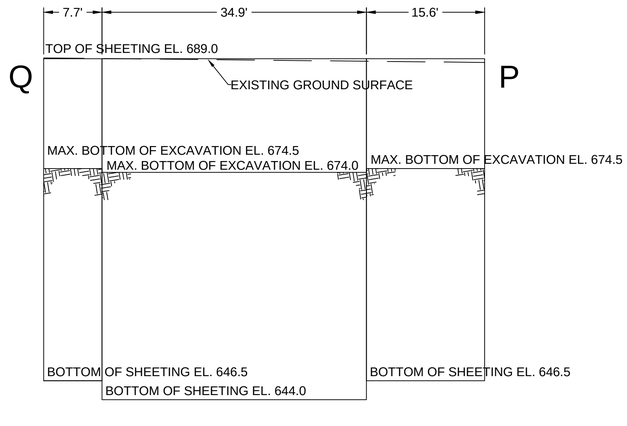
Sheet: 7 OF 10

SOE-07

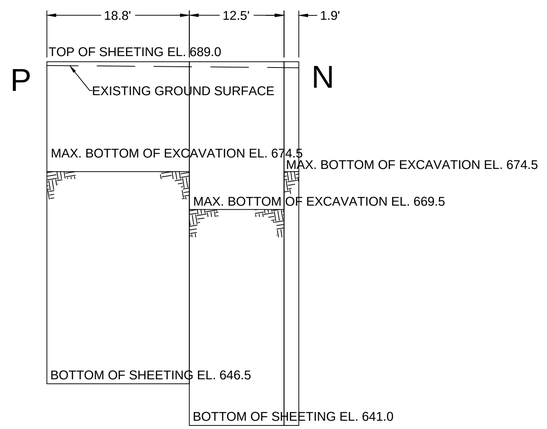
G:\39618\Drawings\2013-0402-39618-000-SOE.dwg



EXCAVATION AREA E2 ELEVATION
WALL R-Q



EXCAVATION AREA E2 ELEVATION
WALL Q-P



EXCAVATION AREA E2 ELEVATION
WALL P-N

NOTES:
1. BOTTOM OF SHEETING ELEVATIONS ARE MINIMUM REQUIRED FOR INDICATED DEPTH.
2. STEEL SHEET PILES SHALL BE AZ-48 SECTIONS.

HORIZ. 0 10 20 30 40
VERT. 0 10 20 30 40
SCALE IN FEET

G:\39618\Drawings\2013-0402-39618-000-SOE.dwg

HALEY& ALDRICH
Haley & Aldrich of New York
112 West 34th Street
17th and 18th Floors
New York, NY 10120
Tel: 212.946.2694
Fax: 212.946.2808
HaleyAldrich.com

ish, inc. environmental consultants
Ish, Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

Project No.:	39618-000
Scale:	AS SHOWN
Date:	5 SEPTEMBER 2013
Autocad File:	39618-000-SOE
Drawn By:	PGL/SMB
Designed By:	JDS
Checked By:	DRS
Approved By:	BPS

Stamp:

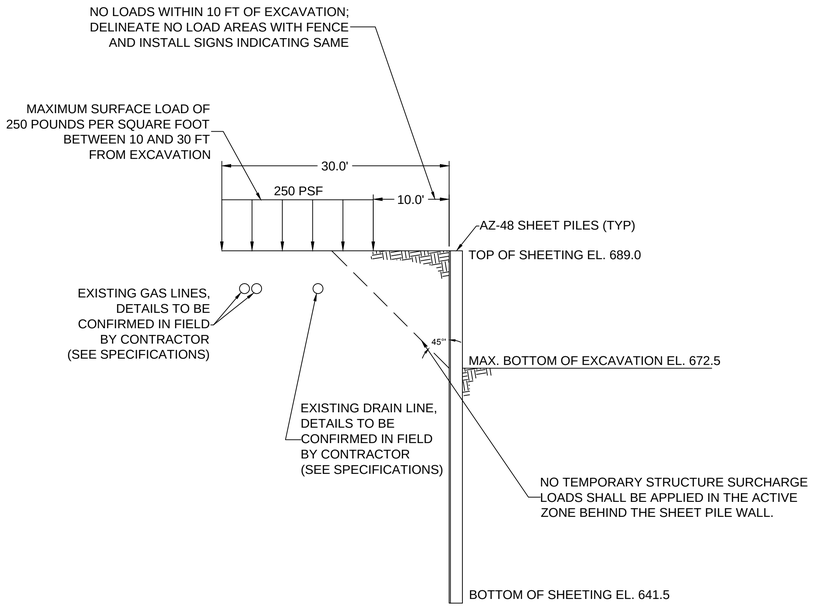
Rev.	Description	By	Date

NYSEG OPERABLE UNIT 1
FORMER MGP SITE
DANSVILLE, NEW YORK

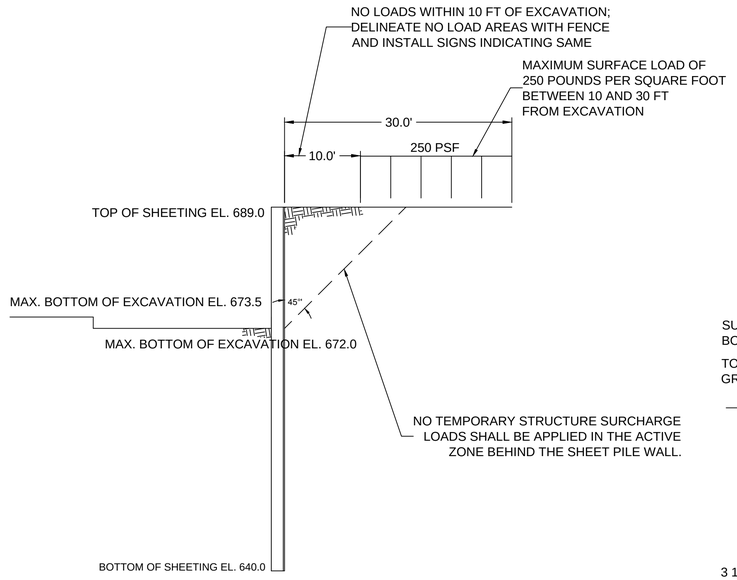
EXCAVATION AREA E2 ELEVATION

Sheet: 8 OF 10

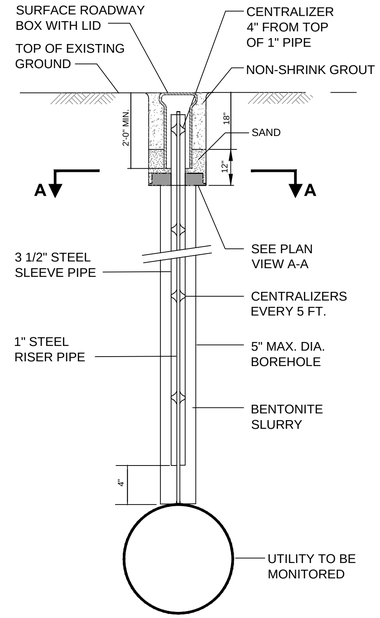
SOE-08



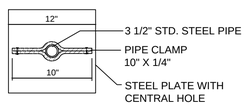
CROSS SECTION A-A



CROSS SECTION B-B



UTILITY MONITORING POINT (UMP) DETAIL
NOT TO SCALE



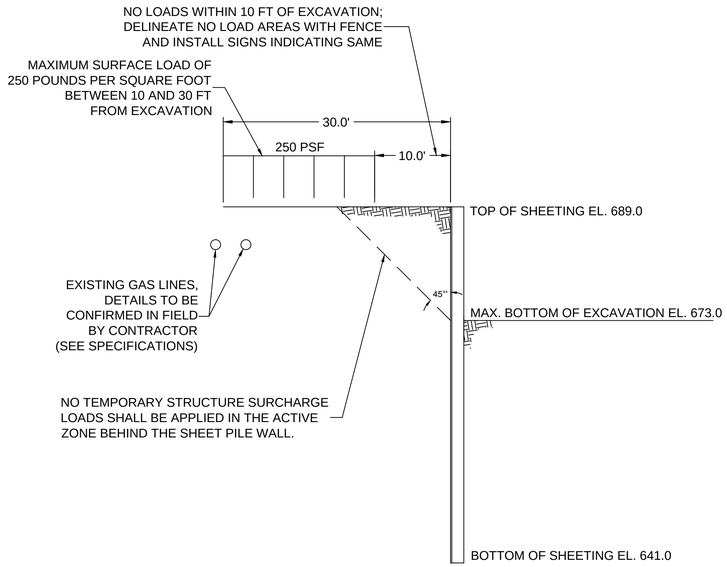
PLAN VIEW A-A

NOTES:

1. SURFACE LOADING INCLUDES ALL LOADING OF ANY KIND (E.G.; VEHICLE, SOIL STOCKPILE, EQUIPMENT, TEMPORARY BUILDINGS/STRUCTURES, MATERIAL STORAGE).

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF AN INDEPENDENT HORIZONTAL/VERTICAL SUPPORT SYSTEM (FOUNDATION) FOR THE PORTABLE BUILDING ENCLOSURE. AT LEAST 2 WEEKS PRIOR TO COMMENCEMENT OF CONSTRUCTION THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER APPROPRIATE DRAWINGS AND SPECIFICATIONS THAT FULLY DEPICT THE SUPPORT SYSTEM. THE SYSTEM SHALL INCLUDE MATERIALS AND METHODS REQUIRED TO SUPPORT THE PORTABLE BUILDING ENCLOSURE WITHOUT LOAD TRANSFER TO THE ADJACENT TEMPORARY EXCAVATION SUPPORT SYSTEM (I.E., STEEL SHEET PILE WALL) WHICH SHALL BE DEMONSTRATED IN THE SUBMITTAL THROUGH ENGINEERING CALCULATIONS. THE SUBMITTAL SHALL BE PREPARED AND STAMPED BY A PROFESSIONAL ENGINEER CURRENTLY LICENSED IN THE STATE OF NEW YORK.

3. STEEL SHEET PILES SHALL BE AZ-48 SECTIONS.



CROSS SECTION C-C

0 10 20 30 40
SCALE IN FEET

HALEY& ALDRICH
Haley & Aldrich of New York
112 West 34th Street
17th and 18th Floors
New York, NY 10120
Tel: 212.946.2694
Fax: 212.946.2808
HaleyAldrich.com

ish, inc. environmental consultants
Ish, Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

Project No.:	39618-000
Scale:	AS SHOWN
Date:	5 SEPTEMBER 2013
Autocad File:	39618-000-SOE
Drawn By:	PGL/SMB
Designed By:	JDS
Checked By:	DRS
Approved By:	BPS

Stamp:

Rev.	Description	By	Date

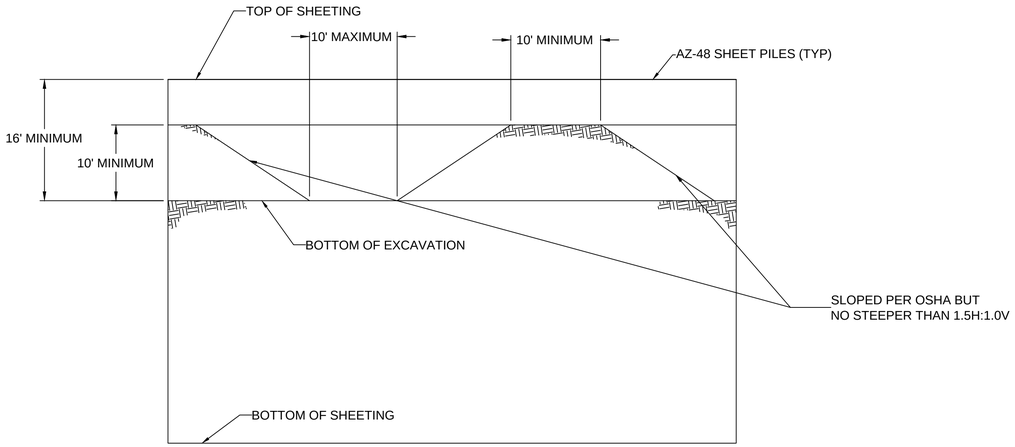
NYSEG OPERABLE UNIT 1
FORMER MGP SITE
DANSVILLE, NEW YORK

CROSS SECTIONS

Sheet: 9 OF 10

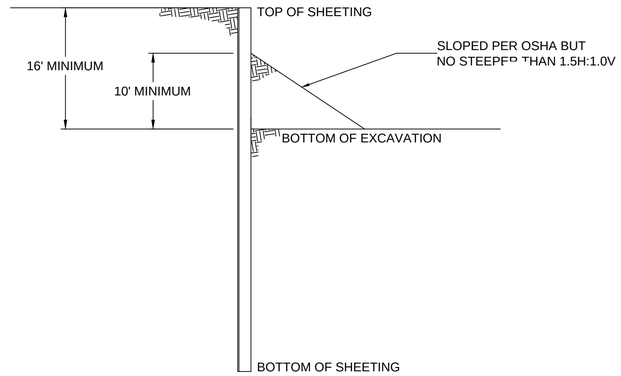
SOE-09

G:\39618\Drawings\2013-0402-39618-000-SOE.dwg



ELEVATION VIEW (TYPICAL)

NOT TO SCALE



SECTION VIEW (TYPICAL)

NOT TO SCALE

NOTES:

1. NO EXCAVATIONS GREATER THAN OR EQUAL TO 16 FEET IN DEPTH SHALL BE CONDUCTED WITHIN 20 FEET OF THE SHEET PILE WALL WITHOUT A BERM AT LEAST 10 FEET IN HEIGHT MEASURED FROM THE BASE OF THE EXCAVATION.

2. THE SLOTTED EXCAVATIONS OF THE BERMS SHALL BE PERFORMED SUCH THAT NO GREATER THAN 10 LINEAL FEET OF THE SHEETING IS EXPOSED AS MEASURED AT THE BOTTOM OF EXCAVATION AND A MINIMUM OF 10 LINEAL FEEL OF BERM IS MAINTAINED, AS MEASURED ALONG THE TOP OF THE BERM, BETWEEN ADJACENT SLOTTED EXCAVATIONS.

3. AFTER THE SLOTTED EXCAVATION OF THE BERM IS COMPLETED, BACKFILL MATERIAL SHALL BE PLACED IN ACCORDANCE WITH THE PROJECT REQUIREMENTS TO RE-ESTABLISH A 10 FOOT MINIMUM BERM PRIOR TO EXCAVATING THE ADJACENT AREA.

4. STEEL SHEET PILES SHALL BE AZ-48 SECTIONS.

HALEY& ALDRICH
Haley & Aldrich of New York
112 West 34th Street
17th and 18th Floors
New York, NY 10120
Tel: 212.946.2694
Fax: 212.946.2808
HaleyAldrich.com

Ish, Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

Project No.:	39618-000
Scale:	AS SHOWN
Date:	5 SEPTEMBER 2013
Autocad File:	39618-000-SOE
Drawn By:	PGL/SMB
Designed By:	JDS
Checked By:	DRS
Approved By:	BPS

Stamp:

STATE OF NEW YORK
BRYAN P. SWEENEY
LICENSED PROFESSIONAL ENGINEER
No. 083883-1
4/5/13

Rev.	Description	By	Date

NYSEG OPERABLE UNIT 1
FORMER MGP SITE
DANSVILLE, NEW YORK

BERM DETAILS

Sheet: 10 OF 10

SOE-10

G:\39618\Drawings\2013-0402-39618-000-SOE.dwg

ATTACHMENT 2
TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS
CONTRACT DOCUMENTS
DANSVILLE FORMER MGP SITE
FOR OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

Prepared for:

NYSEG
Kirkwood Industrial Park
Binghamton, NY 13902

Prepared by:

Ish Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615

TABLE OF CONTENTS

TABLE OF CONTENTS

SECTION 01 10 00

SUMMARY OF WORK AND DRAWING INDEX

PART 1 GENERAL

Work covered by this contract encompasses the Contract Documents for the Dansville Former MGP Site, Operable Unit 1, Dansville, Livingston County, New York. The Work shall include the furnishing of all labor, materials, equipment, permits, services, and operations required to complete all aspects of the work as indicated on and in the Drawings and Specifications, including but not necessarily limited to the following:

- Mobilization and demobilization of appropriate labor, materials, equipment, permits, services, and operations required to complete the installation of all aspects of the specified Work;
- Installation, operation, and decommissioning of appropriate on-Site temporary utilities and sanitary facilities;
- Mobilization, operation and demobilization of field offices and related temporary structures;
- Survey of Work to provide measurements for payment;
- Site security for the duration of the project;
- Installation, operation, and decommissioning of appropriate on-Site decontamination facilities;
- Installation and removal of temporary fence with visual barrier;
- Installation and removal of visual barrier on existing fence;
- Demolition of existing fence as shown on the Drawings;
- Installation, maintenance and removal of temporary erosion and sediment control devices;
- Demolition of the remaining aboveground foundation/structure;
- Demolition of the remaining below grade foundations and remaining concrete slab as required for remedial work;
- Demolition of the existing loading dock;
- Location, cutting and temporarily sealing existing storm water main;
- Abandonment of existing stormwater main and associated catch basins;

- Construction of surface drainage channel;
- Abandonment of existing groundwater monitoring wells and piezometer;
- Location, cutting and capping existing sanitary sewer, abandonment of existing sanitary sewer lines and installation of cleanout for water pre-treatment system discharge;
- Location, cutting and capping existing water main and abandonment of existing water line;
- Installation and removal of hydraulic control barrier around perimeter of the remediation area;
- Procurement, installation, maintenance and removal of temporary fabric structure, structure foundation, interior lighting and necessary electrical facilities;
- Excavation of approximately 11,700 cubic yards of unimpacted soil to be reused as backfill and 15,500 cubic yards of impacted soil to be transported off-site;
- Management of dust and odors resulting from the Site remediation activities;
- Management and treatment of waste water from construction operations in a temporary pre-treatment system;
- Transportation of impacted soils to an approved off-site treatment facility and/or landfill disposal facility;
- Backfill excavation area with unimpacted excavated reuse soil and clean soil as required;
- Site Restoration, gravel cover, topsoil, seeding, and mulching, and;
- Any and all ancillary work required to complete the above in compliance with local, state and federal requirements and the Contract Documents.

The following Contract Documents Drawings are to be used in conjunction with the Specifications for the performance of the Work:

Drawing Number	Drawing Title
C-01	TITLE SHEET
C-02	EXISTING CONDITIONS SITE PLAN
C-03	GENERAL SITE ARRANGEMENT PLAN

SUMMARY OF WORK AND DRAWING INDEX

- C-04 SITE PREPARATION PLAN
- C-05 SOIL EXCAVATION PLAN
- C-06 NORTH EXCAVATION AREA CROSS SECTIONS
- C-07 SOUTH EXCAVATION AREA CROSS SECTIONS
- C-08 PHASE 1 & 2 TRAFFIC PLAN
- C-09 PHASE 3 & 4 TRAFFIC PLAN
- C-10 EROSION AND SEDIMENT CONTROL AND SITE SECURITY PLAN
- C-11 EROSION AND SEDIMENT CONTROL AND SITE SECURITY DETAILS SHEET 1 OF 2
- C-12 EROSION AND SEDIMENT CONTROL AND SITE SECURITY DETAILS SHEET 2 OF 2
- C-13 WATER PRE-TREATMENT SYSTEM PLAN VIEW AND FLOW DIAGRAM
- C-14 DEWATERING DETAILS
- C-15 FINAL SITE RESTORATION PLAN
- C-16 ENCLOSURE AND AIR HANDLING SYSTEM
- SOE-01 SHEETING LAYOUT PLAN
- SOE-02 EXCAVATION AREA B ELEVATION
- SOE-03 EXCAVATION AREA C ELEVATION
- SOE-04 EXCAVATION AREA D ELEVATION
- SOE-05 EXCAVATION AREA D ELEVATION
- SOE-06 EXCAVATION AREA E1 ELEVATION
- SOE-07 EXCAVATION AREA E2 ELEVATION
- SOE-08 EXCAVATION AREA E2 ELEVATION
- SOE-09 CROSS SECTIONS

For the contractor’s reference, applicable test boring logs, boring location map and geotechnical data have been included with these Technical Specifications as Appendix A.

END OF SECTION

SECTION 01 14 00

WORK RESTRICTIONS

PART 1 GENERAL

1.1 SITE USAGE

A. Contractor shall confine all operations, including the storage of materials, to the Project Site as approved by the Engineer.
B. No visually impacted materials shall be stored in vehicles or stockpiles outside of the Temporary Structure.
C. Contractor's use of the premises shall be limited to the Work being performed as specified in the Contract Documents.
D. The Owner shall execute access agreements to obtain permission to complete any Work that is to be conducted on properties not owned by the Owner. Contractor shall not occupy, cross, or otherwise use any of the properties not owned by the Owner until such access agreements have been executed and the Contractor has been granted permission for use of those properties by the Owner or its representative.
E. Contractor shall be responsible for the security and safety of Contractor's equipment, tools, vehicles and other materials/facilities. Owner and Engineer are not liable for loss or damage of Contractor's tools, vehicles, equipment, or materials, whatever the cause. Such loss or damage shall not be sufficient reason for changes in the Project Schedule or costs.
F. Contractor shall be responsible for any damage to roadways, facilities, utilities, trees, or structures adjacent to the Site due to negligence, carelessness, actions, errors, or omissions on the part of the Contractor.

1.2 ACCESS ROADS

A. Contractor personnel vehicles shall enter and exit the Contractor Parking area from Battle Street.
B. All construction vehicles shall enter and exit the Site from Ossian Street (N.Y.S. Route 36).
C. Contractor shall be responsible for obtaining any permits, securing bonds or paying fees necessary for Contractor's use of public streets or roads.
D. Contractor shall abide by local, state, and federal regulations, including, but not limited to providing flaggers and signage required for traffic flow on public streets.
E. Contractor shall, at all times, provide access for emergency vehicles to the Site and neighboring properties and provide access for pedestrians along Battle Street and Ossian Street (N.Y.S. Route 36).

1.3 PARKING

A. Contractor shall not park construction vehicles and equipment outside the Site.
B. Contractor employees shall park personal vehicles only in Contractor Parking area indicated on the Drawings.

C. Vehicles shall not be parked in any locations where they impede traffic or access to areas where Work is being performed.

1.4 WORK HOURS

A. Normal Work Hours shall be from 7:00 A.M. to 5:00 P.M., Monday through Friday, or as otherwise approved in advance by the Owner/Engineer, and subject to availability of adequate daylight to safely perform the Work. Contractor shall submit planned schedule of activities, anticipated staffing, and scheduled work hours to the Owner/Engineer in the Daily Report.

B. Work hours established by any ordinance, Law, or Regulation shall supersede the requirements of this Specifications Section.

C. Contractor shall provide adequate lighting at all times, as deemed necessary by the Engineer to maintain a safe work environment and Work area and shall meet or exceed OSHA and/or NYSDOT Regulations.

D. Contractor may conduct equipment maintenance during hours outside of the Normal Work Hours defined in this Section, but only with prior approval from the Owner/Engineer.

E. Contractor personnel shall not work at any time on the Site alone.

F. Any variation from Normal Work Hours or work on Saturdays, Sundays or Holidays shall be subject to approval by the Engineer and the Owner. Any request for approval of a change shall be made to the Engineer no less than 48 hours in advance.

G. Emergency repairs of equipment outside of Normal Work Hours may be performed without 48-hour notice, subject to approval by the Engineer.

1.5 IMPACTED MATERIAL CONTROL

A. Contractor shall manage the Work to ensure that impacted materials (soil, water, groundwater, and any other impacted materials) are not discharged from the Site to the surrounding streets or properties.

1.6 AIR EMISSIONS

A. Contractor shall conduct all Work such that noise levels, odors, particulate emissions, and organic vapor emissions are regularly monitored and are in accordance with all applicable Laws, Regulations and as specified in the Contract Documents.

B. Contractor shall control the Work at all times such that noise levels, odors, particulate emissions, and organic vapor do not exceed the Action Levels set forth in the site-specific Community Air Monitoring Plan (CAMP), Odor Monitoring Plan, (OMP) and the site-specific Health and Safety Plan (HASP), in the Work area and at the Site fence line.

C. The Engineer shall have authority to direct Contractor to stop Work or modify Work methods or activities as necessary to enforce compliance with the CAMP, OMP or the HASP.

1.7 PROTECTION OF EXISTING UTILITIES

A. Contractor shall contact and coordinate with utility companies to locate all utilities (including pipelines, cables, power poles, guy wires, and other structures) on the Site prior to beginning Work.

B. Contractor shall comply with specific utility protection Laws or Regulations.

C. All utilities shall be protected from damage during construction, unless otherwise indicated on the Drawings to be removed or abandoned. If damaged, the utilities shall be repaired as required by the utility's Owner at the Contractor's expense.

D. If a utility is encountered that is not shown on the Drawings or otherwise made known to the Contractor prior to beginning of the Work, the Contractor shall promptly take necessary steps to assure that the utility is not damaged, and give written notice to the Engineer. The Engineer will then 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 that was not identified before.

PART 2 MATERIALS - Not used

PART 3 METHODS - Not used

END OF SECTION

SECTION 01 22 16

PAYMENT PROCEDURES

PART 1 GENERAL

1.1 FORMAT

A. The Bid Form, submitted by the Successful Bidder, as modified by any executed Change Orders, will be the basis for Payment. The Schedule of Values will serve as the basis for progress payments and will be incorporated into a form of Application for Payment as specified herein. The Owner may request further breakdown of certain lump sum items provided on the Bid Form to be included in the Schedule of Values as deemed necessary by the Owner.

B. Contractor shall submit one Application for Payment and invoice, covering the Work performed in each calendar month, for each month for the duration of the Work.

C. Contractor shall submit to the Owner an Application for Payment on the specified forms, and attach a separate invoice, for the Work completed in the calendar month covered by that Application for Payment.

1) Contractor's invoice shall be a separate page, or pages, in a form of Contractor's choosing that includes the specified information. Contractor shall submit a separate invoice to Owner for each Work Order.

1.2 SUBMITTAL PROCEDURES

A. Contractor shall submit original Application for Payment and invoice, and one copy, to the Engineer for review.

B. Payment Period: Submit invoices at intervals not less than 30 days. Submit an invoice for each month no later than the invoice closing date of the following month as set by Owner. The schedule of invoice closing dates will be given to the Contractor prior to mobilization.

C. Contractor shall prepare a final Application for Payment and invoice as specified in Section 01 77 19 CONTRACT CLOSEOUT.

1.3 APPLICATIONS FOR PAYMENT

A. Contractor shall submit each application for payment in a standardized form approved by Owner. A completed copy of this form shall be the cover for each invoice.

B. Applications for Payment shall be executed and certified by signature of authorized officer of Contractor.

C. Contractor shall list original Work Order amount, and each authorized Change Order and Work Change Directive, listing Change Order or Work Change Directive number and dollar amount.

1.4 INVOICES

A. Each invoice shall be accompanied by the specified Application for Payment form and shall show the following:

1. The date of the Master Services Agreement,
2. Work Order Number,
3. Work Order Date,
4. Owner's Project No.,
5. The name of the Owner Representative named on the Work Order ("Work Order Representative"), and,
6. A description of the Work performed (The description of the Work shall document site location, project code number and detail the actual Work performed and completed pertaining to the invoicing period).

B. Invoices that include Work performed on a Time and Materials (T&M) or Cost Plus Percentage (CP) basis shall be supported with copies of daily time sheets, and Contractor shall attach photocopies of receipts for all materials and expenses claimed as T&M or CP Work. Lack of complete documentation for T&M or CP work will be just cause for refusal by Owner to pay such claimed costs, pending submittal of required documentation. All documentation shall be submitted and approved prior to invoice submittal.

1.5 SUBSTANTIATING DATA:

A. Owner may request substantiating data for any claimed due payment. When OWNER requires substantiating data, Contractor shall submit, within 30 days, data justifying quantities of Work performed and dollar amounts in question. Owner may conditionally approve claimed payment pending submittal of acceptable substantiating data; however, unsubstantiated claims for payment will result in withholding of the unsubstantiated amounts from subsequent payment claims.

B. Contractor shall submit one copy of substantiating data with cover letter for each request for substantiating data. Each submittal of substantiating data shall show Application for Payment number and date, and pay item by number and description.

PART 2 MATERIALS - Not Used

PART 3 METHODS - Not Used

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

Contract Modification Procedures shall be followed and any change in Work must be approved by Owner before Contractor provides labor, materials, tools, equipment or services, and performs any Work not defined in the Specifications or on the Drawings.

1.2 SUBMITTALS

Contractor shall submit all documentation and correspondence regarding changes in the Work in accordance with the procedures specified in Section 01 33 00 - SUBMITTALS

1.3 PROCEDURES FOR CHANGES IN THE WORK

The Engineer may make modifications to the Drawings and Specifications as necessary to complete the Work, or as directed by Owner. Contractor shall not make any modifications to the Drawings or Specifications except upon written Work Change Directive from Engineer and approved by Owner.

A. FIELD ORDER

The Engineer may make minor modifications to the Work, and provide interpretations or clarifications, which do not entail any change to the Scope of Work as defined in the Contract Documents. Minor modifications to the Work will be communicated through the issuance of a Field Order. The Field Order will include at a minimum the date, name of issuer, description, interpretation or clarification of the change, the relevant Specification(s) or Drawing(s), and any additional information necessary for proper documentation.

B. WORK CHANGE DIRECTIVE

1. The Engineer may order an addition, deletion, substitutions or revision to the Work, due to a change or unforeseen physical conditions under which the Work is being performed, by issuance of a Work Change Directive Form (attached). The Work Change Directive shall include a description of the modified Work, reference to the impacted Specification(s) and Drawing(s).

2. Contractor shall provide all necessary information required to complete and return the completed Work Change Directive Form as soon as possible to the Engineer but not more than 2 days following its receipt.

3. Contractor shall not initiate Work described in the Work Change Directive Form until the Owner has returned Approved Form to the Engineer and the Contractor. The Work Change Directive shall be signed by the Engineer, the Contractor and the Owner.

C. CHANGE ORDER

1. A Change Order Form (attached) shall be completed when there is Work that the Contractor will perform that is a new Work item, material or method that is not included in the Bid Form.

2. Contractor shall provide all necessary information on the Change Order Form including a description of the work, the purpose for the change, reference to the applicable Specification(s) and Drawing(s), the unit price, the method for measurement of the Work covered by the unit price, and an estimate of the resulting change to the Contract Price and/or Plan of Operation.

3. Contractor shall not initiate Work described in the Change Order Form until reviewed by the Engineer and approved by the Owner.

4. The Change Order shall be signed by the Engineer, the Contractor and the Owner.

5. The Schedule of Values shall be modified when the Change Order is executed and accepted by all parties.

.

D. If a change to the Work involves a deduction from the Contract Price amount, not determinable by reference to the Schedule of Values, a cost estimate prepared by the Engineer shall be accepted by the Contractor if the Contractor fails to submit its own cost estimate within five (5) working days following notice of such proposed change. The amount of such deduction shall, at the Engineer's option, be a lump-sum amount agreed upon between the Engineer and Contractor based on the actual cost saved on labor, materials, tools and equipment usage, which would have been necessary for the portion of the Work not performed.

E. Additional costs associated with Contract Modifications shall be paid on a Time and Materials (T&M), a Cost Plus Percentage (CP) basis, applicable unit price, or lump sum as agreed upon between Contractor and Owner prior to conducting the work.

F. In the event the Contractor performs any Work on a T&M basis, or CP basis, Contractor shall submit supporting documentation prior to the application for Payment.

G. If the Engineer is not satisfied with the cost estimate provided by the Contractor, for any Contract Modification with a value estimated by the Engineer to be more than $25,000, the Engineer with Owner's approval may engage another Contractor to perform the scope of change in the Work.

H. If the Engineer and Contractor are not able to agree on the cost or changes to the Plan of Operation for Work Change Directives or the Change Orders, it shall, nevertheless, be the duty of the Contractor, upon written notice from the Engineer, to proceed immediately with the changes and continue the work as directed by the Engineer.

1.4 CONTRACTOR REQUEST

A. Contractor shall maintain detailed records of Work conducted on the basis of T&M.

B. Contractor shall include with the Daily Construction Report a list of itemized T&M Work conducted for verification and approval by the Engineer each day that the Contractor performs Work on the basis of T&M.

C. Contractor shall provide sufficient documentation for each request for a change in the Contract Price or Plan of Operation to allow the Engineer to properly evaluate the request. Documentation may include the following: Quantities of products, labor, and equipment; Taxes, where applicable; Overhead and profit; and, Justification for any change to Plan of Operation.

D. Contractor shall support each claim for additional costs with the following information for verification by the Engineer: Description and date of claim; Dates and time work was performed, and by whom; Timesheets; Duration and rate sheets for labor and equipment; and, Invoices and receipts for products, equipment, materials and sub-subcontracts.

1.5 DELAY DAMAGES

A. If the Contractor, due to its own fault, neglects, fails, or refuses to complete the Work within the time specified for Substantial Completion as specified in Contract Documents, or any approved modified project completion date based on a properly executed Change Order, then the Contractor does hereby agree to pay to the Owner, as liquidated damages ("Delay Liquidated Damages") and not as a penalty, the sum of Three Thousand USD ($3,000) per day for each calendar day beyond the Substantial Completion Date set forth until Substantial Completion is achieved.

B. The Delay Liquidated Damages amount is agreed to be a reasonable estimate of the amount of damages which the Owner will sustain and said amount shall be deducted from any monies due or that may become due to the Contractor. If monies owed to Contractor under this Agreement are insufficient to cover said Delay Liquidated Damages, then the Contractor shall pay the amount of the difference by check to the Owner.

PART 2 MATERIALS - Not used

PART 3 METHODS

3.1 CORRELATION OF CONTRACTOR SUBMITTALS

A. Contractor shall promptly revise the Schedule of Values and Application for Payment forms to record each authorized Work Change Directive or Change Order as a separate line item and adjust the Contract Price.

B. Contractor shall promptly revise Plan of Operation to reflect any change in schedule and shall revise sub-schedules to adjust times for other items of work affected by the change, and resubmit Plan of Operation.

C. Contractor shall promptly enter changes in Project Record Documents.

END OF SECTION

WORK CHANGE DIRECTIVE FORM
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

WORK CHANGE DIRECTIVE NO. _____

DATE OF ISSUANCE: _____

EFFECTIVE DATE: _____

On behalf of New York State Electric and Gas Corporation (NYSEG), the Contractor shall proceed with the following changes to the Work:

Description:

Purpose for Work Change Directive:

Attachments:

Any Claim that the Described Work Change Directive shall affect the Contract Price shall be summarized below:

_____ Unit Prices

_____ Lump Sum $_____

_____ Total Cost of Work

Estimated increase (decrease) in Contract Price: $_____
(Estimate amount is not to be exceeded without further authorization.)

Estimated increase (decrease) in Contractor Schedule: _____ days

---

RECOMMENDED	ACCEPTED	APPROVED
By: _____	By: _____	By: _____
Engineer	Contractor	NYSEG
Date: _____	Date: _____	Date: _____

CHANGE ORDER FORM
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

Owner: New York State Electric and Gas Corporation (NYSEG)

CHANGE ORDER NO. _____

CONTRACT/WORK ORDER: _____ DATE OF ISSUANCE: _____

PROJECT NO.: _____ EFFECTIVE DATE: _____

Description of Work covered in this Change Order shall consist of furnishing the labor, materials, tools, equipment, incidentals, and services necessary to complete the activity.

Description:

Purpose for Change Order:

Attachments:

Any Claim that the Work described shall affect the Contract Price shall be summarized below:

_____ Unit Prices

_____ Lump Sum $_____

_____ Total Cost of Work

Estimated increase (decrease) in Contract Price: $_____
(Estimate amount is not to be exceeded without further authorization.)

Estimated increase (decrease) in Contractor Schedule: _____ days

---

RECOMMENDED	ACCEPTED	APPROVED
By: _____	By: _____	By: _____
Contractor	Engineer	NYSEG
Date: _____	Date: _____	Date: _____

SECTION 01 29 00

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SUMMARY

A. The Work shall include furnishing all labor, materials, equipment and incidentals required to construct the Remedial Design, complete as shown on the Contract Documents and as specified herein.

B. Payment to the Contractor of the Contract Price as specified in the Bid Form shall be full compensation to the Contractor for furnishing all labor, materials, tools, equipment, incidentals and services required to complete the Work as specified above. Payment of the Contract Price shall also fully compensate the Contractor for insurance, bonds, and furnishing other services required, and all other items incidental to the satisfactory completion of the Work as shown on the Contract Documents and as specified herein.

C. For bid items that require a measurement of length or area as the basis for payment, the measurement shall be made for the installed work only; no additional payment shall be made for unused, overlapped or wasted materials.

1.2 QUANTITY ESTIMATES

A. 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 Bid Form. The estimated quantities shown on the Bid Form are not guaranteed and are solely for the purpose of comparison of bids and determining an initial Contract Price. Quantities and measurements supplied or placed in the Work in accordance with the Specifications and Drawings and verified by the Owner/ Engineer will determine payment.

B. The Engineer will determine the actual quantities and classifications of Unit Price Work performed by the Contractor. The Engineer will review with the Contractor the Engineer's preliminary determinations before rendering a written decision to the Owner on an Application for Payment.

C. If the actual Work requires more or fewer units than the estimated units indicated on the Bid Form, the Contractor shall provide the required units at the unit prices contracted. Under no circumstances may the Contractor exceed stated quantities without prior written approval from the Engineer.

1.3 PAYMENT

A. Payment includes: Full compensation for all required labor, supervision, submittals, permits, products, materials, tools, equipment, transportation, services, incidentals, erection, or installation of an item and all other cost necessary for the Work, including Contractor's overhead and profit.

B. 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 as 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 monitoring wells, utilities, or any other facilities property located within or adjacent to the Work Area.

C. Payment will be made by the Owner 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. The Engineer will review the Contractor's determination of percent completion to determine payment by the Owner.

1.4 MEASUREMENT OF QUANITIES

A. Weight Measurement

1. Weight tickets or other documents should be provided. Weight tickets shall be obtained from scales certified in accordance with applicable laws and regulations for the state and county in which the scales are located. Certification shall have been made within a period of not more than one year prior to date of use for weighing commodity.

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

3. For shipments to offsite waste management facilities and locations, trucks will be weighed at the receiving facility for the purpose of measuring the quantity of Work for payment.

B. Volume Measurement; Volumes and measured as in-place volumes will be determined by survey approved by the Engineer. The Contractor shall retain the services of an independent land surveyor, licensed or registered in the State of New York, whose determination of in-place volumes shall be authoritative and final for the purpose of measurement for payment. To compute in-place volumes of excavation, the average end area method or other methods acceptable to the Engineer will be used.

C. Area Measurement; Measured by square dimension using length and width or radius and verified by the Engineer.

D. Linear Measurement: Measured by linear dimension, at the item centerline or mean cord, and verified by the Engineer.

E. Time Measurement: Measured by the actual time rounded to the nearest time unit and verified by the Engineer.

1.5 ASSESSMENT OF NON-CONFORMING WORK

A. Contractor shall replace Work, or portions of the Work, that does not conform to the requirements of the Specifications and Drawings, as assessed by the Engineer.

B. If, in the opinion of the Engineer, it is not practical to remove and replace the non-conforming Work, the Engineer will direct one of the following remedies:

1. The non-conforming Work may remain, but the unit price will be adjusted to a new price at the discretion of the Engineer and agreed to by the Contractor.

2. The non-conforming Work shall be partially repaired to the instructions of the Engineer, and the unit price will be adjusted to a new price at the discretion of the Engineer and agreed upon by the Contractor.

C. The individual Specification sections may modify these options or may identify a specific formula or percentage price reduction.

D. The authority of the Engineer to assess non-conforming work and identify payment adjustment is final.

1.6 ELIMINATED ITEMS

A. Should any items contained in the Drawings or Specifications be found unnecessary for the proper completion of the Work, the Engineer may, upon a written Work Change Directive to the Contractor, eliminate such items from the Work, and such action shall in no way invalidate the Contract.

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

1.7 APPLICATION FOR PAYMENT

A. Contractor shall submit Applications for Payment as specified in Specifications Section 01 22 16 PAYMENT PROCEDURES.

1.8 MEASUREMENT AND PAYMENT OF BID ITEMS

A. Contractor shall complete the Bid Form provided in the Contract Documents by providing a Unit Price for each Bid Items listed. Measurement and payment of the Work will be based on the Bid Items and as described in these Technical Specifications.

B. Contractor shall submit with the completed Bid Form a list of time and material rates for all equipment and personnel required to complete the Work. Time and material rates shall include the Contractor's overhead and profit. This shall be the basis for measurement and payment of change order work directed by the Engineer and performed on a time and material basis.

C. Lump sum price shall constitute full compensation for all labor, supervision, permits, materials, equipment, submittals, incidentals, transportation of all equipment and labor and facilities and materials to and from the Site and all other cost necessary to complete the Bid Item.

D. Payment for all Bid Items will be made as described in this section of the Technical Specifications and the Contract Documents. Payment shall constitute full compensation for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete Work as described in and shown on the Contract Documents

Bid Item 1 Mobilization, Demobilization and Preconstruction Activities

1. No more than 70% of the lump sum price for all Items listed under Mobilization and Demobilization and Preconstruction Activities may be invoiced prior to demobilization from the Site.
2. Fencing and Visual Barriers may be invoiced at 50% per linear feet when mobilized and 50% per linear foot when demobilized.

Bid Item 2 Demolition and Site Preparation

1. Lump sum payment for demolition of site features will be paid in full after items have been removed from the site, loaded into transportation vehicles for disposal, and completion of demolition is verified by the Engineer.
2. Demolition of utilities and installation of temporary surface drainage channel will be measured for payment on an in-place linear foot basis as verified by survey;

3. Installation of sanitary sewer cleanout, water main cap and catch basin wall penetration will be paid in full following inspection and approval by Engineer.
4. Basis of payment for transport and disposal of all materials to the approved disposal facility will be made based on weight tickets from the receiving facility.

Bid Item 3 Sheet Pile Wall

1. No more than 70% of the lump sum price for Utility Monitoring Points may be invoiced following installation. The remaining 30% may be invoiced proportionally during Sheet Pile Wall installation.
2. Loading, transport, and unloading of Sheet Piling from NYSEG sites to the Dansville Site shall be paid in full after the sheets are stockpiled on the Dansville;
3. No more than 80% of the lump sum price for Rental of Steel Sheet Piles may be invoiced prior to demobilization from the Site.
4. No more than 80% of the lump sum price for Steel Sheet Pile Wall may be invoiced prior to demobilization from the Site.
5. Loading, transport, and unloading of all NYSEG Sheet Piles (388 sheet piles) to NYSEG's Elmira facility will be approved for payment in full when sheets have been unloaded by the Contractor and inspected by NYSEG at the Elmira facility.

Bid Item 4 Pre-Engineered Fabric Structure and Air Handling

1. No more than 80% of the lump sum price for both the Pre-Engineered Fabric Structure and the Air Handling System may be invoiced prior to demobilization from the Site.
2. Activated Carbon Change Out shall be approved for payment in full when activity is completed and approved by Engineer.

Bid Item 5 Excavation and Loading for Transportation of Soils

1. Excavation and loading for transportation of soils will be measured for payment on an in-place cubic yard basis as verified by survey of the excavation limits.

Bid Item 6 Backfill Excavation Areas

1. Reuse and imported backfill materials will be measured for payment on an in-place cubic yard or square yard basis as verified by survey.

Bid Item 7 Water Pretreatment System

1. No more than 50% of the lump sum price for the water pretreatment system shall be paid prior to system startup. The remaining 50% may be invoiced proportionally during water pre-treatment system operation up to 1.5 million gallons. Treatment of water shall be documented by totalizer readings and verified by the Engineer for payment.

2. Treatment of water in excess of 1.5 million gallons shall be documented by totalizer readings and verified by the Engineer for payment.

3. Carbon Change Out and Organo Clay Replacement will be measured for payment on a unit basis as approved by the Engineer.

4. Dewatering Sump Pit and Pump will be measured for payment on a time basis. The Engineer shall review and approve operating durations as a basis for payment.

5. Conveyance and Discharge Pipe Installation will be measured for payment on an installed linear foot basis as verified by Engineer.

Bid Item 8 Site Restoration

1. Installed gravel soil cover and topsoil will be measured for payment on an in-place cubic yard basis as verified by survey.

2. Seeding, Conditioning and Mulching will be measured for payment on a square foot basis as verified by survey of the installed limits.

3. Convert temporary surface drainage channel to permanent surface drainage channel. Final length will be measured for payment on a linear foot basis as verified by survey of the final channel.

Bid Item 9 Site Health and Safety

MEASUREMENT AND PAYMENT

1. Work shall be conducted in Level D Personnel Protection Equipment. If the Contractor is required to upgrade to Level C Personnel Protection Equipment the date and times shall be documented and verified by the Engineer for payment.

2. Provide and apply secondary odor controls if needed. The basis of payment shall be by the applied gallon and the quantity of materials applied shall be pre-approved and documented for verification by the Engineer for payment.

3. No more than 80% of the lump sum price for General Health and Safety may be invoiced prior to demobilization from the Site.

Bid Item 10 Miscellaneous

1. Engineer Pre-approved stand-by time shall be compensated at a time and materials rate and shall be a result of circumstances beyond the control of the Contractor.

Bid Item 11 Seneca Meadows Soil Disposal

1. Transportation and disposal will be measured for payment based on weight tickets from Seneca Meadows.

END OF SECTION

SECTION 01 31 13

COORDINATION

PART 1 GENERAL

1.1 The Contractor will not have exclusive occupancy of the work site. In his operations for work under this Contract, he shall cooperate with and coordinate his operations with those of the Owner (or its designated representative), other contractors, trades and work forces.

1.2 The Contractor agrees that he will have no claim against the Owner because of any increased costs due to delays or extra expense entailed by reason of the above requirements.

END OF SECTION

SECTION 01 29 73

SCHEDULE OF VALUES

PART 1 GENERAL

1.1 A Schedule of Values shall be submitted to the Owner for review and approval, and will be incorporated into a form for Application for Payment. The Schedule of Values shall represent installed value for installed Work.

1.2 The Schedule of Values shall subdivide the Work, as a minimum, into the component parts as shown on the Bid Form.

1.3 Should the Engineer determine that the schedule of values may be in any way unbalanced, the schedule will be rejected pending submission of detailed cost documentation by the Contractor, demonstrating the accuracy of the Schedule of Values.

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 GENERAL

1.1 A preconstruction meeting between the Owner (or its designated representative), NYSDEC representative, Engineer and Contractor will be held prior to commencement of construction activities. All parties will be introduced and project specific administrative procedures will be discussed.

1.2 The Owner (or its designated representative), NYSDEC, Engineer and Contractor, and those subcontractors whose presence is necessary, shall attend periodic meetings for the purpose of discussing the progress and execution of the Work. These meetings shall be held weekly and shall be held at a time and place as designated by the Owner.

1.3 The proceedings of these meetings will be recorded by the Engineer, and a copy will be subsequently furnished to the Owner and Contractor. It will be the Contractor's responsibility to distribute copies, as may be required, to subcontractor(s).

END OF SECTION

SECTION 01 32 16

CONSTRUCTION SCHEDULE

PART 1 GENERAL

1.1 The Contractor shall prepare a “Plan of Operations” which shall show the manner in which work will be started and prosecuted. The “Plan of Operations” shall also show the interrelationship of work under the various trades, dates upon which different tasks are to be started, methods for progressing with the work, allowance for anticipated delays, and dates upon which completion of different tasks are required. All known or likely coordination issues with other entities on-Site shall be identified in the “Plan of Operations”.

1.2 The Plan of Operations including the Construction Schedule shall be updated and submitted to the Owner at the beginning of each calendar month or more frequently as needed.

1.3 After review of the Plan of Operations, the Contractor shall be responsible for ensuring that the Plan is adhered to and shall maintain proper coordination between each trade’s work.

1.4 The Contractor shall furnish materials and equipment which are safe, efficient, appropriate and large enough to secure a satisfactory quality of Work as required by the Contract Documents and a rate of progress which will insure the completion of the Work within the time stipulated in the Contract Documents, accounting for all reasonable and typical delays due to weather, unclassified excavation, and all other such delays. If at any time such materials and equipment appear to the Owner to be inefficient, inappropriate or insufficient for securing the quality of Work required or for producing the required rate of progress, the Owner shall direct the Contractor to increase the efficiency, change the character or increase the materials and equipment, and the Contractor shall conform to such order. Failure of the Owner to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the Work and rate of progress required.

1.5 If, in the opinion of the Owner, the Contractor falls behind in his Work, the Contractor shall take such steps as may be necessary to improve his progress, and/or the days of Work, and/or the amount of construction materials, and/or, to the extent permitted by law, to institute or increase overtime operations, all without additional cost to the Owner.

1.6 Failure of the Contractor to comply with the requirements of the Owner shall be grounds for determination by the Owner that the Contractor is not prosecuting the Work with such diligence as will insure project completion within the time specified. Failure of the Contractor to prosecute the Work with such diligence as will insure project completion within the time specified, may result in termination. Termination will be at the convenience of the Owner.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 GENERAL

1.1 Description of Requirements; The types of submittal requirements specified in this Section include:

- Plan of Operations;
- Health & Safety Plan (prior to commencing Work);
- Contractor Quality Control Plan;
- Daily Reports;
- Shop Drawings;
- Product Data;
- Samples;
- Miscellaneous work-related submittals; and,
- As-Built Survey Drawings.

Individual submittal requirements are specified in applicable sections for each unit of Work.

1.2 Definitions: Work-related submittals of this Section are categorized for convenience as follows:

A. Plan of Operations: as defined in Section 01 32 16 CONSTRUCTION SCHEDULE of these Specifications.

B. Health & Safety Plan: as defined in the Site Specific Health and Safety Plan.

C. Contractor Quality Control Plan: as defined in Section 01 43 00 Quality Assurance/Quality Control of these Specifications.

D. Daily Reports: Daily Construction Progress Reports, daily monitoring logs (noise, dust/air emissions, etc.), disposal documentation (manifest, weight tickets, etc.), Bill of Lading, progress photographs, Health and Safety Incident (accident) Report and Near-Miss Reports, and proposed manpower, equipment, and schedule for planned activities.

E. Shop Drawings: specially prepared technical data for this project, including drawings, diagrams, data sheets, schedules, reports, calculations, instructions, measurements and similar information not in standard printed form for general application to several projects.

F. Product Data: standard printed information on materials, products and systems (such as cut sheets) not otherwise specially prepared for this project.

G. Samples: both fabricated and unfabricated representative physical examples of materials, products and units of Work; both as complete units and as smaller

portions of units of Work; either for limited visual inspection or (where indicated) for more detailed testing and analysis.

H. Miscellaneous Submittals (related directly to the Work): other plans as defined in these Specifications, warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, permits, physical work records, quality testing and certifying reports (certifications), weights and measures data, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock, product tags and similar information, devices and materials applicable to the Work and not processed as shop drawings, product data or samples.

I. As-Built Survey Drawings: As-Built drawings shall be provided in electronic format compatible with CADD software, which accurately depict the limits of surface drainage channel, excavation limits and all additional Work performed and certified from a licensed Surveyor in the State of New York.

PART 2 MATERIALS – None

PART 3 METHODS

3.1 Coordination and Sequencing; The Contractor shall coordinate preparation and processing of submittals with performance of the Work so that Work will not be delayed. The Contractor shall coordinate and sequence different categories of submittals for the same Work, and for interfacing units of Work so that one will not be delayed for coordination with another.

3.2 Preparation of Submittals; The Contractor shall provide a permanent marking on each submittal to identify project name, date, Contractor, submittal number and name, corresponding Specification section, and similar information to distinguish it from other submittals. Each submittal item shall have a separate transmittal sheet (compiling of multiple submittals on one transmittal sheet shall not be allowed) and shall clearly bear the Contractor's executed review and approval marking and provide space for Engineer's "Action" marking. Each submittal shall be packaged appropriately for transmittal and handling. Submittal information shall include a minimum of two (2) glossy (original) catalog brochures, as applicable. Illegible photoreproductions or illegible facsimile copies are not acceptable.

Contractor's review information and/or submittals which are illegible or are received from sources other than through the Contractor's office will be returned stamped "No Action". Refer to paragraph titled "Action on Submittals".

3.3 Specific-Category Submittal Requirements; Except as otherwise indicated in individual sections of these Specifications, the Contractor shall comply with requirements specified herein for each indicated category of submittal. The Contractor shall provide and process

intermediate submittals, where required between initial and final, similar to initial submittals.

A. Daily Reports; The Contractor shall furnish to the Engineer a written daily report listing manpower, equipment and progress of activities. The reports shall include all monitoring logs (noise, dust/air emissions, etc.), sampling results, disposal documentation (manifest, weight tickets, etc.) for all materials transported off-Site, Bill of Ladings for all materials brought on-Site, progress photographs, survey data, Health and Safety Incident (accident) Report and Near-Miss Reports, and proposed manpower, equipment, and schedule for planned activities.

B. Shop Drawings; The Contractor shall provide shop drawings, settings, samples, schedules and such other drawings as may be necessary for the execution of Work in the shop and in the field, as required by the Contract Documents and/or Engineer's instructions. Deviations from the Contract Documents shall be called to the attention of the Engineer at the time of the first submission of drawings for approval. Then Engineer's approval of shop drawings shall not release the Contractor from responsibility for such deviations. Shop drawings shall be submitted according to the following schedule:

1. Four (4) copies shall be submitted within a time period required to prevent delay of the Work.

2. The Contractor shall respond to required submittals with complete information and accuracy, to achieve required approvals within no more than three (3) submissions. All costs to the Owner involved with additional submissions will be backcharged to the Contractor by deducting such costs from payments due for work completed. In the event that the Contractor requests a revision to a previously approved Work item, all costs associated with the review and approval process will likewise be backcharged to the Contractor unless judged by the Engineer that the need for such deviation from previously approved data is beyond the control of and not caused by the Contractor.

3. The Engineer will, as soon as practical, return to the Contractor one (1) copy of the shop drawings that will be annotated as described in the "Action on Submittals" section of these Specifications. The four (4) Engineer-reviewed and annotated shop drawings shall be distributed as follows: two retained by the Engineer; one forwarded to the Owner; one returned to the Contractor.

4. The Contractor shall then correct as required the shop drawings to conform to the corrections and changes requested by the Engineer.

5. Following completion of such corrections and changes, the Contractor shall furnish to the Engineer four (4) revised copies of the shop drawings, conforming to the required corrections and changes for final approval. Revised copies shall clearly bear the Contractor's executed review and approved marking, call out the revision number sequentially for each revision of the submittal, and provide space for the Engineer's action marking.

C. Product Data; The Contractor shall collect required data into one submittal for each unit of work or system, and shall mark each copy to show which choices and options are applicable to the project. The Contractor shall include manufacturer's standard print recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements. The Contractor shall clearly identify either on standard print materials or as attachments thereto, all conflicts between the manufacturing recommendations and the Contract Documents. The Contractor shall maintain one set of product data (for each submittal) at the project Site, available for reference by the Owner, Engineer and others.

D. Samples; The Contractor shall provide samples that are identical to the final condition of proposed materials or products for the work, and shall include "range" samples (not less than three units) where unavoidable variations must be expected. Samples shall be accompanied by documentation that shall describe or identify variations between units of each set, provide the basis for sample tracking, test data review, Engineer approval/rejection, etc.

E. Tests and Test Reports

1. The Contractor shall classify such reports as either "project related" or "product data" depending upon whether the report is uniquely prepared for the project or a standard publication of workmanship control testing at point of production, and shall denote and submit the reports accordingly.

2. All test equipment used shall be verified to be in calibration at the time of each test and test reports shall so indicate. No test shall be made without such verification.

3.4 Action on Submittals; Where action and return is required or requested, the Engineer will review each submittal, and will mark the submittal with "Action". Where submittals must be held for coordination with other contracts, the Contractor will be so advised without delay. The Engineer's action may include the following:

1. Final Unrestricted Release:

Work may proceed, provided it complies with the Contract Documents, when submittal is returned with the following:

Marking: "Approved"

2. Restricted Release:

Minor corrections are noted and shall be made. A resubmittal may be required. Work may proceed at the Contractor's own risk, provided it complies with notations and corrections on submittal and with Contract Documents. Should a required resubmittal not be accepted, the Contractor shall perform all revisions to work executed to bring work into compliance with final approved shop drawings at no cost to the Owner.

Marking: "Approved as Noted"

3. Returned for Resubmittal:

Do not proceed with Work. Major corrections are noted. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking. Do not allow submittals with the following marking (or unmarked submittals where a marking is required) to be used in connection with performance of the Work:

Marking: "Disapproved"

4. Rejected:

Based on the information submitted, the submission is not in conformance with the Contract Documents. The deviations from the Contract Documents are too numerous to list and a completely revised submission of the proposed equipment or a submission of other equipment is required.

or

Reproducible transparencies and resultant prints are not legible and will not be reviewed and a resubmittal is required.

Marking: "Rejected"

5. Other Action:

Where submittal is returned for other reasons, with the Engineer's explanation included, it will be marked as follows:

Marking: "No Action"

If a submittal is satisfactory to the Engineer, the Engineer will annotate the submittal, "Approved" and return one (1) copy to the Contractor. If reproducible transparencies are submitted, the Engineer will retain the copies and return the reproducible transparencies to the Contractor.

If a resubmittal is required, the Engineer will annotate the submittal "Approved as Noted" or "Disapproved" or "Rejected" and return one (1) copy to the Contractor for appropriate action. If reproducible transparencies are submitted, the Engineer will retain the copies and return the reproducible transparencies to the Contractor.

The Contractor shall revise and resubmit submittals as required by the Engineer until submittals are "Approved" or "Approved as Noted" without resubmittal required by the Engineer.

Approval of a shop drawing by the Engineer will constitute approval of the subject matter (limited to the Specification referenced) for which the drawing was submitted and not for any other structure, material, equipment or appurtenances shown.

END OF SECTION

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.1 Except as specifically stated otherwise in the Contract Documents, the Contractor shall pay at his own expense, all costs and fees for permits, licenses, certificates etc. required by regulatory agencies, utilities, etc. and all costs to comply in full with the for mentioned for execution of Work under this Contract.

1.2 Whenever any product is specified by references to Federal Specifications, ASTM Standards, American Standard Specification or other "association" standards, the Contractor shall present an affidavit from the manufacturer certifying that the product complies with the particular standard specification. All references shall be latest edition of standards at time of bid closing. When necessary, requested or specified, supporting test data shall be submitted to substantiate compliance.

1.3 The following industry standards shall be considered minimum requirements under this specification, unless otherwise noted:

A. The rules and regulations of the Occupational Safety and Health Act (OSHA).
B. NYS Department of Health rules and regulations.
C. Standards and specifications of the New York State Department of Transportation (NYDOT).
D. Standards and Specifications of the New York State Department of Environmental Conservation (NYDEC).
E. The rules and regulation of the Village of Dansville.
F. Standards of the American Concrete Institute (ACI).
G. Standards of the American Institute of Steel Construction (AISC).
H. Standards and specifications of the American Society for Testing and Materials (ASTM).
I. Standards and specifications of the American Association of State Highway Transportation Officials (AASHTO).
J. Standards and specifications of the American National Standards Institute (ANSI).
K. Standards and specifications of the American Gas Association (AGA).
L. Standards and specifications of the Plastic Piping Institute (PPI).

END OF SECTION

SECTION 01 42 13

ABBREVIATION AND DEFINITIONS

PART 1 GENERAL

1.1 Abbreviations

The following abbreviations may be in the Contract Documents and represent the organization named. The names are believed to be correct as of the date of the Contract Documents.

AAN	-	American Association of Nurserymen
AASHTO	-	American Association of State Highway and Transportation Officials
AGA	-	American Gas Association
AGMA	-	American Gear Manufacturers Association
AISC	-	American Institute of Steel Construction
AISI	-	American Iron and Steel Institute
ANSI	-	American National Standards Institute
APA	-	American Plywood Association
API	-	American Petroleum Institute
ASCE	-	American Society of Civil Engineers
ASME	-	American Society of Mechanical Engineers
ASTM	-	American Society for Testing and Materials
CAMP	-	Community Air Monitoring Program
FM	-	Factory Mutual System Fed. Spec. - Federal Specifications
IEC	-	International Electrotechnical Commission
IEEE	-	Institute of Electrical and Electronics Engineers
HASP	-	Health and Safety Plan
NEC	-	National Electrical Code
NEMA	-	National Electrical Manufacturers Association
NFPA	-	National Fire Protection Association
NSF	-	National Sanitation Foundation
NWWA	-	National Water Well Association
NYDEC	-	New York State Department of Environmental Conservation
NYSDOT	-	New York State Department of Transportation
NYSEG	-	New York State Electric and Gas
OMP	-	Odor Monitoring Program
OSHA	-	Occupational Safety and Health Administration
PPE	-	Personal Protective Equipment
PPI	-	Plastic Piping Institute
PS	-	Product Standard of the National Bureau of Standards
UL	-	Underwriters Laboratory

Where reference is made to a standard issued by one of the above mentioned organizations it is understood that the latest revisions thereof shall apply.

ABBREVIATION AND DEFINITIONS

1.2 Definitions

Engineer - The entity providing engineering services and construction oversight for the Owner's project and functions as owner's representative in the field.

Owner – New York State Electric and Gas Corporation

Contractor - The entity entering into this Contract with the Owner.

Subcontractor - Any entity under contract with Contractor to perform all or a portion of the Work hereunder, and any of its affiliates involved in the project.

Site Safety Officer - The entity contracted or employed by the Owner providing on-site health and safety coordination and monitoring.

Contract Documents - The Contract or Agreement, Contract General Conditions, Special Conditions, and Drawings and Specifications are the Contract Documents, and such other documents as are specified in the Contract.

Drawings - The "Contract Documents Drawings" as identified in Section 01 10 00 SUMMARY OF WORK AND DRAWING INDEX of these Specifications.

Work - The work to be performed by Contractor as described in Section 01 10 00 SUMMARY OF WORK AND DRAWING INDEX of these Specifications, and as further defined by the Contract Documents.

END OF SECTION

SECTION 01 43 00

QUALITY ASSURANCE/QUALITY CONTROL

PART 1 GENERAL

1.1 The Contractor shall develop and implement a Contractor Quality Control Plan. The Plan shall identify and describe the following:

A. Names, qualifications, duties, responsibilities and authorities of personnel assigned to perform Quality Control functions;

B. Inspections and tests to be performed by the Contractor, on a continuing basis, to assure compliance with the Drawings and Specifications; and,

C. Reporting procedures, including reporting formats.

1.2 The Contractor shall submit his Contractor Quality Control Plan to the Engineer, for review and approval, prior to initiation of construction activities on the worksite. The Contractor shall make all amendments requested by the Engineer, and resubmit the plan for additional review. The Contractor will not be authorized to initiate construction on the worksite until the required submittals have been reviewed and approved by the Engineer.

1.3 The Engineer will utilize a Quality Assurance Plan (QAP) to evaluate and document the compliance of construction activities with the Contract Documents. The Contractor shall assist the Engineer, with sample collection, testing, etc., as described in the QAP, and shall ensure compliance of the work with the Contract requirements evaluated therein.

END OF SECTION

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

Work covered in this Section shall consist of furnishing the labor, materials, tools, equipment, incidentals, and services necessary to construct facilities and temporary controls as indicated on and in the Drawings and Specifications, including but not necessarily limited to the following:

- temporary utilities: electric service, water service, and sanitary facilities;
- enclosures and fencing;
- utility monitoring point;
- security;
- protection of work and property;
- access roads, and parking areas;
- stockpile areas;
- air handling equipment;
- temporary water pre-treatment system;
- temporary fabric structure;
- transportation of excavated soils to off-site landfill for disposal;
- traffic control signs and regulation; and,
- field offices and sheds.

Contractor shall remove facilities and temporary controls and restore Site prior to submitting final application for payment.

END OF SECTION

SECTION 01 52 13

FIELD OFFICES AND SHEDS

PART 1 GENERAL

1.1 The Contractor shall provide and maintain field offices, trailers, and sheds as deemed necessary in order to properly store and shield construction machinery and materials from harmful elements.

1.2 Field office, trailer, and shed areas shall be maintained and kept hazard free by the Contractor.

1.3 Field offices, trailers, and sheds shall be removed by the Contractor upon completion of the work or as ordered by the Owner.

1.4 All buildings and trailers other than storage sheds shall be provided with the following minimum requirements:

- Lighting: electric, non-glare type producing a minimum illumination level of 50 foot-candles measured at desk height;
- Heating and cooling; capable of maintaining ambient temperature within the structure of 70 degrees Fahrenheit (plus or minus 3 degrees). An air conditioning unit is required;
- Potable water;
- First aid supplies;
- Fire extinguisher: non-toxic dry chemical type, UL-approved for Class A, B and C fires (minimum rating of 2A, 10B, 10C);
- Temporary offices and trailers shall be provided with proper safety features including exits, safety doors and any other precaution specified by National Fire Protection Standards, state and local standards, and any other applicable standards; and,
- Fire and smoke detectors meeting applicable standards.

1.5 Janitorial services shall be supplied by the Contractor on a daily basis. This shall include but not be limited to cleaning trailer floors and empting garbage cans, and providing janitorial supplies, such as towels, soap, paper, etc.

1.6 Trailers shall be placed on concrete blocks, anchored and leveled, with adequate wooden steps and handrails provided at each exterior door. The trailers and their associated equipment shall be new or recently renovated to a like new condition subject to the Owner's approval. The following shall be provided by the Contractor:

A. One trailer shall contain two offices and shall be supplied for use by the Owner and/or its representatives and NYSDEC. Each office shall be separated by permanent floor to ceiling height walls and with lockable doors. The office shall have a minimum of 120 square feet of floor area and at least one operable window and shall be supplied with the following equipment:

- Office desk (60 inches by 30 inches laminated top) with lockable drawers, desktop light, swivel chair, four straight-back chairs, and table (60 inches by 30 inches laminated top);
- A telephone with dedicated line with extension and intercom connection to the other offices within the same trailer;
- High Speed Internet access;
- Fire-resistant, two-drawer, lockable filing cabinet, legal size;
- Shelf set, two shelves 12 inches deep by 3 feet long (attachable to wall);
- A minimum of six (6) 120 vac, 15 amp electrical outlets; and,
- Waste basket.

B. The Owner and/or its representatives, and NYSDEC shall have access to and utilization of a shared, partitioned Contractor's meeting area having a minimum of 120 square feet of floor area. The meeting area shall contain the following equipment:

- One office table with laminated top having minimum dimensions of 8 feet by 5 feet;
- Drafting table of (sufficient size to hold E sized drawings) and chair;
- A telephone with a shared dedicated line equipped with a functional speaker phone system;
- Six straight backed chairs;
- Bulletin board, 4 feet by 6 feet; and,
- Waste basket.

C. The Owner and/or its representatives and NYSDEC shall have access to and utilization of a Contractor supplied and maintained desktop, heavy-duty, electric, dry-process printer/copier/scanner and an adequate supply of copy paper. The copy paper and other materials, parts and supplies necessary to generate copies shall be supplied by the Contractor.

D. The Contractor shall provide for the Owner's and/or its representatives and the NYSDEC exclusive use of one FAX machine capable of a minimum transmission rate of 36.6 kbps and that requires no personnel present to receive incoming messages or a scanner capable of scanning 8.5 x 14 inches paper so that the scanned documents can be emailed from the Site.

E. Toilet facilities: The Owner and/or its representatives and the NYSDEC shall, at a minimum, have access to and utilization of the Contractor's sanitary facilities.

END OF SECTION

SECTION 01 52 16

TEMPORARY FIRST AID FACILITIES

PART 1 GENERAL

1.1 The Contractor shall provide equipment and facilities as specified in the Health & Safety Plan (HASP). The Contractor shall take every precaution for the safety of his employees. The Contractor shall provide such equipment and facilities as are necessary or required, in case of accident, for first aid service to any who may be injured in the progress of the work, and the Contractor shall have standing arrangements for the removal, transport and hospital treatment of any employees who may be injured or who may become ill.

1.2 The Contractor must report immediately to the Engineer every accident to persons or damage to property, and shall furnish in writing full information, including testimony of witnesses, regarding any and all accidents.

1.3 The Contractor shall review and comply with the requirements of the HASP.

1.4 At the commencement of work, the Contractor shall inform all parties of his activities, including number of employees, and anticipated duration of work.

1.5 The Contractor shall obtain and keep on file, Material Safety Data Sheets (MSDS) for all products used on-site.

END OF SECTION

SECTION 01 52 19

TEMPORARY SANITARY FACILITIES

PART 1 GENERAL

1.1 The Contractor shall at his own expense, provide and maintain chemical toilets on the site of adequate number and size for use by all personnel.

1.2 Facilities shall be maintained in strict conformity with the applicable laws and shall be kept in a clean and sanitary condition by the Contractor.

1.3 The Contractor shall arrange for discharge of wastewater resulting from septic systems, etc., at his own expense.

END OF SECTION

SECTION 01 55 19

ACCESS ROADS AND PARKING AREAS

PART 1 GENERAL

1.1 Temporary parking areas for construction use shall be maintained as required and as directed by the Engineer.

1.2 Stabilized Construction Entrances shall be installed at the locations shown on the Drawings.

1.3 Stabilized Construction Entrances shall be constructed of aggregate underlain with geotextile to the dimensions shown on the Drawings.

1.4 The Entrances shall be maintained in a condition which will prevent the tracking of sediment onto public right-of-way or streets. This may require periodic top dressing with additional aggregate or reconstruction. All soils or other materials spilled, dropped or washed onto public rights-or-way or streets must be removed immediately.

1.5 Wheels must be cleaned to remove soils and other materials prior to exiting the Site. Washing shall be conducted on the Decontamination Pad.

1.6 All soils shall be prevented from entering storm drains, ditches and watercourses.

1.7 Inspection and needed maintenance shall be provided after each rain event.

1.8 Stabilized Construction Entrances shall meet the requirements of the New York Standards and Specifications for Erosion and Sediment Control for Stabilized Construction Entrance.

END OF SECTION

SECTION 01 56 23

BARRIERS

PART 1 GENERAL

Work covered in this Section shall consist of furnishing the labor, materials, tools, equipment, incidentals, and services necessary to complete removal of existing fence as indicated on the Drawings, the installation of visual barrier on existing fence, and the installation of temporary fence with visual barrier, as indicated on the Drawings.

PART 2 MATERIALS

2.1 TEMPORARY FENCE

All materials shall be of the quality necessary to perform the intended function and as shown on the Drawings.

2.2 CONSTRUCTION SAFETY FENCE

A. Construction barrier fence shall be constructed from durable polyethylene material in a highly visible bright color. Construction barrier fence shall be a minimum 4 feet high. Use either wooden stakes, steel posts or steel fencing pins for fence construction. Fence shall be anchored every 10 feet.

B. Weather resistant signs shall be posted on construction safety fence every 50 linear feet where installed along the Steel Sheet Pile Wall no load area. Signs shall clearly state “NO LOAD ZONE” in 3 inches tall bold letters.

2.3 VISUAL BARRIER

Visual barrier shall be constructed from a durable, lightweight, tear-resistant woven fabric made from high density polyethylene. Material shall have a minimum density of 90%, be green in color and shall be subject to approval by the Engineer. Visual barrier shall extend the entire width and length of the Site perimeter fencing. Manufacturer’s recommended connector type and methods shall be used.

PART 3 METHODS

3.1 Temporary fences and vehicular gates shall be constructed as shown on the Drawings and as necessary throughout the course of the work.

3.2 Visual barrier shall be installed on existing fences and on temporary fences following Manufacturer’s installation recommendations. At a minimum, plastic ties shall be installed every 12 linear feet to tightly secure visual barrier to posts.

3.3 The Contractor shall barricade open excavations complying with OSHA requirements.

3.4 The Contractor shall fence off and secure the perimeter of work areas as instructed by the Engineer.

3.5 The Contractor shall install construction safety fence 10 feet away from the perimeter of Steel Sheet Pile wall to prevent construction vehicle from driving in the NO LOAD ZONE.

3.6 Fences and barricades shall be constructed so as to impede or prevent unauthorized parties from entering the work area.

3.7 At the conclusion of each work day, the Contractor shall inspect the entire site to ensure all barriers and signs are intact and operational. It shall be the Contractors responsibility to maintain all barricades and signs.

3.8 The Contractor shall remove from the working area all temporary fences and barricades upon completion of the work.

END OF SECTION

SECTION 01 57 23

SOIL EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.1 SUMMARY

Work covered in the Section shall consist of furnishing the labor, materials, tools, equipment, incidentals, and services necessary to control erosion and sedimentation, as indicated on and in the Contract Documents.

1.2 EROSION AND SEDIMENT CONTROLS

The controls and measures required of the Contractor are described below.

A. Stabilization Practices; The stabilization practices to be implemented include temporary seeding, mulching, preservation of mature vegetation, etc. On the Daily Report, record the dates when the major grading activities occur (e.g., clearing and grubbing, excavation, embankment, and grading); when construction activities temporarily or permanently cease on a portion of the Site; and when stabilization practices are initiated. Initiate stabilization practices as soon as practicable.

1. Burn off of the ground cover is not permitted.

2. Protection of Erodible Soils; Immediately finish the earthwork brought to a final grade, as indicated or specified. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

B. Structural Practices; Implement structural practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants (including silt, soil and sediment) from exposed areas of the Site. Implement structural practices in a timely manner during the construction process to minimize erosion and sediment runoff.

1. Silt Fences/Fiber Rolls; Provide silt fences or fiber rolls as a temporary structural practice to minimize erosion and sediment runoff. Properly install silt fences/fiber rolls to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g., clearing and grubbing, demolition, excavation, and grading). Install silt fences in the locations indicated on the Contract Documents. Contractor is responsible for removal of silt fences following completion of Site Work and approval must be obtained from the Engineer prior to final removal of silt fence barriers. Fiber rolls that are biodegradable may be cut open, the roll shall be spread out and the compost spread onto the roll material and the surrounding ground surface.

2. Stabilized Construction Entrances; Stabilized construction entrances shall be maintained throughout the project. Locate/install the stabilized construction entrances where shown on the Contract Document.

C. Vegetation and Mulch

1. Provide temporary protection on excavation areas as soon as backfilling is completed or sufficient soil is exposed to require erosion protection. Stabilize surface by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.

2. Seeding: Provide new seeding where ground is disturbed. Include topsoil and conditioners or nutrients as necessary during the seeding operation to establish a suitable stand of grass. The seeding operation shall be as specified in Section 32 92 19 SEEDING.

1.3 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTALS:

1. Certificates
Mill Certificate or Affidavit

2. Product Cut Sheet

1.4 DELIVERY, STORAGE, AND HANDLING

Identify, store and handle filter fabric in accordance with ASTM D 4873.

PART 2 MATERIALS

Erosion and sedimentation control materials shall consist of those indicated on the Drawings and described in the Specifications.

2.1 COMPONENTS FOR SILT FENCES

A. Filter Fabric; Provide geotextile that complies with the requirements of ASTM D 4439, and consists of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and contains stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure. Provide synthetic filter fabric that contains ultraviolet ray inhibitors and stabilizers to assure a minimum of six months of expected usable construction life

at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile Elongation (percent)	ASTM D 4632	100 lbs. min. 30 percent max.
Trapezoid Tear	ASTM D 4533	55 lbs. Min
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

B. Silt Fence Stakes and Posts; Use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction shall have a minimum cross section of 2 by 2 inches and have a minimum length of 3 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction shall have a minimum weight of 1.33 pounds/linear foot and a minimum length of 5 feet.

C. Mill Certificate or Affidavit; Provide a mill certificate or affidavit attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. Specify in the mill certificate or affidavit the actual Minimum Average Roll Values and identify the fabric supplied by roll identification numbers. Submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

2.2 COMPOST FILTER SOCK

Compost filter socks shall be a tubular sediment control and storm water filtration device, comprised of straw or excelsior woven roll enchased in netting of jute, nylon or burlap. Compost filter socks shall be anchored by driving hard wooden stakes 10 feet on center and having a minimum cross section of 2 by 2 inches and having a minimum length of 3 feet. Staking depth for sand and silt loam soils shall be 12 inches and 8 inches for clay soils.

2.3 STABILIZED CONSTRUCTION ENTRANCE

Stabilized Construction Entrances shall be constructed of NYSDOT No. 3 or 4A aggregate underlain by geotextile as shown on the Contract Documents. Stabilized Construction Entrances shall be constructed as required by the New York Standards and Specifications for Erosion and Sediment Control. The entrances shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. Top dress aggregate as required. All sediment spilled, dropped or washed onto public right-of-way must be removed immediately.

When necessary, wheels shall be cleaned to removed sediment prior to entrance onto public right-of-way. Washing shall be done on the decontamination pad. All sediment shall be prevented from entering storm drains, ditches or watercourses.

PART 3 METHODS

3.1 Erosion and sedimentation control installation and maintenance practices shall be consistent with those indicated on the Drawings and Specifications.

3.2 When joints are unavoidable, splice together silt fence filter fabric at a support post, with a minimum 6 inch overlap, and securely sealed. Fiber rolls shall be overlapped a minimum of 1 foot

3.3 Erosion and sedimentation appurtenances shall be inspected at least weekly and following every significant rainfall event. All repairs shall be completed within 24 hours and to the satisfaction of the Owner's Representative and reported in the daily construction reports.

3.4 All disturbed areas shall be stabilized as soon as practicable. Erosion and sedimentation appurtenances shall remain in place and be maintained until stabilization is permanent.

3.5 Existing catch basins and storm sewer outfalls shall be adequately protected to prevent entry of sediments prior to permanent site stabilization as described in Section 33 44 19.16 CATCH BASIN STORMWATER FILTERS, and as shown on the Drawings.

3.6 Excavate silt fence trench approximately 6 inches wide and 6 inches deep on the upslope side of the location of the silt fence. The 6 by 6 inch trench shall be backfilled and the soil compacted over the filter fabric. Remove silt fences upon approval by the Engineer.

3.7 Install compost filter sock as shown on the Drawings.

3.8 The stabilized construction entrance shall be constructed to a minimum length of 50 feet and a minimum width of 12 feet. Aggregate thickness shall be a minimum of 6 inches.

END OF SECTION

SECTION 01 70 39

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 The Contractor shall maintain at the job site, one copy of:

- Drawings;
- Specifications;
- Addenda;
- Contractor's Plan of Operation;
- Contractor's Health and Safety Plan (HASP);
- Community Air Monitoring Program (CAMP) (provided by Engineer);
- Odor Monitoring Plan (OMP) (provided by Engineer);
- Reviewed Submittals and Shop Drawings;
- Work Change Directives, and Change Orders;
- Other modifications to the Contract;
- Field test records;
- Monitoring logs;
- Disposal documentation;
- Bills of Ladings;
- All pertinent correspondence; and,
- Drawings reflecting "As-Built" conditions.

1.2 The Contractor shall store record documents in the field office supplied by the Contractor, apart from documents used for construction.

1.3 The Contractor shall provide files and racks for storage of record documents.

1.4 The Contractor shall file record documents in accordance with Project Filing Format of Uniform Construction Index.

1.5 The Contractor shall maintain record documents in clean, dry, legible condition.

1.6 The Contractor shall not use record documents for construction purposes.

1.7 The Contractor shall make documents available at all times for inspection by the Owner and/or Engineer.

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING

PART 1 GENERAL

1.1 The Contractor shall establish the exact position, or location including elevation, slopes and grades of all the work indicated on and in the Drawings and Specifications. All work shall be referenced to center lines which shall be established from control points, re-established where necessary, and maintained throughout the life of the Contract. Any error, or apparent discrepancies found in the Drawings, or Specifications shall be called to the Engineer's attention for interpretation prior to proceeding with the Work.

1.2 All property lines and survey monuments which may be disturbed during construction shall be properly tied in to fixed points before being disturbed, and properly reset by the Contractor upon completion of the work. Survey monuments which must be removed for placement of proposed facilities shall be replaced at a location approved by the Engineer.

1.3 The Contractor shall furnish a surveyor, licensed in the State of New York, who shall verify that all as-built portions of the work are provided at the locations and elevations shown on the Drawings.

1.4 All field survey information shall reference the New York Plane Coordinate System, Central Zone, North American datum of 1983 and the North American vertical datum of 1988.

END OF SECTION

SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 This section covers the requirements for final cleaning, inspection and other procedures necessary for contract closeout.

1.2 The work shall consist of the complete decontamination of all equipment, cleaning the Site, inspection, and administrative provisions for substantial completion and for final acceptance. The Contractor shall be responsible for proving that all construction activities, as indicated in and on the Drawings and Specifications have been completed.

1.3 Final decontamination shall include the following:

- Decontamination, cleaning and removal of the Fabric Structure and accessories, Air Handling system equipment and accessories, Temporary wastewater pre-treatment system equipment and accessories;
- Decontamination of the Steel Sheet Piles, bracing and appurtenances; Steel Sheet Piles shall be transported off-site as specified by the Owner.
- Decontamination and removal of all of the Contractor's equipment and materials;
- Collection and disposal of all Contractor-generated contaminated material and equipment on the Site for which decontamination is inappropriate; and,
- Wash-down of equipment Decontamination Pad and sumps, including collection and management of sediments and wash water for off-Site disposal by others.

1.4 Equipment decontamination: Decontamination shall take place on the equipment Decontamination Pad and shall consist of degreasing (if required) followed by high pressure water wash and/or steam cleaning. Special attention shall be paid to removal of material on and within the undercarriage, tracks and sprockets of crawler equipment, and undercarriage, tires and axles of trucks and rubber tire mounted equipment.

1.5 Tools decontamination: Tools and items for which decontamination is difficult or impossible to verify shall remain on-Site, until completion of the work, for subsequent packing and disposal by the Contractor at an approved disposal facility (examples of such items are wire, rope, lumber, personnel protective equipment and apparel).

1.6 Prior to removal from Site, all decontaminated equipment and material shall be subject to inspection and approval by the Site Safety Officer and the Engineer.

1.7 Cleaning of the Site shall include, but not necessarily be limited to the following:

- Removal of all waste such as excess construction material, wood, bituminous concrete, debris and any other foreign material;

- Disconnection of all temporary utilities to the Site, unless directed otherwise by the Engineer;
- Removal of temporary Site facilities, unless directed otherwise by the Engineer;
- Removal of the Decontamination Pad, lining/containment systems within the materials handling area, and related appurtenances, and off-Site disposal of these materials in accordance with applicable regulations; and,
- Removal of all Contractor-constructed access roads and parking areas, unless directed otherwise by the Engineer.

1.8 Substantial Completion

A. When the Contractor considers the work to be substantially complete, he shall submit to the Engineer written Notice of Substantial Completion with a "punch list" of remaining items to be completed or corrected, and the estimated dates of the completion or correction.

B. Should inspection by the Engineer find that the work is not substantially complete, the Engineer will promptly notify the Contractor in writing, listing the observed deficiencies. The Contractor shall remedy the deficiencies and send a new written Notice of Substantial Completion to the Engineer. This procedure shall continue until such time when the Engineer is satisfied with such repairs and corrections and the Owner has concurred with the determination by the Engineer.

C. When the Engineer finds the work to be substantially complete, he will prepare a Certificate of Substantial Completion after obtaining approval from the Owner with a list of remaining deficiencies which require timely correction prior to final completion.

1.9 Final Inspection

A. When the Contractor considers the work to be complete, he shall submit to the Engineer written certification that:

- Contract Documents have been reviewed;
- Work has been inspected for compliance with Contract Documents and any change orders;
- Work has been completed in accordance with Contract Documents and change orders, and deficiencies listed within the Certificate of Substantial Completion have been corrected; and,
- Work is complete and ready for final inspection.

B. Should the inspection by the Engineer find work to be incomplete, he will promptly notify the Contractor in writing, listing the observed deficiencies. The Contractor shall remedy the deficiencies and send a second written certification

that the work is complete. This procedure shall continue until such time when the Engineer is satisfied with such repairs and corrections.

C. When the Engineer finds the work to be complete and the Owner approves the Engineers findings, a Final Acceptance Certificate will be issued to the Contractor.

END OF SECTION

SECTION 01 89 13

SITE PREPARATION

PART 1 GENERAL

Work covered in the Section shall consist of furnishing the labor, materials, tools, equipment, incidentals, and services necessary to provide clearing and grubbing and removal of obstructions for the entire area proposed for construction, as indicated in and on the Specifications and Drawings.

PART 2 MATERIALS - None

PART 3 METHODS

3.1 Clearing and grubbing shall consist of the clearing, grubbing, removal, hauling, and disposal of all trees, tree root systems, brush, stumps, debris, and objectionable materials within proposed construction areas as specified and as indicated on the Drawings, or as otherwise directed by the Owner to properly execute the work.

3.2 The Contractor shall avoid cutting or injuring trees and vegetation outside areas to be cleared as indicated, or as necessary, without the Owner's permission. The Contractor shall be responsible for damages outside of these lines.

3.3 Trees, stumps and tree root systems shall be disposed at an approved off-site disposal facility, subject to the approval of the Owner. Unimpacted topsoil shall be stockpiled for later use at the site.

3.4 Miscellaneous concrete structures located at or near the ground surface, including foundations, pavement, concrete pads, etc. that will be encountered by Site grading or stormwater and utility installation activities shall be disposed of at an off-Site location. Other materials, such as railroad ties, wood, steel and other debris shall be removed and disposed at an off-Site location, in accordance with applicable regulations, subject to the approval of the Owner. Overexcavated areas shall be backfilled as required, using structural fill (unless otherwise directed by the Engineer), in accordance with the requirements of Section 31 00 00 EARTHWORK of these Specifications.

3.5 Fugitive dust control shall be in accordance with Section 44 11 23 DUST/AIR EMISSION CONTROL.

END OF SECTION

SECTION 01 91 00

SITE SAFETY AND WORKSITE CONDITIONS

PART 1 GENERAL

1.1 Work specified in this Section shall consist of maintaining clean, orderly, hazard-free conditions at the Site.

1.2 The Site shall be maintained in accordance with the governmental requirements applicable to worksite cleanliness and in a neat, orderly and hazard-free condition until final acceptance of the work. Areas adjacent to the Site shall be kept free from hazards caused by construction activities, and shall be regularly inspected for hazardous conditions caused by construction activities.

1.3 Volatile materials shall be stored in covered metal containers, and shall be removed from the worksite daily. Accumulations of materials which create hazardous conditions shall be prevented. Cleaning and disposal operations shall be conducted in accordance with anti-pollution laws and governmental requirements applicable to those operations.

1.4 All excavations and trenches shall be shored, sheathed and braced or sloped in accordance with all applicable Occupational Safety and Health Administration (OSHA) rules and regulations pertinent to excavation, trench, and confined entry operations.

1.5 Construction equipment shall meet all OSHA rules and regulations for construction equipment. The Contractor shall submit written verification of compliance prior to commencement of work.

1.6 The Contractor shall prepare a Health and Safety Plan (HASP) to specify the equipment and procedures required to protect the Contractor's personnel and subcontractors. The HASP shall meet all applicable rules and regulations, and shall be subject to approval by the Engineer in accordance with the Engineer's HASP included in the Contract Documents. This approval shall in no way relieve the Contractor of the obligation to ensure the accuracy and adequacy of the HASP and its proper implementation.

1.7 The Contractor shall employ the use of monitoring equipment as specified in the approved HASP to protect, as required, all personnel involved in the work area.

1.8 All personnel on-site shall conform to the level of personal protection as specified in the HASP. In addition, all personnel on-site shall, at a minimum, be equipped with the following:

- Boots/Shoes, Safety with Steel Toe and Shank;
- Safety Glasses;
- Hard Hat; and,
- Hearing Protection.

1.9 The Contractor shall comply with all OSHA and other local, state and federal rules and regulations regarding confined space entry, site safety and all other site operations.

1.10 The Contractor shall be aware of and shall notify his personnel of all potential worksite hazards. The Contractor shall limit smoking to restricted areas on-site.

1.11 All stockpiles shall be bermed, lined and covered with waterproof material as required to prevent exposure to the elements. Sandbags shall be used to secure cover. Stockpiles shall be inspected daily to ensure that they are adequately covered and that no surface water shall come in contact with the material.

PART 2 MATERIALS

2.1 Cleaning materials shall be the types recommended by the manufacturer of the surface to be cleaned.

2.2 Fugitive dust and air emission control materials shall be the types as shown on the Drawings or as specified in Section 44 11 23 DUST/AIR EMISSIONS CONTROL.

2.3 Utility Monitoring Points shall be constructed as shown on the Drawings.

PART 3 METHODS

3.1 Cleaning shall be executed every workday during the project; structures, grounds, and areas of the worksite and public and private properties immediately adjacent to the worksite and temporary sanitary facilities shall be maintained free from accumulations of materials and rubbish which has been caused by construction operations. Materials and rubbish shall be placed in dump containers.

3.2 Loose material on open decks and on other exposed surfaces shall be either removed or secured either at the end of each work day or more often to maintain the worksite in hazard free condition. Securing shall prevent dislodgement by wind and other forces.

3.3 Dump containers shall be emptied promptly at least once a week; contents shall be legally and properly disposed by the Contractor.

3.4 Materials, debris and rubbish shall be handled in a controlled manner, and shall not be dropped or thrown from heights.

3.5 Spillages of other than potable water shall be immediately reported to the Owner, and removed.

3.6 Cleaning operations shall occur at times when dust and other materials will not fall on wet and newly painted surfaces.

3.7 OFFSITE TRACKING OF SOILS, IMPACTED OR OTHERWISE, WILL NOT BE TOLERATED. ALL ROADS LEADING AWAY FROM THE SITE SHALL REMAIL CLEAN AND FREE FROM SITE SOILS.

3.8 Controlling offsite tracking of soils from the former Pappas Cleaners property (NYDEC vehicles, NYDEC contractor vehicles, etc) will be the responsibility of the Contractor.

3.9 Contractor shall provide a truck washing station as per Section 02 51 29 DECONTAMINATION PAD and as shown on the Drawings, or Engineer approved equivalent.

3.10 Loaded trucks shall transition directly from the loading area to the decontamination pad. Contractor shall provide and maintain a gravel tracking pad between the soil loading area and the decontamination pad.

3.11 Decontamination shall include removal of soil and residues from the undercarriage, suspension, wheels and tire tracks, and other parts of the vehicle that visually appear to be contaminated. Soils on the roof of the cab and on the top edge of the dump bed shall be removed with a broom. Decontamination shall be conducted in accordance with Section 01 19 00 SITE SAFETY AND WORKSITE CONDITIONS

3.12 Trucks shall pass over a decontamination pad and the tires shall be cleaned with a BioSolve and water solution (sprayed via a pressure washer) prior to leaving the decontamination pad. The tires of all trucks shall be cleaned in this manner regardless of the presence of soil on the tires. The level of effort required to clean the tires shall be proportional to the condition of the tires, however, every tire shall be inspected and wetted to indicate the truck tires have been inspected and cleaned as required.

3.13 The contractor shall ensure that all truck leaving the site from the truck washing station travel over well maintained gravel roads and do not pick up and track offsite soil or mud from the reminder of the site.

3.14 Contractor shall have on hand, at all times, sufficient and suitable equipment (e.g. skid steer-mounted rotary brush/broom) and manpower to control dust and off-Site tracking of soil. Contractor shall sweep the paved portion of Ossian Street at least once per day during active operations, at the direction of the Engineer, or as conditions dictate.

3.15 Sidewalk and other paved surfaces within any right-of-way shall be broom-cleaned, and other ground surfaces within any right-of-way shall be rake-cleaned.

3.16 Cleaning shall be maintained until final acceptance.

3.17 Any road surface or other area damaged by the Contractor shall be repaired to original condition by the Contractor at no additional cost to the Owner.

3.18 Fugitive dust and air emission controls shall conform to Section 44 11 23 DUST/AIR EMISSIONS CONTROL.

3.19 Utilities located within any right-of-way shall be monitored daily during Steel Sheet Pile Wall installation and any damage that may occur shall be repaired immediately.

3.20 Perimeter noise monitoring shall be conducted during Steel Sheet Pile Wall installation.

END OF SECTION

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

Work covered by this Section shall consist of furnishing the labor, materials, tools, equipment, incidentals, and services necessary to provide for the abandonment of monitoring wells and piezometers, and the demolition of concrete foundations and loading dock, catch basins, pipe, utilities and associated facilities as indicated on the Drawings and in the Specifications.

PART 2 MATERIALS - None

PART 3 METHODS

3.1 All demolition and related activities shall be performed in accordance with applicable regulations and as shown on the Drawings. The Contractor shall perform these activities in a manner that satisfies all applicable requirements and standards for the safety of the public and the Contractor's personnel. Costs associated with damage to the Contractor's equipment incurred as a result of the performance of demolition and related activities shall be the sole responsibility of the Contractor.

3.2 Miscellaneous concrete structures located at or near the ground surface, including pavement, concrete pads, etc. that will be encountered during excavation activities shall be excavated and disposed of at an off-Site facility at the direction of the Engineer. Other materials such as wood, steel, and other debris shall be removed and disposed at an off-Site location, in accordance with applicable regulations, subject to approval of the Owner. Overexcavated areas shall be backfilled in accordance with the requirements of Section 31 23 00 EXCAVATION AND FILL.

3.3 Fugitive dust control shall be in accordance with Section 44 11 23 DUST/AIR EMISSION CONTROL.

END OF SECTION

SECTION 02 51 29

DECONTAMINATION PAD

PART 1 GENERAL

1.0 SUMMARY

Work covered in this Section shall consist of furnishing all labor, materials, tools, equipment, incidentals, and services necessary to maintain and operate and remove the decontamination pad.

1.1 SUBMITTALS

A. A shop drawing of the proposed decontamination pad shall be submitted in accordance with Section 01 33 00 SUBMITTALS. All materials shall be identified.

B. Contractor shall provide the procedures for the inspection and decontamination of vehicles leaving the Site.

C. Contractor shall submit proposed decontamination methods and equipment that will be used in accordance with NYSDEC requirements.

D. Contractor shall submit the proposed procedures for minimizing wastewater generation.

PART 2 MATERIALS

2.1 DECONTAMINATION PAD

A. Contractor shall construct and maintain decontamination pad in accordance with the Contract Documents.

B. Decontamination pad liner system shall consist of a 40 mil LLDPE geomembrane underlain and overlain with a 10 oz/sy non-woven geotextile as shown on the Drawings.

C. The liner system shall extend over the perimeter earthen berms.

PART 3 METHODS

A. The Contractor shall construct operate and maintain the decontamination pad. No vehicle with access to the work area shall leave the site without prior decontamination on the Decontamination Pad.

B. Decontamination shall be conducted by the Contractor in accordance with Section 01 91 00 SITE SAFETY AND WORKSITE CONDITIONS.

C. Water and other liquids utilized in conjunction with the decontamination pad shall be collected and pumped by the Contractor to the on-Site Water Pre-Treatment System provided, operated and maintained by the Contractor.

D. The Decontamination Pad shall be removed in accordance with Section 01 77 19 CONTRACT CLOSEOUT of these specifications as part of project closeout activities.

END OF SECTION

SECTION 02 56 13

WASTE CONTAINMENT GEOMEMBRANE

PART 1 GENERAL

1.0 SUMMARY

Work covered in this section shall consist of furnishing the labor, materials, tools, equipment, incidentals and services necessary to supply and install the geomembrane liner in the Water Pre-Treatment System containment area and the decontamination pad.

1.1 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 SUBMITTALS:

A. Shop Drawings

B. Product Data

C. Test Reports
   1. Manufacturer's certified raw and sheet material test reports and a copy of the CQC certificates.

D. Fabricator's CQC certificates for all factory seams.
   2. Samples

1.2 DELIVERY, STORAGE, AND HANDLING

A. Delivery

The Contractor shall be present during delivery and unloading of the geomembrane. Each Geomembrane roll shall be labeled with the manufacturer's name, product identification number, and dimensions.

B. Storage

Temporary storage at the project site shall be on a level surface, free of sharp objects, and where water cannot accumulate. The geomembrane shall be protected from puncture, abrasion, excessive heat or cold, material degradation, or other damaging conditions. Palleted materials shall be stored on level surfaces and shall not be stacked on top of one another. Damaged geomembrane shall be removed from the site and replaced with geomembrane that meets the specified requirements at the sole expense of the Contractor.

C. Handling

The Geomembrane shall be handled and installed as per the Manufacturer’s recommendation. The Geomembrane shall not be dragged, lifted by one end, or dropped.

1.3 EQUIPMENT

A. Equipment used in performance of the work shall be in accordance with the geomembrane manufacturer's recommendations and shall be maintained in a satisfactory working condition.

PART 2 MATERIALS

A. Raw Materials

Resin used in manufacturing geomembrane sheets shall be made of virgin uncontaminated ingredients. No more than 10 percent regrind, reworked, or trim material in the form of chips or edge strips shall be used to manufacture the geomembrane sheets. All regrind, reworked, or trim materials shall be from the same manufacturer and exactly the same formulation as the geomembrane sheet being produced. No post consumer materials or water-soluble ingredients shall be used to produce the geomembrane. For geomembranes with plasticizers, only primary plasticizers that are resistant to migration shall be used. The Contractor shall submit a copy of the test reports and CQC certificates for materials used in the manufacturing of the geomembrane shipped to the site.

B. Sheet Materials

Geomembrane shall be a 40 mil LLDPE flexible, prefabricated geomembrane sheet as shown on the Drawings or a fabricated polyethylene containment pad manufactured to the required thickness and size as determined by the Contractor. The Geomembrane material shall be uniform in color, thickness, and surface texture. The materials shall be free of cuts, abrasions, holes, blisters, contaminants and other imperfections. Geomembrane sheet and factory seams shall conform to the requirements listed in Table 1 for Manufacturing Quality Control.

C. Factory Seams

Geomembrane sheets shall be factory seamed into one sheet sufficient in size to cover the containment areas and berms.

TABLE 1: 02 56 13: LLDPE GEOMEMBRANE SPECIFICATIONS			
TESTING PROPERTY	**TEST METHOD**	**FREQUENCY**	**MAV**
Thickness, mil Lowest individual reading	ASTM D 5199	every roll	40 36
Density, g/cm^3 (max.)	ASTM D 1505	200,000 lbs	0.939
Tensile Properties (each direction) Strength at Break, lb/in-width Elongation at Break, %	ASTM D 6693, Type IV Dumbbell, 2 ipm G.L. 2.0 in	20,000 lbs	 152 800
Tear Resistance, lb	ASTM D 1004	45,000 lbs	22
Puncture Resistance, lb	ASTM D 4833	45,000 lbs	56
Carbon Black Content, % (Range)	ASTM D 1603*/4218	20,000 lbs	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lbs	Note(1)
Oxidative Induction Time, min	ASTM D 3895, 200°C; O_2, 1 atm	200,000 lbs	>100

NOTES:
• MAV: Mean Average Value
• (1)Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.

PART 3 METHODS

3.0 SURFACE PREPARATION

Surface preparation shall be performed in accordance with Division 31 EARTHWORK. Rocks larger than ½ inch in diameter and any other material which could damage the geomembrane shall be removed from the surface to be covered with the geomembrane. The prepared surface shall be further amended with at least two (2) passes of a smooth drum roller. Construction equipment tire or track deformations beneath the geomembrane shall not be greater than 1.0 inch in depth.

3.1 GEOMEMBRANE DEPLOYMENT

The procedures and equipment used shall not elongate, wrinkle, scratch, or otherwise damage the geomembrane, or the underlying subgrade. Geomembrane damaged during installation shall be replaced or repaired, at the Engineers discretion. Only Engineer approved low ground pressure equipment shall be operated on the top surface of the geomembrane. Geomembrane shall be installed between two layers of 10 oz/sy non-woven geotextile as shown in the Drawings.

3.2 FIELD SEAMS

If field seams are required, panels shall be seamed in accordance with the geomembrane manufacturer's recommendations. In sumps, corners and odd-shaped geometric locations, the number of field seams shall be minimized. Seaming shall extend to the outside edge of

panels. Soft subgrade shall be compacted and approved prior to seaming. The seam area shall be free of moisture, dust dirt, and foreign material at the time of seaming. Fish mouths in seams shall be repaired.

A. Polyethylene Seams

Polyethylene geomembranes shall be seamed by thermal fusion methods. Extrusion welding shall only be used for patching and seaming in locations where thermal fusion methods are not feasible. Seam overlaps that are to be attached using extrusion welds shall be ground prior to welding. Grinding marks shall be oriented perpendicular to the seam direction and no marks shall extend beyond the extrudate after placement. Extrusion welding shall begin within 10 minutes after grinding. Where extrusion welds are temporarily terminated long enough to cool they shall be ground prior to applying new extrudate over the existing seams. The total depth of the grinding marks shall be no greater than 10 percent of the sheet thickness.

3.3 EQUIPMENT PLACEMENT

The Contractor shall place the Water Pre-Treatment System equipment in the containment area from outside the containment berm. Heavy equipment shall not drive directly on the geomembrane. If the Contractor must drive on the geomembrane a cover material for the geomembrane must be approved by the Engineer and provided so that the integrity of the liner is not compromised.

3.4 DEFECTS AND REPAIRS

Tears, holes, blisters and other defects shall be repaired with patches. Patches shall have rounded corners, be made of the same geomembrane, and extend a minimum of 6 inches beyond the edge of defects. Minor localized flaws shall be repaired by spot welding or seaming as determined by the Engineer in accordance with Manufacturer’s recommendations. Repairs shall be non-destructively tested over 100% of the seams.

3.5 VISUAL INSPECTION AND EVALUATION

Immediately prior to covering the geomembrane or placement of water Pre-Treatment System equipment, the geomembrane shall be visually inspected by Engineer for defects, holes, or damage due to weather conditions or construction activities. At the Engineer's discretion, the surface of the geomembrane shall be brushed, blown, or washed by the Contractor if the amount of dust, mud, or foreign material inhibits inspection or functioning of the geomembrane.

END OF SECTION

SECTION 13 31 00

FABRIC STRUCTURES

PART 1 GENERAL

1.0 SECTION INCLUDES

A. Aluminum structural frame
B. Structure membrane
C. Structure accessories

1.1 RELATED SECTIONS

D. Division 1 - General Requirements
E. Division 26 - Electrical

1.2 DESCRIPTION

A. General:

1. Provide and erect pre-engineered tension fabric structure, accessories and miscellaneous materials for a complete enclosure including foundation and supports for building components specified in other sections.
2. Building Width: 118’-0.
3. Building Length: 210’-0.
4. Building Height: 45’-0 (Center).

B. Performance Requirements:

1. All excavation must occur underneath the fabric structure.
2. When moving the structure from location to location Manufacturer’s guidelines must be used.
3. The Contractor is responsible for providing electrical hookup for the structure.

1.3 SUBMITTALS

A. Provide SUBMITTALS as per Section 01 33 00.

B. Certification: Manufacturer certification that the building conforms to the Contract Documents and manufacturer's standard design procedures. Manufacturer certification that the structure will meet local building codes for seismic and wind load requirements.

C. Drawings and Specifications:

1. Horizontal and vertical support foundation system designed and certified by a New York State Professional Engineer – submitted for approval at least one week prior to commencement of building erection
2. Anchor stake/pin locations
3. Product and connection details

D. Manufactured product information including the following.

1. Preparation instructions;
2. Storage and handling requirements;
3. Installation instructions;
4. Special procedures; and,
5. Production selection samples (e.g. paint color chips).

E. Contractor shall obtain necessary permits as required by the Village of Dansville, New York, and other public entities as applicable, to construct the temporary fabric structure.

1.4 QUALITY CONTROL

A. Contractor/Building Erector Qualifications - Contractor must provide personnel experienced in the erection of systems similar in complexity to that required for this project, plus the following:

1. Acceptable to or licensed/trained by manufacturer.
2. Experience with tension fabric structures.
3. Successfully completed comparable scale projects using tension fabric structures.

B. Contractor/Building Erector to perform QUALITY ASSURANCE/QUALITY CONTROL as defined in Section 01 43 00.

C. The Contractor shall advise the Owner and Engineer of any material defects.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store products in Manufacturer's unopened packaging until ready for installation.

B. Use proper equipment and methods during unloading and transporting material to endure safety and to prevent damage.

C. Handle and store materials in accordance with Manufacturer’s recommendations.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within the limits recommended by Manufacturer for optimum results. Do not install products when environmental conditions are outside Manufacturer's recommendations.

PART 2 MATERIALS

2.0 MANUFACTURERS

A. All site Structure Rentals as shown on the Contract Drawings.

B. Engineer approved equal materials will be considered in accordance with Section 01 33 00 SUBMITTALS.

2.1 FRAMING MATERIALS

A. Aluminum structural arched frame members that form single modules that can be connected to produce a structure of indefinite length.

2.2 FOUNDATION SYSTEM

A. Foundation system shall be utilized to transfer building and live loads of the temporary structure to below the excavation depths. The Contractor shall be responsible for the design, construction and maintenance of the support system for the temporary structure. See Section 31 50 00 LATERAL SUPPORT OF EXCAVATION of these Technical Specifications for additional requirements regarding foundation systems.

2.3 WALL COVERING MATERIALS

A. Premium 22oz (min.) PVC coated polyester flame retardant fabric opaque (blackout) membrane cladding.

2.4 WALL ACCESSORIES

A. Service Doors:

1. Five (5) 14’ x 14’ steel overhead motorized roll up cargo door
2. Single width steel exit door with lockset

B. Louvers:

1. Six (6)-24” openings, connections and associated supports for air handling system piping.

2.5 ROOF ACCESSORIES

A. Light Fixture: One (1) 400 watt metal halide light fixture per 1000 sq/ft of structure surface area.

PART 3 METHODS

3.0 PREPARATION

A. Verification of Conditions: Examine areas and conditions under which Work is to be performed and identify conditions unfavorable to proper and or timely completion.

1. Verify location.
2. Do not proceed until unsatisfactory conditions have been corrected.

B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing. Locate braced bays as required by Manufacturer.

3.1 ERECTION OF FRAME

A. Install in accordance with Manufacturer's instructions.

B. Do not field cut or alter structural members without written approval by the Manufacturer and Engineer.

3.2 INSTALLATION OF WALL SYSTEM

A. Install in compliance with Manufacturer's instructions.

B. Install overhead rollup cargo door frames, doors and motors, service door, louvers, and lighting in compliance with Manufacturer's instructions.

C. Seal structure and accessories watertight and weathertight in compliance with building manufacturer's standard procedures.

D. Do not field cut or alter fabric without written approval by the Owner or Engineer.

E. Any alterations to the structure must be pre-approved by the Manufacturer.

END OF SECTION

SECTION 26 01 00

TEMPORARY ELECTRICAL FACILITIES

PART 1 GENERAL

1.0 SECTION INCLUDES

A. Temporary electrical service during construction
B. Temporary electrical facilities associated with temporary treatment system

1.1 RELATED SECTIONS

1.2 REFERENCES

A. National Electrical Code (NEC)
B. Institute of Electrical and Electronic Engineers (IEEE)
C. International Electrotechnical Commission (IEC)
D. National Electrical Manufactures Association (NEMA)

1.3 DESCRIPTION

A. Services and Equipment

1. Temporary low voltage electrical service for contractors use during construction.
2. Temporary low voltage electrical service required to operate temporary treatment system during construction.
3. Temporary low voltage distribution, control, and safety equipment required to operate temporary treatment system during construction.
4. Temporary low voltage electrical service to operate lights and motorized roll up cargo doors in the Fabric Structure during construction.
5. Temporary low voltage electrical service required to operate temporary treatment system during construction.
6. Temporary low voltage distribution, control and safety equipment required to operate Carbon Adsorber and Fan Air Handling System during construction

B. Design Criteria

1. Contractor is responsible for establishing electrical needs for utility purposes during construction.

2. Temporary treatment system electrical requirements as shown on the Drawings. Contractor to provide electrical power including grounding, safety disconnects, controls, and other systems required to allow operation of the temporary treatment system.
3. Temporary electric service for utility purposes in the Fabric Structures
4. Carbon adsorber and fan air handling system electrical requirements as shown on the Drawings. Contractor to provide electrical power including grounding, safety disconnects, controls and other systems required to allow operation of the air handling system.
5. Performance Requirements.
6. Provide necessary temporary electrical service for use by contractors during construction at no additional cost to Owner.
7. Provide necessary temporary electrical service for fabric structure during construction.
8. Provide necessary temporary electrical service to operate temporary waste water pre-treatment system and air handling system during construction including all conductors, raceways, transformers, enclosures, safety disconnects, metering devices, grounding systems, distribution components and other materials in accordance with local, state and national building and electrical requirements.
9. Contractor to remove all temporary electrical facilities prior to final close out of work.

1.4 SUBMITTALS

A. Provide SUBMITTALS as per Section 01 33 00

B. Manufacturer’s electrical ratings, shop drawings and installation information

1. Schedule of calculated electrical loads for Contractor’s use during construction and for operation of Contractor’s temporary treatment system and air handling system.
2. Service components
3. Grounding systems
4. Safety disconnect switches
5. Control interlock instrumentation
6. Motor controls
7. Other components required to complete installation

1.5 QUALITY CONTROL

A. The Contractor shall be responsible for quality control activities during installation of the piping and associated appurtenances.

B. The Contractor shall comply with all applicable Federal, State and local laws or ordinances as well as applicable codes, standards and regulations.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in Manufacturer's unopened packaging until ready for installation.

B. Use proper equipment and methods during unloading and transporting material to ensure safety and to prevent damage.

C. Handle and store materials in accordance with Manufacturer’s recommendations.

PART 2 MATERIALS

2.0 ELECTRICAL COMPONENTS

A. Contractor to supply all electrical components required for Contractor’s temporary electrical service needs.

B. Contractor to supply all electrical components required for Contractor’s temporary waste water pretreatment system operation during construction.

PART 3 METHODS

3.0 INSTALLATION

A. Contractor shall install all electrical components to provide required temporary electrical needs in accordance with Manufactures instructions and in compliance with all local, state, and federal requirements. Licensed electricians and tradesmen shall conduct the Work.

B. Contractor shall test all temporary electrical installations to assure correct voltage, amperage, grounding, phase, interlock and motor direction prior to placing temporary facilities into operation.

3.1 OPERATION

A. Contractor shall be responsible for satisfactory operation, maintenance and troubleshooting of all temporary electrical facilities.

B. Contractor shall be responsible for all costs associated with the temporary electrical facilities including fees, taxes, utility costs, and costs to remove temporary facilities prior to contract close-out.

C. Contractor shall maintain temporary electrical facilities in safe operating condition meeting all applicable local, state and federal requirements.

END OF SECTION

SECTION 31 00 00

EARTHWORK

PART 1 GENERAL

Work covered in the Section shall consist of furnishing the labor, materials, tools, equipment, incidentals, and services necessary to complete the installation of all work, and related work as indicated on and in the Contract Documents, including but not necessarily limited to the following:

1. Geotextile
2. Grading
3. Excavation and Fill
4. Riprap
5. Metal Sheet Piling

END OF SECTION

SECTION 31 05 19

GEOTEXTILE

PART 1 GENERAL

1.0 SUMMARY

Work covered by this Section shall consist of furnishing the labor, materials, tools, equipment, incidentals and services necessary to provide and install non-woven geotextile fabric for use as shown in the Contract Documents.

1.1 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTALS:

A. Product Data - Geotextile – A minimum of 7 days prior to scheduled use, submit proposed geotextile data sheets showing physical properties.

B. Samples - Samples of the proposed geotextile material – A minimum of 7 days prior to scheduled use, submit samples of the proposed geotextile materials.

C. Certificates - Geotextile - A minimum of 7 days prior to scheduled use, submit Manufacturer's certificate of compliance stating that the geotextile meets the requirements of this section.

1.2 DELIVERY, STORAGE, AND HANDLING

Deliver, store, and handle geotextile in accordance with ASTM D 4873.

A. Delivery

Notify the Engineer a minimum of 24 hours prior to delivery and unloading of geotextile rolls packaged in an opaque, waterproof, protective plastic wrapping. The plastic wrapping shall not be removed until deployment. Geotextile or plastic wrapping damaged during storage or handling shall be repaired or replaced. Label each roll with the Manufacturer's name, geotextile type, roll number, roll dimensions (length, width, gross weight), and date manufactured.

B. Storage

Protect rolls of geotextile from construction equipment, chemicals, sparks and flames, temperatures in excess of 160 degrees F, ultraviolet light, or any other environmental condition that may damage the physical properties of the geotextile. To protect geotextile from becoming saturated, either elevate rolls off the ground or place them on a sheet of plastic in an area where water will not accumulate.

C. Handling

Handle and unload geotextile rolls with load carrying straps, a fork lift with a stinger bar, or an axial bar assembly. Rolls shall not be dragged along the ground, lifted by one end, or dropped to the ground.

PART 2 MATERIALS

2.0 RAW MATERIALS

A. Geotextile

Provide geotextile that is a nonwoven pervious sheet of polymeric material consisting of long-chain synthetic polymers composed of at least 95 percent by weight polyolefins, polyesters, or polyamides. The use of woven slit film geotextiles (i.e., geotextiles made from yarns of a flat, tape-like character) will not be allowed. The geotextile shall contain stabilizers and/or inhibitors to the base polymer, as needed, to make the filaments resistant to deterioration by ultraviolet light, oxidation, and heat exposure. Regrind material, which consists of edge trimmings and other scraps that have never reached the consumer, may be used to produce the geotextile. Post-consumer recycled material may also be used. Geotextile shall be formed into a network such that the filaments retain dimensional stability relative to each other, including the edges. Geotextiles shall meet the requirements specified in Table 1:31 05 19. Where applicable Table 1:31 05 19 property values represent average roll values (MARV) in the weakest principal direction. Values for AOS represent maximum average roll values.

Table 1: 31 05 19
MINIMUM PHYSICAL REQUIREMENTS FOR GEOTEXTILE

PROPERTY	FILTER CLOTH ACCEPTABLE VALUE	8 oz/sy GEOTEXTILE ACCEPTABLE VALUES	10 oz/sy GEOTEXTILE ACCEPTABLE VALUES	TEST METHOD
Grab Strength (lbs)	205	220	260	ASTM D 4632
Seam Strength (lbs)	205	220	260	ASTM D 4632
Mass/Unit Area	8	8	10	ASTM D 5261
Puncture (lbs)	120	120	165	ASTM D 4833
Trapezoid Tear (lbs)	85	90	100	ASTM D 4533
Apparent Opening Size (U.S. Sieve)	80	80	100	ASTM D 4751
Permittivity (Sec -1)	1.35	1.3	1.0	ASTM D 4491
Ultraviolet Degradation (%)	70 at 500 hours	70 at 500 hours	70 at 500 hours	ASTM D 4355

B. Thread

Construct sewn seams with high-strength polyester, nylon, or other approved thread type. Thread shall have ultraviolet light stability equivalent to the geotextile and the color shall contrast with the geotextile.

2.1 MANUFACTURING QUALITY CONTROL SAMPLING AND TESTING

The Manufacturer is responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the specification. Documentation describing the quality control program shall be made available upon request. Perform manufacturing quality control sampling and testing in accordance with the manufacturer's approved quality control manual. As a minimum, geotextiles shall be randomly sampled for testing in accordance with ASTM D 4354, Procedure A. Acceptance of geotextile shall be in accordance with ASTM D 4759. Tests not meeting the specified requirements will result in the rejection of applicable rolls.

PART 3 METHODS

3.0 INSTALLATION

A. Subgrade Preparation

The surface underlying the geotextile shall be smooth and free of ruts or protrusions which could damage the geotextile. Subgrade materials and compaction requirements shall be in accordance with Section 31 23 00 EXCAVATION AND FILL.

B. Placement

Notify the Engineer a minimum of 24 hours prior to installation of geotextile. Geotextile rolls which are damaged or contain imperfections shall be repaired or replaced as directed. The geotextile shall be laid flat and smooth so that it is in direct contact with the subgrade. The geotextile shall also be free of tensile stresses, folds, and wrinkles. On slopes steeper than 10 horizontal to 1 vertical, lay the geotextile with the machine direction of the fabric parallel to the slope direction.

3.1 OVERLAPS

Continuously overlap geotextile panels a minimum of 12 inches at all longitudinal and transverse joints. Where seams must be oriented across the slope, lap the upper panel over the lower panel.

3.2 PROTECTION

Protect the geotextile during installation from clogging, tears, and other damage. Damaged geotextile shall be repaired or replaced as directed. Use adequate ballast (e.g., sand bags) to prevent uplift by wind. The geotextile shall not be left uncovered for more than 14 days after installation.

3.3 REPAIRS

Repair torn or damaged geotextile. Clogged areas of geotextile shall be removed. Perform repairs by placing a patch of the same type of geotextile over the damaged area. The patch shall extend a minimum of 12 inches beyond the edge of the damaged area. Patches shall be continuously fastened using approved methods. The machine direction of the patch shall be aligned with the machine direction of the geotextile being repaired. Remove and replace geotextile rolls which cannot be repaired. Repairs shall be performed at no additional cost to the Owner.

3.4 PENETRATIONS

Construct engineered penetrations of the geotextile by methods recommended by the geotextile manufacturer.

3.5 COVERING

Do not cover geotextile prior to inspection and approval by the Engineer. Place cover soil in a manner that prevents soil from entering the geotextile overlap zone, prevents tensile stress from being introduced in the geotextile, and prevents wrinkles from folding over onto themselves. On side slopes, soil backfill shall be placed from the bottom of the slope upward. Cover soil shall not be dropped onto the geotextile from a height greater than 3 feet. Rip rap shall not be dropped onto the geotextile from a height greater than 1 foot. No equipment shall be operated directly on top of the geotextile without approval of the Engineer. Use equipment with ground pressures less than 7 psi to place the first lift of soil over the geotextile. A minimum of 12 inches of soil shall be maintained between full-scale construction equipment and the geotextile. Cover soil material type, compaction, and testing requirements are described in Section 31 23 00 EXCAVATION AND FILL. Equipment placing cover soil shall not stop abruptly, make sharp turns, spin their wheels, or travel at speeds exceeding 5 mph.

END OF SECTION

SECTION 31 09 13

GEOTECHNICAL INSTRUMENTATION AND MONITORING

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the Work of this Section.

B. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.2 DESCRIPTION OF WORK

A. The Contractor shall furnish all labor, equipment, materials, and incidentals necessary to install and survey the top of the excavation support wall at no greater than 25 feet (ft) on-center intervals for both vertical and horizontal deformations. Survey data will be summarized in Tables indicating measured values and deformation from initial survey and provided to the Engineer for review.

B. Contractor shall furnish all labor, equipment, materials, and incidentals necessary to install utility monitoring points (UMPs) on top of existing utility pipes buried below adjacent streets at locations shown on the Drawings. Contractor shall install casing at street surface for access to read UMPs. Contractor shall use vacuum extraction to install all UMPs.

C. Owner/Engineer will furnish all labor, equipment, materials, and incidentals necessary to install vibration monitoring equipment between the excavation system and the house on the southwest side of the Site.

D. The Contractor shall protect from damage and maintain instruments installed by the Contractor and Owner/Engineer. The Contractor shall furnish all labor, equipment, materials and incidentals necessary to repair and replace damaged and inoperative instruments at no additional cost to the Owner.

1.3 LIMITING VALUES

A. During all aspects of the Work, ground vibrations shall be maintained in accordance with the Vibration Monitoring Plan. If the vibration levels exceed the threshold, Contractor shall modify installation techniques to reduce vibration levels below the limiting value.

1.4 RELATED SECTIONS

A. Section 31 5000 - Lateral Support of Excavation

1.5 JOB CONDITIONS

A. Prior to submitting a bid, the Contractor shall review and understand the information referenced therein. The subsurface information is made available to the Contractor for information on factual data only and shall not be interpreted as a warranty of subsurface conditions whether interpreted from written text, boring logs or other data.

1.6 DEFINITIONS AND REFERENCE STANDARDS

A. ASTM: Specifications of the American Society for Testing and Materials.

B. Engineer: Authorized representatives of the Owner.

1.7 SUBMITTALS

A. General

1. The Contractor shall forward submittals to the Engineer a minimum of two weeks prior to any planned work related to the Contractor's submittals, unless otherwise noted.

2. The time period(s) for submittals are the minimum required by the Engineer to review, comment, and respond to the Contractor. The Engineer may require resubmission(s) for various reasons. The Contractor is responsible for scheduling specified submittals and resubmittals so as to prevent delays in the Work.

3. The Contractor's submittals shall be reviewed and accepted by the Engineer prior to conducting any work.

4. Acceptance of the Contractor's submittals by the Engineer does not relieve the Contractor of the responsibility for the adequacy, safety and performance of the Work.

B. Shop drawings indicating proposed instrumentation sizes, configurations, dimensions, material types, specifications, installation procedures, locations, means and methods of drilling and casing, data reporting formats, and other data. This includes all required information for the UMPs and vibration monitoring equipment.

C. A plan showing locations and designations of the survey points installed on the top of the excavation support wall. This submittal shall also include a detailed description of the Contractor's proposed means and methods for installing all UMPs.

D. Contractor shall submit weekly lateral movement data from the survey points installed on the top of the excavation support wall. The data shall be forwarded to the Engineer within 24 hours of each survey in tabular and graphical form that is acceptable to the Engineer. As a minimum, the data shall be well organized, presented in spreadsheet format, and include the instrumentation designation, reading time and date, current reading, and cumulative movement. Increased monitoring frequency and reporting may be required based on the performance of the system.

1.8 QUALITY ASSURANCE

A. The Contractor's instrumentation may be installed under the observation of the Engineer. The Contractor shall install the survey reference points on top of the wall prior to start of excavation. The Contractor shall immediately replace, at no additional cost to the Owner, unsatisfactory survey reference points or UMPs that are damaged during the project. This latter requirement applies to all instrumentation installed by the Contractor/Owner/Engineer regardless of location, and all instrumentation damaged as a result of the Work.

B. The Contractor shall obtain additional data from the instrumentation and/or furnish, install, and monitor additional instrumentation to monitor construction performance and safety aspects of the Work as necessary at no additional cost to the Owner.

PART 2 - MATERIALS

2.1 SURVEY REFERENCE POINTS ON EXCAVATION SUPPORT WALL

A. Chisel mark or welded survey hub on steel sheet pile wall. Survey marks shall be clearly identified using fluorescent spray paint.

2.2 UTILITY MONITORING POINTS (UMPs)

A. Install 1 inch diameter steel riser pipe with centralizers inside PVC pipe. PVC pipe shall extend down to top of pipe being monitored. One inch pipe shall have flange installed on bottom and shall rest on top of the utility pipe. Construction details for the UMPs are provided in the Drawings.

B. Roadway box shall be cast iron and flush mounted on the ground surface. Roadway box shall be capable of supporting all roadway loads without damage or settlement.

PART 3 - EXECUTION

3.1 SURVEY REFERENCE POINTS ON EXCAVATION SUPPORT WALL

A. Install survey reference points along top of the excavation support wall to monitor vertical and lateral movements of the wall. Install points at locations proposed by the Contractor and accepted by the Engineer. The maximum spacing between points shall not exceed 25 ft along the length of the excavation support wall.

3.2 UTILITY MONITORING POINTS

A. Install UMPs at locations shown on the drawings using vacuum extraction equipment to reduce potential to damage utilities.

3.3 CONTRACTOR MONITORING

A. Obtain two sets of initial readings on the reference points (both vertical and lateral) on the excavation support wall at least one day apart prior to beginning excavation. Obtain the first initial reading at least one week prior to the start of excavation and monitor during construction work on a daily basis.

B. Monitor reference points on the excavation support wall daily. This survey shall be accurate to 0.01 ft.

C. The frequency of readings may be increased or decreased based on the interpretation of the monitoring data for the first week. If frequency is increased then the aadditional readings shall be obtained at no additional cost to the Owner.

D. Movement of the Steel Sheet Pile wall in excess of 4 inches from the initial reference point reading as indicated by the survey of the reference points shall be reported to the Engineer immediately. The Engineer shall asses the what actions are appropriate based on the Site conditions (e.g. work remaining, weather, loading, historic movement, actual soil conditions encountered, proximity to sensitive structures/impact of ground loss, etc.)

E. During all aspects of the Work, utility monitoring points shall be monitored.

3.4 PROTECTION AND ACCESS OF INSTRUMENTATION

A. The Contractor shall exercise caution during the progress of work to prevent damage to all instrumentation devices. Any damage or loss of function caused by the Contractor's operations, or by any other cause, to new or existing instrumentation devices installed by the Contractor or the Engineer shall be immediately repaired or the equipment replaced to the satisfaction of the Engineer at no additional cost to the Owner.

END OF SECTION 31 09 13

SECTION 31 22 00

GRADING

PART 1 GENERAL

Work covered in this Section shall consist of furnishing the labor, materials, tools, equipment, incidentals, and services necessary to complete the grading of the Site to the lines and grades as indicated on and in the Drawings and Specifications.

1.0 Existing grades are indicated on the Drawings and are available in an electronic CADD format for the Contractor. No claim for additional compensation shall be made by the Contractor unless it is ascertained that the existing grades as indicated on the Drawings vary by more than one (1) foot from those determined at time of construction. Existing grades as indicated on the Drawings shall be considered as existing at the time of construction unless the Contractor, at his own expense, makes a field survey prior to the commencement of construction operations. Discrepancies arising as a result of this survey must be brought to the immediate attention of the Owner and the Engineer; otherwise the Contractor shall have no basis for claim for differing site conditions.

PART 2 MATERIALS

Imported clean fill soil shall be in accordance with Section 31 23 00 EXCAVATION AND FILL of these Specifications.

PART 3 METHODS

3.0 Grading

A. Grading operations shall not be started in an area until Site Preparation operations, as described in Section 01 89 13 SITE PREPARATION of these Specifications, within the area have been completed and the appropriate erosion control measures have been installed.

B. Surface grades shall be established as specified in and on the Drawings and Specifications, unless otherwise directed by the Engineer. Fill material placement, as required to achieve the design grades, shall be performed in accordance with the requirements of Section 31 23 00 EXCAVATION AND FILL of these Specifications.

C. The Contractor shall perform all field survey work required under this Section. All field survey work shall be performed by a surveyor subject to the requirements of Section 01 71 23 FIELD ENGINEERING.

D. A laser level or equivalent method shall be employed by the Contractor to maintain slopes of one (1) percent or less during grading operations. Grade settings utilized for each surveyed length shall be noted accordingly on "as-built" drawings.

E. Areas specified for grading, including adjacent transition areas, shall have uniform surfaces or slopes between finish elevations.

F. Grade stakes shall be set at breaks in grade, along swales and as required for proper grading of the construction site. Before commencing construction operations, the Contractor shall stake out facility limit lines as required to perform the work. The Contractor shall maintain existing base lines and monuments, and shall establish and maintain new control points required for his operations.

G. The Contractor shall repair and re-establish grades in settled, eroded, rutted, or otherwise damaged areas, to the satisfaction of the Engineer.

H. The Contractor shall provide and maintain slopes, crowns and ditches on all excavations and embankments to ensure satisfactory drainage at all times.

I. Fugitive dust control shall be in conformance with Section 44 11 23 DUST/AIR EMISSION CONTROL.

3.1 Stockpiles

A. If it is not possible to place material in its proper location of the permanent construction, it shall be stockpiled for later use, at locations that are subject to the approval of the Engineer. At a minimum, separate stockpiles shall be required for each of the following classes of materials:

1. Existing On-Site Reuse Material
2. Imported Clean Soil
3. Coarse Aggregates
4. Riprap
5. Top Soil
6. Gravel

B. Stockpiles shall be built up in twelve (12) inch layers for the full width of the storage pile. Storage pile side slopes shall be four (4) minimum horizontal to one (1) vertical.

C. The Contractor shall maintain all stockpiles in a safe and professional manner during their use, including implementation of measures to minimize erosion and clean-up of any on-Site sedimentation determined by the Engineer to have been created by the stockpile. Stockpiles shall not impede existing surface drainage patterns.

3.2 All existing catch basins, pipes, wires, curbings, utilities and other structures which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from damage by the Contractor.

Should such items be damaged, they shall be restored by the Contractor, without compensation, to at least as good condition as that in which they were found immediately before the work was begun.

3.3 If the Contractor should remove existing pipes or other structures, for his own convenience (and subject to the approval of the Engineer), which are to remain in service, the Owner will approve no payment to the Contractor for repair or replacement of these materials.

3.4 The structures to which the provisions of the preceding two paragraphs apply shall include pipes, wires, utilities and other structures which:

- are not indicated on the Drawings or otherwise provided for;
- encroach upon or are encountered near and substantially parallel to the edge of construction operations; and,
- in the opinion of the Engineer will impede progress to such an extent that satisfactory construction work cannot proceed until they have been changed in location, removed (to be later restored) or replaced.

END OF SECTION

SECTION 31 23 00

EXCAVATION AND FILL

PART 1 GENERAL

1.0 SUMMARY

Work covered in this section shall consist of furnishing the labor, materials, tools, equipment, incidentals and services necessary to perform excavation and stockpiling of un-impacted overburden materials, excavation of impacted soils targeted for transportation off-site, backfill of proposed excavation areas, and placement of soil cover gravel and topsoil materials as shown on the Contract Documents.

1.1 DEFINITIONS

A. Degree of Compaction

Degree of compaction required, except as noted in the second sentence, is expressed as a percentage of the maximum density obtained by the test procedure presented in either ASTM D 698 or ASTM D 1557 as shown on the Contract Documents, abbreviated as a percent of laboratory maximum density. Since ASTM D 698 and ASTM D 1557 applies only to soils that have 30 percent or less by weight of their particles retained on the ¾ inch sieve express the degree of compaction for material having more than 30 percent by weight of their particles retained on the ¾ inch sieve as a percentage of the maximum density in accordance with ASTM D 4254.

1.2 SYSTEM DESCRIPTION

Subsurface soil boring logs are provided in the Contract Documents. These data represent the latest subsurface information available; however, variations may exist in the subsurface between boring locations.

1.3 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTALS

A. Preconstruction Submittals

1. Shoring and Sheeting Plan

B. Test Reports

1. Soil Testing
   i. Physical and chemical as required
   ii. Within 24 hours of conclusion of tests, 2 copies of test results.

2. Documentation indicating where materials originate – each source

C. Certificates

1. Testing
2. Qualifications of the Contractor's validated testing facilities

D. Permits or Regulatory Requirements

PART 2 MATERIALS

2.0 REQUIREMENTS FOR OFF-SITE SOILS

Existing soil and imported soil used for excavation backfill must meet the requirements of 6 NYCRR 375-6.7 (d) and must be low permeability soil, free of extraneous debris or solid waste, and must not exceed the allowable constituent levels for imported fill or soil for the use of the site which are provided in soil cleanup objective (SCO) 6 NYCRR 375 (Table 375-6.8(b)). Where a compound is detected which is not on the tables in 6 NYCRR 375 the supplemental soil cleanup objectives (SSCOs) in the Commissioner Policy on Soil Cleanup Guidance shall be used. If an SSCO is not provided the Engineer shall contact NYDEC Division of Environmental Remediation (DER) to determine a site-specific level.

Sampling frequency for soil imported from a virgin mine/pit shall be conducted at a frequency of at least one round of characterization samples for the initial 100 cubic yards of material in accordance with 6 NYCRR 375 5.4(e). Sampling frequency for material sources other than a virgin mine/pit shall be conducted in accordance with 6 NYCRR 375 5.4(e) as summarized in Table 1: Section 31 23 00. For all soil sampling EPA Test methods for evaluating solid wastes physical and chemical methods SW-846 shall be followed.

Table 1: Section 31 23 00
Sample Frequency for Non-Virgin Mine/Pit Soil Imported to the Site

Contaminant	**VOCs**	**SVOCs, Inorganics, & PCBs/Pesticides**	
Total Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0 - 50	1	1	3-5 discrete samples from different locations in the fill being provided with comprise a composite sample for analysis
50 – 100	2	1	
100 – 200	3	1	
200 – 300	4	1	
300 – 400	4	2	
400 – 500	5	2	
500 – 800	6	2	
800 – 1000	7	2	
>1000	Add an additional 2 VOC and 1 composite for each additional 1000 cy		

Contractor shall provide the following documentation regarding the source of fill to the Engineer to be submitted to the NYSDEC for approval before fill is transported to the site: Name of person providing the documentation and relationship to the source of the fill; the location where the fill was obtained; identification of any state or local approvals as a fill source and if no prior approval is available for the source, a brief history of the use of the property which is the source of the fill.

Material other than soil shown on the Contract Documents may be imported without chemical testing, provided that it contains less than 10% by weight material which would pass through a size 80 sieve and consists of virgin stone, gravel or rock from a permitted mine or quarry.

2.1 IMPORTED CLEAN SOIL

Imported clean soil for backfill shall consist of materials classified as SM, SC, or CL as determined by ASTM D 2487 or Engineer approved equivalent. Physical sampling of all imported soil for use as backfill shall be conducted at a frequency of one sample for each source and one sample for every 5000 bcy of material placed. The material shall be free of rocks larger than 2 inches and shall not contain roots larger than ½ inch in diameter, organic matter or frozen soil. Material shall not be brought on site until tests have been approved by the Engineer.

2.2 TOPSOIL

Material suitable for topsoil obtained from offsite areas shall consist of a natural, friable sandy loam, silt loam or loam soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material detrimental to plant growth. Topsoil gradation shall meet the requirements provided in Table 2:31 23 00. Organic matter content shall be between 6% and 12%. Amend topsoil pH range to obtain a pH of 5.5 to 7.6.

TABLE 2: 31 23 00
TOPSOIL GRADATION REQUIREMENTS

Sieve Size:	Percent Passing by Weight
2 inch	100
1 inch	85 to 100
¼ inch	65 to 100
No. 200	20 to 65
2 Micron	0 – 20

2.3 COARSE AGGREGATE

Coarse aggregates shall consist of crushed stone, crushed gravel, screened gravel or crushed air-cooled blast furnace slag meeting the gradation requirements of NYDOT Standard Specifications (latest edition) Table 703-4 for the type and size of Aggregate shown on Drawings.

2.4 GRAVEL

Final gravel material for gravel soil cover shall consist of No. 2 crusher run limestone that meets the requirements of NYSDOT Specifications Section 304.02. Provide materials well graded from coarse to fine and free from organic or other deleterious materials. Gravel shall meet the NYSDOT requirements as a Type 2 surface quality material with a maximum particle size of 2 inches.

PART 3 METHODS

3.1 GENERAL EXCAVATION

Perform excavation of every type of material encountered within the limits of the project to the lines, grades and elevations indicated and as specified on the Contract Documents. Excavation depth shall not exceed 18 feet. All impacted soil loading shall be completed on plastic sheeting. After loading is completed, the plastic sheeting shall be swept clean or replaced with new clean plastic sheeting prior to moving the truck. Transport clean overburden materials approved by the Engineer to the stockpile area for use as backfill and load the impacted Site soils into transportation vehicles for disposal at an off-Site facility. Prior to receiving excavated materials, all off-Site transportation vehicles shall be fitted with a plastic liner. During construction, perform excavation and fill in a manner and sequence that will provide proper drainage at all times.

A. Drainage

Provide for the collection and disposal of surface and subsurface water encountered during construction. Completely drain construction site work areas during periods of construction as necessary to keep soil materials sufficiently dry. It is the responsibility of the Contractor to assess the soil and groundwater conditions presented by the Contract Documents and to employ necessary measures as approved by the Engineer to permit construction to proceed.

B. Dewatering

Control groundwater flowing toward or into excavations to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. Take control measures by the time the excavation reaches the groundwater table in order to maintain the integrity of the in-situ material. While the excavation is open, the free water level shall be maintained continuously, at least two (2) foot below the working level. The Contractor shall be responsible for taking appropriate measures to minimize the entry of surface water into excavations and assessing the need for water treatment. Water that accumulates in excavations shall be pumped to the Pre-Treatment System for processing and discharge to the local POTW.

C. Channels

Finish excavation of channels by cutting accurately to the cross sections, depth, grades and elevations shown on the Contract Documents. Do not excavate channels below grades shown. Evaluate excavated material and place in clean stockpile or prepare for transportation/disposal Off-Site as directed by the Engineer. Maintain excavations free from detrimental quantities of leaves, brush, sticks, trash and other debris until final acceptance of the work.

D. Trench Excavation Requirements

Excavate the trench as recommended by the Manufacturer of the pipe to be installed. Slope trench walls below the top of the pipe, or make vertical, and of such width as shown on the Drawings. Provide vertical trench walls where no Manufacturers' printed installation manual is available. Shore trench walls, cut back to a stable slope, or provide with equivalent means of protection for employees who may be exposed to moving ground or cave-in in accordance with OSHA regulations. Do not exceed the trench width below the pipe top of 18 inches plus pipe outside diameter (OD). Where recommended trench widths are exceeded, the Contractor shall provide for a redesign, a stronger pipe, or special installation procedures. The Contractor is responsible for the cost of redesign, stronger pipe, or special installation procedures without any additional cost to the Owner. No more than 20 lineal feet of open trench should exist when pipeline/utility line installation ceases at the end of the workday.

1. Bottom Preparation

Grade bottom of trenches to provide uniform bearing and support for the bottom quadrant of each section of pipe. Excavate bell holes to the necessary size at each joint or coupling to eliminate point bearing. Remove stones of ½ inch or greater in any dimension, or as recommended by the pipe Manufacturer, whichever is smaller, to avoid point bearing.

E. Underground Utilities

The Contractor is responsible for movement of construction machinery and equipment over pipes and utilities during construction. Excavation made with power-driven equipment is not permitted within 2 feet of known utility or subsurface construction. For work immediately adjacent to or for excavations exposing a utility or other buried obstruction, excavate by hand. Start hand excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until approval for backfill is granted by the Engineer. Report damage, if any, to utility lines or subsurface construction immediately to the Engineer.

3.2 BACKFILLING AND COMPACTION

Place backfill material as shown on the Drawings**.** Compact backfill to **at least 95 percent** laboratory maximum modified Proctor density. Place backfill material adjacent to any and all

types of structures to prevent wedging action or eccentric loading upon or against the structure. Materials shall be placed in maximum twelve (12) inch loose lifts and compacted with sheepsfoot rollers, pneumatic tired rollers, steel-wheeled rollers, vibratory compactors, or other Engineer approved equipment. Moisten material as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used.

A. Trench Backfill

Backfill trenches to the grade shown. Do not backfill the trench until piping is approved by the Engineer.

3.3 FINISHING

The Contractor shall finish the surface of excavations, and subgrades to a smooth and compact surface in accordance with the lines, grades and cross sections or elevations shown on the Contract Documents. The degree of finish for graded areas shall be within 0.1 foot of the grades and elevations indicated on the Drawings. The Contractor shall repair graded, topsoiled, or backfilled areas and re-establish grades to the required elevations and slopes prior to acceptance of the work.

3.4 PLACING TOPSOIL

On areas to receive topsoil, disk the compacted subgrade soil to a 3 inch (maximum) depth for bonding of topsoil with subsoil. Spread topsoil evenly to a thickness of 6 inches and grade to the elevations and grades shown on Contract Documents. Do not spread topsoil when frozen or excessively wet or dry. Obtain material required for topsoil from offsite sources.

3.5 TESTING

Density testing will be performed by the Contractor and submitted to the Engineer. When test results indicate, as determined by the Engineer, that compaction is not as specified; the Contractor shall remove, replace and recompact the material that does not meet the compaction Specifications. The Contractor shall perform tests on recompacted areas to determine conformance with compaction specification requirements. The Contractor shall conduct one compaction test per 2,500 square feet, or fraction thereof, of each lift of fill or backfill areas compacted by other than hand-operated machines but in no instance shall the spacing of test locations exceed 50 linear feet. The Engineer will perform independent testing as necessary to assure that the specifications are being met.

END OF SECTION

SECTION 31 37 00

RIPRAP

PART 1 GENERAL

1.0 SUMMARY

Work covered by this Section shall consist of furnishing the labor, materials, tools, equipment incidentals and services necessary to provide riprap materials for construction of drainage channel as shown in the Contract Documents.

1.1 DEFINITIONS

A. Stone for Riprap

Stone for riprap shall consist of field stone or quarry stone of approximately rectangular shape prisms. The stone shall be hard and angular and of such quality that it will not disintegrate on exposure to water or weathering. The specific gravity of the individual stones shall be at least 2.5.

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 SUBMITTALS:

A. Certificates

A minimum of 7 days prior to scheduled use, submit Manufacturers' certificates of compliance stating that the riprap meets the requirements of this Section.

B. Testing

Gradation for each size rip rap specified on the Drawings

1.3 DELIVERY, STORAGE, AND HANDLING

Perform in a manner to prevent contamination or segregation of materials.

PART 2 MATERIALS

2.0 RIPRAP

Riprap shall be hard, durable rock, of such quality that it will not disintegrate on exposure to water or weathering. Riprap shall be composed of a well-graded mixture such that 50% of the mixture by weight shall be larger than the D50 size. A well-graded mixture is defined as a mixture of other sizes to fill the progressively-smaller voids between the stones. Riprap shall meet the following gradations:

NSSGA* No.	Maximum Stone (in.)	D50 (in.)	Minimum Stone (in.)
R-3	6	3	2

*NSSGA – National Stone Sand and Gravel Association

The inclusion of more than trace (1 percent) quantities of dirt, sand, clay and rock fines shall not be permitted.

A. Geotextile

Geotextile shall be a 10 oz. non-woven material and shall meet the requirements of Section 31 05 19 GEOTEXTILE.

B. Rock

Riprap rock size and placement thickness shall be as shown on Contract Documents and as specified herein.

PART 3 METHODS

3.0 SURFACE PREPARATION

Remove vegetation, debris, decayed vegetable matter, and rubbish from within the footprint of the riprap.

3.1 EXCAVATION

Excavate to contours, elevation, and dimensions indicated. Excavated materials shall be inspected by the Engineer. Visually impacted materials shall be transported to the stockpile area for off-site disposal. Visually unimpacted material shall be placed with clean on-site stockpiled soils and may be used as general backfill material.

3.2 RIPRAP CONSTRUCTION

Construct riprap on geotextile in accordance with NYSDOT

A. Preparation

Trim and dress indicated areas to conform to cross sections, lines and grades shown within a tolerance of 0.1 foot.

B. Geotextile Placement

Place geotextile bedding material uniformly on prepared subgrade as indicated on Contract Documents.

C. Stone Placement

Place riprap on geotextile to produce a well graded mass with the minimum practicable percentage of voids in conformance with lines and grades indicated. Distribute larger rock fragments, with dimensions extending the full depth of the riprap throughout the entire mass and eliminate “pockets” of small rock fragments. Rearrange individual pieces by mechanical equipment or by hand as necessary to obtain the distribution of fragment sizes specified above.

Riprap shall not be dropped onto the geotextile from a height greater than 1 foot.

3.3 FINISH OPERATIONS

A. Grading

Finish grades as indicated within one-tenth of one foot. Maintain areas free of trash and debris.

END OF SECTION

SECTION 31 5000

LATERAL SUPPORT OF EXCAVATION

PART 1 – GENERAL

1.01 GENERAL PROVISIONS

A. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section.

B. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK

A. The Work of this Section shall include all labor, equipment, materials, and incidentals necessary for the following:

1. Installing, and maintaining a continuous, cantilevered, interlocking steel sheet pile wall to allow for the excavation of impacted materials. Steel Sheet Piles shall be AZ-48 Sections.

2. Coordinating the installation, maintenance, and removal (as applicable) of temporary excavation support systems with the Contractor's site and below-grade excavation activities (e.g., excavation, sprung structure movement, dewatering, pile driving, and backfilling). The Contractor's activities shall be consistent with the approach and methodology outlined in the Contractor's submittals and reviewed by the Engineer.

3. Designing, installing, and maintaining the foundations for the temporary structure to prevent loading from the temporary structure being applied to the support of excavation system.

4. Performing any and all preparatory work to discover, protect, maintain, relocate, and restore all existing or new site improvements as necessary.

5. Providing survey and layout for the installation of temporary excavation support systems.

6. Pre-trenching along the alignment of the temporary excavation support walls to remove obstructions in advance of wall construction. Pre-trenching shall be performed to a depth of at least 7 feet or to the bottom of the previous building foundations, whichever is deeper.

7. Legally disposing of materials generated during the process of work in accordance with material management requirements of the Specifications.

8. Determining the elevation, total length and condition of the existing AZ-48 sheet piles located in the southeastern portion of the site that were previously used to perform the Pappas Cleaners excavation. The Contractor may re-use these sheets if it is determined by the Engineer that they are sufficient to resist the design loads.

9. Developing and implementing a movement mitigation system to slow movements of temporary excavation support walls, ground, streets, sidewalks, utilities, and other facilities if required by the Engineer.

10. Determine the size, depth, location, pipe type/material, pipe joint type, and condition of the existing utilities located in Battle Street and Ossian Street within 35 feet of the limits of the

proposed excavations. The investigation shall include a video survey of the storm drain to document the condition prior to the work being performed on-site and at the completion of site activities.

1.03 RELATED SECTIONS

A. Section 31 0913, Geotechnical Instrumentation and Monitoring

1.04 DEFINITIONS AND REFERENCE STANDARDS

A. Owner: New York State Electric & Gas Corporation (NYSEG)

B. Engineer: Authorized representatives of the Owner. For the work covered under this Section, this term will include Haley & Aldrich of New York, Inc.

C. Contractor: The entity responsible for performing the Work of this Section.

D. Code: Current Edition of the New York State Building Code

E. OSHA: Occupational Safety and Health Administration

F. AISC: American Institute of Steel Construction

G. Site Improvements: When used in the context of "protecting adjacent site improvements," shall include, but not be limited to, buildings, utilities, pavements, roadways, slabs, sidewalks, curbs, foundations, and all other site improvements and features that are outside the limits of the site, and those elements within the limits of the site that are to remain.

1.05 JOB CONDITIONS AND TOLERANCES

A. The Contractor shall employ any and all measures necessary to maintain noise levels at or below levels established in any applicable documents, regulatory requirements or agreements prepared by the Owner or as requested by the Owner as the Work of this Section progresses. These measures may include noise shields over vibratory hammers, impact hammers, compressors and other noise intensive construction equipment.

B. Temporary excavation support walls shall be installed to within 1% of vertical measured from street level to the final excavation level.

C. Numerous existing and new utilities and other improvements are located in proximity to the temporary excavation support systems. The Contractor shall take any and all measures necessary to locate, protect and maintain existing utilities and other improvements.

D. The Contractor is solely responsible to conduct the Work of this Section in a manner that protects existing and new improvements from impacts or damage associated with the Work of this Section. This includes review of monitoring data and coordination with utility owners to assess allowable movement. Damage to improvements shall be promptly repaired or replaced by the Contractor to the satisfaction of the owner of the improvement at no additional cost to the Owner. The Contractor shall include and incorporate the findings of this preparatory work in its submittals.

E. The Contractor shall expect to encounter remnants of old buildings (foundations and slabs), utilities, and other buried structures and obstructions during pre-trenching and mass excavation.

1.06 INSTALLATION CRITERIA

A. The Contractor shall install the temporary excavation support to provide an excavation that permits safe and expeditious excavation of the impacted materials.

B. The Contractor shall maintain the groundwater level at least 2 ft below the bottom of excavation at all times. Dewatering shall be completed in accordance with the excavation dewatering specification.

C. Criteria for installation of the temporary excavation support systems are shown on the Drawings and outlined herein. Additional requirements, as determined by the Contractor, that are not shown on the Drawings, may also be required to successfully complete the excavation.

D. Earth berms maintained adjacent to the temporary excavation support wall for lateral support shall be at least 2 ft wide at the top (measured perpendicular to the wall) and sloped away from the wall at an inclination no steeper than 1.5 horizontal to 1 vertical (1H:1V). Earthen berms comprised of organic silt and/or peat are not acceptable for providing lateral stability to the wall.

1.07 QUALITY ASSURANCE

A. The Engineer may observe, as a minimum, the following Contractor activities: pre-trenching; installation of temporary excavation support walls; excavation of the impacted materials.

B. The Contractor shall provide sufficient notice to the Engineer to allow the Engineer to be present to observe the Work. The Contractor shall cooperate with the Engineer in all respects to facilitate any testing, measurements or observations.

C. The presence of the Engineer shall not relieve the Contractor of its responsibility to perform the work in accordance with the Contract Documents and approved submittals, nor shall it be construed to relieve the Contractor from full responsibility for the means and methods of construction, protection of all site improvements against damage, and for safety on the construction site.

D. The Contractor shall adhere to the applicable requirements of the Specifications, OSHA Standards, and to all other applicable ordinances, codes, statutory rules, and regulations of federal, state, and local authorities having jurisdiction over the Work of this Section.

E. Work not in conformance with the specified requirements shall be improved, or removed and replaced, at no additional cost to the Owner. All costs related to testing of nonconforming Work or materials shall be paid for by the Contractor, at no additional cost to the Owner.

F. Geotechnical instrumentation shall be installed on the temporary excavation support system to monitor vertical and lateral movements of the wall in accordance with Section 31 0913.The Contractor shall complete all instrumentation installation and baseline reading requirements outlined in Section 31 0913 prior to excavating within the limits of the temporary excavation support system. The instrumentation reading and reporting is defined in Section 31 0913. The Contractor may conduct additional testing or instrumentation monitoring for its own information at no additional cost to the Owner.

1.08 SUBMITTALS

A. General

1. The Contractor shall provide submittals to the Engineer a minimum of 3 weeks prior to any planned work related to the Contractor's submittals.

2. The time period(s) for submittals are the minimum required by the Engineer to review, comment, and respond to the Contractor. The Engineer may require resubmission(s) for

various reasons. The Contractor is responsible for scheduling specified submittals and re-submittals so as to prevent delays in the work.

3. The Contractor's submittals shall be reviewed and accepted by the Engineer prior to conducting any work.

4. All Contractor submittals shall be prepared and stamped by a Professional Engineer registered in the State of New York, retained by the Contractor. The Contractor's Professional Engineer shall have a minimum of five years' experience in the design and performance of systems similar to those required for this project.

5. Acceptance of the Contractor's submittals by the Engineer does not relieve the Contractor of the responsibility for the adequacy, safety, and performance of the Work.

B. The Contractor shall provide the following submittals regarding temporary excavation support systems:

1. Evidence that the Contractor, Subcontractor(s), and Contractor's Engineer have a minimum of five years' experience in each specialty work item, and that each have completed a minimum of five projects with similar specialty work. The Contractor shall employ supervising personnel and labor with a minimum of five years' direct experience for each specialty work item.

2. Detailed narrative outlining the construction sequence (i.e., installation and removal (as applicable) of the temporary excavation support system elements with respect to temporary structure movements, and excavation for impacted materials. The narrative shall provide a detailed description of the wall installation, excavation, and backfilling.

3. Mill certificates for all steel sheet piling, H-piles, and other steel components for temporary excavation support systems. Mill certificates shall be provided upon delivery of steel to the site. The Engineer may reject steel components not accompanied with a mill certificate until such documentation is provided. If used steel is proposed the Contractor shall submit coupon tests indicating the strength of the steel.

4. As-built plan and wall elevations of any temporary excavation support systems left in place. Indicate modifications, if any, to the original proposed system.

5. Detailed mitigation plan to arrest excess wall, utility, and ground movements if excessive or continued movements occur as judged by the Engineer.

   a. If detrimental effects result from construction activities, the Contractor shall modify the installation and excavation sequence, revise construction procedures and implement measures to mitigate and abate further movement or groundwater impacts. These designs, procedures, and measures shall be submitted by the Contractor to the Engineer for review before implementation.

6. The Contractor shall submit a Movement Mitigation Plan prior to the start of work, and implement such plan immediately if excessive or continued movements occur as judged by the Engineer. The proposed plan may include, but not be limited to segmented and/or slotted excavation, temporary berms and/or other measures. The Contractor shall demonstrate that the proposed measures can be implemented immediately if required to prevent damage to site or off-site improvements.

7. Design for the foundation system to resist the vertical and horizontal loads imposed by the temporary structure. When the structure is supported on the ground surface within the active zone behind the sheet pile wall the foundation system shall transfer the load outside

of the active zone behind the sheet pile wall. The active zone shall be defined by a line drawn at a 45 degree angle from the base of the excavation to the ground surface (e.g. for a 15 ft excavation the active zone will extend 15 ft behind the sheet pile wall as measured on the ground surface).

8. The means and methods of confirming the elevation, total length and condition of the existing AZ-48 sheet piles located in the southeastern portion of the site that were previously used to perform the Pappas Cleaners excavation.

PART 2 - MATERIALS

2.01 STRUCTURAL STEEL

A. Structural Steel shall conform to the current edition of "AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings."

B. Steel sheet piling used for excavation support shall be hot- or cold-rolled sections.

C. Steel Sheet Piles shall be AZ-48 sections.

2.02 WELDING

A. Welding shall conform to the current edition of the American Welding Society Code for Welding in Building Construction

2.03 INSTRUMENTATION

A. Instrumentation shall conform to the requirements of Section 31 0913.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. A continuous, interlocking steel sheet pile wall is required for temporary excavation support to enable excavation of the impacted materials to the depths shown on the Contract documents. Other wall systems proposed by the Contractor and approved by the Engineer may be used, where required, to construct other structures and/or site improvements shown on the Drawings.

B. Provide fully equipped rig(s) and appropriate tools in full-time operation at the site to complete the Work of this Section on schedule. Mobilize additional equipment to the site at no additional cost to the Owner to complete the Work of this Section on schedule.

C. Perform preparatory work to discover, protect, maintain, restore, and/or remove existing and new site improvements within the zone of influence of temporary excavation support walls and other system components.

D. Pre-excavate along the entire alignment of temporary excavation support walls. Excavations shall be backfilled with the excavated material after removal of obstructions greater than 3 in. in size. Backfill shall be placed in lifts not exceeding 10 inches and tamped with the back of the excavator bucket.

E. Install temporary excavation support systems to the limits, depths and tolerances specified herein. Install temporary excavation support systems such that they are in direct contact with the material to be retained.

C. Control vibrations and noise associated with system installations so as to prevent damage to off-site facilities, utilities, and disturbance to neighbors. Refer to specification 31 0913 for limiting vibration levels.

D. Install and remove (as applicable) temporary excavation support systems in a manner that maintains access to and protects associated geotechnical instrumentation at all times, and that protects all off-site facilities and utilities. The instrumentation data will be reviewed upon the completion of the Work to determine if sheeting may be removed adjacent to existing utilities.

E. Remove the existing sheetpile wall located near the property line of the Former Pappas Cleaners site.

F. If required, temporary excavation support systems left in-place shall be cutoff a minimum of 5 ft below finished grade

END OF SECTION

G:\39618\000_SHEETING DESIGN\SPECS\2013-0430-315000 - SOE.DOC

SECTION 32 92 19

SEEDING

PART 1 GENERAL

1.0 SUMMARY

Work covered by this Section shall consist of furnishing the labor, materials, tools, equipment incidentals and services necessary to complete the topsoil and temporary and permanent seeding as indicated in the Contract Documents and as required by the New York Standards and Specifications for Erosion and Sedimentation Control Standard and Specifications for Permanent Critical Area Planting.

1.1 DEFINITIONS

Stand of Turf: 80 percent ground cover of the established species.

1.2 RELATED REQUIREMENTS

Section 31 00 00 EARTHWORK established requirements, with additions and modifications herein.

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 SUBMITTALS:

A. Product Data - Include physical characteristics, and recommendations.

Seed Mixture
Mulch
Fertilizer and lime

B. Test Reports

Topsoil composition tests (reports and recommendations).

C. Certificates

State certification for seed

D. Manufacturer's Instructions

Erosion Control Materials

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery

1. Seed Protection - Protect from drying out and from contamination during delivery, on-site storage, and handling.

2. Fertilizer and Lime Delivery - Deliver to the site in original, unopened containers bearing manufacturer's chemical analysis, name, trade name, trademark, and indication of conformance to state and federal laws. Instead of containers, fertilizer and lime may be furnished in bulk with certificate indicating the above information.

B. Storage

1. Seed, Fertilizer and Lime Storage - Store in cool, dry locations away from contaminants.

2. Topsoil - Stockpile topsoil at a location as directed by the Engineer.

3. Handling - Do not drop or dump materials from vehicles.

1.5 TIME RESTRICTIONS AND PLANTING CONDITIONS

Restrictions - Do not plant when the ground is frozen, snow covered, muddy, or when air temperature exceeds 90 degrees Fahrenheit.

1.6 TIME LIMITATIONS

Seed - Apply seed within twenty four hours after seed bed preparation.

PART 2 MATERIALS

2.0 SEED

A. Classification - Provide State-certified seed of the latest season's crop delivered in original sealed packages, bearing producer's guaranteed analysis for percentages of mixtures, purity, germination, weedseed content, and inert material. Label in conformance with AMS Seed Act and applicable state seed laws. Wet, moldy, or otherwise damaged seed will be rejected. Field mixes will be acceptable when field mix is performed on site in the presence of the Engineer.

B. Planting Dates - Grasses may be seeded any time of the year when the soil is not frozen and is workable.

C. Seed Mixture

General Seed Mixture	Variety	Planting Rate lbs/acre
Birdsfoot trefoil	Empire/Pardee	8*
OR		
Common White Clover	Common	8
PLUS		
Tall Fescue	KY-31/Rebel	20
PLUS		
Redtop	Common	2
or		
Ryegrass (perennial)	Pennfine/Linn	5

Mix #6	Variety	Planting Rate (lbs/acre)
Creeping Red Fescue	Ensylva, Pennlawn, Boreal	20
Tall Fescue	KY31/Rebel	20
Perennial Ryegrass	Pennfine/Linn	5
Birdsfoot Trefoil	Empire, Pardee	10

* Mix 4 lbs. each of Empire and Pardee OR 4 lbs. of Birdsfood and 4 lbs. white clover per acre.

2.1 TOPSOIL

Topsoil shall meet the requirements specified in Section 31 23 00 EXCAVATION AND FILL and meet the Standard and Specifications for Topsoiling as required by the New York Standards and Specifications for Erosion and Sediment Control. Topsoil soil analysis shall be submitted to Engineer for approval. Topsoil may be amended to meet the pH Specifications, however, prior to amending topsoil shall be within 5% of the specified pH.

2.2 SOIL CONDITIONERS

Soil conditioners shall be added to upper 2 inches of topsoil as required to obtain a pH of 5.5 to 7.6.

A. Lime - Commercial grade hydrated limestone containing a calcium carbonate equivalent (C.C.E.) as specified in ASTM C 602 of not less than 100 percent.

2.3 FERTILIZER

A. Granular Fertilizer - Organic, granular controlled release fertilizer containing the following minimum percentages, by weight, of plant food nutrients:

10 percent available nitrogen
10 percent available phosphorus
10 percent available potassium

B. Hydroseeding Fertilizer - Controlled release fertilizer, to use with hydroseeding and composed of pills coated with plastic resin to provide a continuous release of nutrients for at least 6 months and containing the following minimum percentages, by weight, of plant food nutrients:

10 percent available nitrogen
10 percent available phosphorus
10 percent available potassium

2.4 MULCH

Much shall meet the requirements provided in New York Standards and Specification for Erosion and Sediment Control, Standard and Specifications for Mulching. Mulch shall be free from noxious weeds, mold, and other deleterious materials. The best combination for grass/legume establishment is straw.

A. Straw - Stalks from oats, wheat, rye, barley, or rice. Furnish in air-dry condition and of proper consistency for placing with commercial mulch blowing equipment. Straw shall contain no fertile seed and applied at 2 ton/acre and anchored with wood fiber mulch at 500 – 750 lbs/acre. The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

B. Hay - Air-dried condition and of proper consistency for placing with commercial mulch blowing equipment. Hay shall be sterile, containing no fertile seed.

C. Wood Fiber Cellulose - Use natural wood usually. Material shall be mixed with green dye to facilitate visual metering of materials application and mixed with a dispersing agent. Wood fiber cellulose mulch shall be applied with a hydromulcher at a rate of 2,000 lbs/acre.

2.5 WATER

Source of water shall be approved by Engineer and of suitable quality for irrigation, containing no elements toxic to plant life.

PART 3 METHODS

3.0 PREPARATION

A. EXTENT OF WORK - Provide soil preparation (including soil conditioners as required), fertilizing, seeding, and surface topdressing of all newly graded finished earth surfaces as shown on the Drawings, and at all areas inside or outside the limits of construction that are disturbed by the Contractor's operations.

1. Topsoil - Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted to a minimum depth of 6 inches. Contractor shall provide 4 inches of off-site topsoil to meet indicated finish grade. It shall not be placed when it is partly frozen, muddy or on frozen slopes or over ice, snow or standing water puddles. After areas have been brought to finish grade, incorporate fertilizer into soil a minimum depth of 2 inches by disking, harrowing, tilling or other method approved by the Engineer. Top soil shall be tested to determine the amounts of amendments needed. Remove debris and stones larger than 1 1/2 inch in any dimension remaining on the surface after finish grading. Correct irregularities in finish surfaces to eliminate depressions

2. Soil Conditioner Application Rates - Apply soil conditioners at rates as determined by laboratory soil analysis and recommendations provided from a soil testing laboratory such as Cornell University Cooperative Extension Soil Testing Laboratory. Apply ground agricultural limestone to attain a pH as specified in Section 31 23 00 EXCAVATION AND FILL in the upper 2 inches of soil.

3. Fertilizer Application Rates - Apply fertilizer at rates as determined by laboratory soil analysis and recommendations.

3.1 SEEDING

A. Seed Application Seasons and Conditions - Immediately before seeding, restore soil to proper grade. Do not seed when ground is muddy, frozen, snow covered or in an unsatisfactory condition for seeding. If special conditions exist that may warrant a variance in the above seeding dates or conditions, submit a written request to the Engineer stating the special conditions and proposed variance. Apply seed within twenty four hours after seedbed preparation. Sow seed by approved sowing equipment. Sow one-half the seed in one direction, and sow remainder at right angles to the first sowing.

B. Seed Application Method - Seeding method shall be broadcasted, drilling, cultipack type seeding or hydroseeding.

C. Mulching

1. Hay or Straw Mulch - Hay or straw mulch shall be spread uniformly at the rate of 2 tons per acre. Mulch shall be spread by hand, blower-type mulch spreader, or other approved method so that approximately 90% of the soil surface will be covered. Mulching shall be started on the windward side of relatively flat areas or on the upper part of steep slopes and continued uniformly until the area is covered. The mulch shall not be bunched or clumped. Sunlight shall not be completely excluded from penetrating the ground surface. Mulch shall be applied immediately following seeding. Mulch shall be anchored immediately following spreading as specified in New York Standards and Specification for Erosion and Sediment Control, Standard and Specifications for Mulching, Table 3.8, Mulch Anchoring Guide.

2. Turf Reinforcement Mat (TRM) shall be installed in accordance with Manufacturer product literature. TRM shall be sufficiently trench anchored at the crest of slope and at the toe of slope and along the slope as required by the Manufacturer. Mat overlaps shall be anchored a minimum of 6-inches and shall be secured using manufacturer suggested anchoring device every 18-inches.

D. Rolling

Immediately after seeding, roll the entire area except for slopes in excess of 3 to 1 with a roller not exceeding 90 pounds for each foot of roller width. If seeding is performed with cultipacker-type seeder or by hydroseeding, rolling may be eliminated.

E. Watering

Start watering areas seeded as required by temperature and wind conditions. Apply water at a rate sufficient to insure thorough wetting of soil to a depth of 2 inches without run off. During the germination process, seed is to be kept actively growing and not allowed to dry out.

3.2 PROTECTION OF TURF AREAS

Immediately after turfing, protect area against traffic and other use.

3.3 RESTORATION

A. Restore to original condition existing turf areas which have been damaged during seeding operations at the Contractor's expense. Clean existing paving as necessary when work in adjacent areas is complete.

B. An inspection shall be conducted in the middle of the first full growing season. Contractor shall reseed any areas that have not achieved 85% turf coverage.

END OF SECTION

SECTION 33 44 19.16

CATCH BASIN STORMWATER FILTERS

PART 1 GENERAL

Work covered in this section shall consist of furnishing the labor, materials, tools, equipment, incidentals and services necessary to provide catch basin inlet protection as shown on the Contract Documents. The catch basin inlet protection measure is to prevent sediment from entering storm drainage system prior to permanent stabilization of the disturbed areas.

1.0 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTALS:

A. Product Data:

1. Printed copies of the Manufacturer's product data
2. Printed copies of the Manufacturer's recommendations for installation and cleaning procedures of the material being placed, prior to installation.

PART 2 MATERIALS

2.0 STORMWATER FILTER BAGS

A. Catch basin stormwater filter bags shall be manufactured from woven polypropylene and sewn using high strength nylon thread meeting the requirements shown on the Drawings.

B. Stormwater filter bag shall be equipped with lifting loops or lugs to allow the device to be removed, cleaned and reinserted back into the catch basin.

C. The sediment control device shall be sized to fit a Type M catch basin inlet.

PART 3 METHODS

3.0 The stormwater filter bag shall be inserted into the catch basin to capture sediment.

3.1 The stormwater filter bags shall be inspected after each rain event and repairs made as needed.

3.2 To empty the sediment filter bag, the filter bag shall be removed from the catch basin. Lift and turn the filter bag inside out thereby dumping its contents. Clean out the filter bag and wash with water. Reinstall when all sediment has been removed.

3.3 Dispose of sediment off-site.

3.4 Inspect filter bag for rips, tears and holes. Replace filter bags as required.

END OF SECTION

SECTION 44 11 23

DUST /AIR EMISSION CONTROL

PART 1 GENERAL

1.0 SUMMARY

Work covered in the Section shall consist of furnishing the labor, materials, tools, carbon absorbers, fans and associated equipment, incidentals, and services necessary to control fugitive dust and volatile organic compound (VOC) air emissions, as included in the Contract Documents. Real-time air monitoring of carbon monoxide, dust and VOCs will be conducted by the Contractor during the Contractor's execution of Work that results in the disturbance of soils. The Contractor shall be responsible for the operation and maintenance of the air handling system. The Contractor shall make no claim for additional payment for down-time resulting from a stop-work order from the Engineer due to the insufficient or inappropriate use of the products and methods described herein.

1.1 PERFORMANCE REQUIREMENTS

The air handling system shall be operated by the Contractor to maintain carbon monoxide, particulates, VOCs and other potential substances below the regulatory and sound industrial hygiene based concentration in the Work area and on the Site. The Contractor shall maintain the air handling system in accordance with all applicable NYDEC requirements.

1.2 SUBMITTALS

A. Provide submittals as per Section 01 33 00 SUBMITTALS
B. Manufacturer's information
C. Shop Drawings: Show products and connection details
D. GAC product data
E. Manufacturer's installation, and operating and maintenance manual
F. Operation Logs
G. Proposed changes or modifications
H. Carbon disposal documentation

1.3 QUALITY CONTROL

A. Quality control activities shall be followed during installation, start up and operation of the carbon absorbers and associated appurtenances.

B. The filters media shall be installed to comply with all applicable Federal, State and local laws or ordinances as well as applicable codes, standards and regulations.

C. Quality Control activities shall be performed in accordance with the Engineer approved Contractor Quality Control Plan as specified in Section 01 43 00 QUALITY ASSURANCE/QUALITY CONTROL. During remedial activities all Quality Control documentation shall be provided to the Engineer.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in Manufacturer's unopened packaging until ready for installation.

B. Use proper equipment and methods during unloading and transporting material to ensure safety and to prevent damage.

C. Handle and store materials in accordance with Manufacturer's recommendations.

PART 2 MATERIALS

2.0 AIR HANDLING SYSTEM

The carbon absorber and fan air handling system shall be a Nixtox Box Model NB-20 as Manufactured by the TIGG Corporation, or Engineer approved equal. Air handling system shall meet the requirements shown on the drawings and approved by the Engineer.

2.1 CARBON

The air handling system shall contain a standard/maximum of 16,000/20,000 lbs of dry virgin activated or reactivated carbon provided as the standard absorbent. Carbon shall be TIGG 5CR-0410 Vapor Phase Carbon or Engineer approved equivalent.

2.2 AIR MONITORING

The Contractor shall provide air monitoring equipment to monitor the air inside and outside the temporary fabric structure. All air monitoring equipment shall be as specified in the Site Health and Safety Plan. The Contractor shall provide adequate backup air monitoring equipment to allow for uninterrupted site operations. Air monitoring equipment shall be calibrated according to the manufacturer's specifications at a minimum of once per day and after any repair or adjustment.

PART 3 METHODS

3.0 INSTALLATION

The Contractor shall furnish and install the air handling systems including the carbon media, connections to fabric structure, duct, valves, pressure gauges and associated appurtenances in according with Manufacture's recommendations

3.1 OPERATION

A. The Contractor shall be responsible for the satisfactory operation, maintenance and troubleshooting of the air handling system as needed for the duration of the Contract Work.

B. Contractor shall provide replacement carbon as required.

C. Following completion of the installation, the air handling system shall be performance tested. All equipment shall be adjusted and analyzed for misalignment, leaks, excessive vibration, safety protocol and overall performance.

D. The Manufacturer recommended pressure drop for the carbon units shall not be exceeded.

E. Real-time air monitoring of carbon monoxide, dust and VOCs will be conducted by the Contractor inside the fabric structure and at all work areas at the site during the Contractor's execution of Work that will result in the disturbance of soils. Air Monitoring shall occur and meet the requirements as specified in the Health and Safety Plan.

E. Real-time noise monitoring will be conducted by the Engineer, as indicated in the Community Air Monitoring Plan and Noise Monitoring Plan (Plan). In accordance with the Plan, the Contractor shall provide adequate sound attenuation measures for the air handling system and other site operations as required by the Plan.

END OF SECTION

SECTION 44 23 19

PROCESS PLANT WATER PIPING AND VALVES

PART 1 GENERAL

1.0 SECTION INCLUDES

A. Piping

B. Valves

1.1 RELATED SECTIONS

A. Division 26 01 00 – Electrical

B. Division 31 00 00 - Earthwork

C. Section 44 42 56 – Water Treatment Pumps

1.2 DESCRIPTION

A. General

1. Piping shall be installed for the conveyance of groundwater and surface water from the excavation areas (from the dewatering pumps).

2. Two (2) 6-inch diameter PVC conduits are provided between the excavation staging area and the Water Pre-Treatment System staging area to transfer water across the Site. The Contractor shall maintain unimpeded traffic flow to this area.

3. The solid wall piping and flexible wall piping shall be installed for the Waste Water Pre-Treatment System. HDPE piping is also acceptable.

4. Valves and associated appurtenances shall be installed for the Water Pre-Treatment System.

5. The Waste Water Pre-Treatment System shall be operated to treat impacted water that is managed during construction activities. The treated effluent shall be discharged to the POTW in accordance with the Village of Dansville Wastewater Discharge Permit.

6. Contractor shall obtain necessary Permit to discharge pre-treated water to the POTW and conduct all sampling and monitoring required for the Discharge Permit.

B. Design Criteria

1. As shown in the Contract Documents.

C. Performance Requirements

1. To dewater the excavation areas.

2. To convey the groundwater and surface water from the excavations to the Waste Water Pre-Treatment System.

3. To convey the process water as part of the Water Pre-Treatment System.

4. The Waste Water Pre-Treatment System shall be operated by the Contractor in order to achieve Village of Dansville Wastewater Discharge Permit Requirements.

1.3 SUBMITTALS

A. Provide submittals as per Section 01 33 00 SUBMITTALS.

B. Shop Drawings: Piping (including type and sizes), connection details, and valve connection details.

C. Proposed changes or modifications.

D. Village of Dansville POTW Permit to Discharge Wastewater.

1.4 QUALITY ASSURANCE

A. Quality assurance activities shall be provided by the Contractor as per Section 01 43 00 QUALITY ASSURANCE/QUALITY CONTROL of these Specifications.

1.5 QUALITY CONTROL

A. The Contractor shall be responsible for quality control activities during installation of the piping, valves and associated appurtenances.

B. The Contractor shall perform routine performance monitoring by collecting samples from the in-system sample ports.

C. The Contractor shall comply with all applicable Federal, State and local laws or ordinances as well as applicable codes, standards and regulations.

D. The Contractor shall provide Quality Control documentation to the Engineer.

PART 2 MATERIALS

2.0 PIPING

A. The Piping shall be as shown on the Contract Documents.

B. The Piping shall have a minimum pressure rating of 60 psi.

2.1 FITTINGS AND COUPLINGS

A. The Fittings and Couplings shall be as shown on the Contract Documents.

B. Threaded pipe fittings and flanges to connect piping and appurtenances shall have a minimum pressure rating of 60 psi.

2.2 VALVES

A. The valves shall be as shown on the Contract Documents.

PART 3 METHODS

3.0 INSTALLATION

A. The Contractor shall furnish and install the piping, valves, incidentals and associated appurtenances in accordance with Manufacturers instructions (e.g., pipe and valve cleaning/pipe and valve preparation).

B. Piping runs shall be hydrostatic tested by the Contractor using potable water or clean air prior to start up. The pressure shall be above 60 PSI but at or below rated pressures.

C. Piping shall be selected and positioned to minimize head loss.

D. The Contractor shall attempt to install the piping in continuous sections to the extent practicable.

3.1 OPERATION

A. The Contractor shall be responsible for the satisfactory operation, maintenance and troubleshooting of the Waste Water Pre-Treatment System piping and valves

needed for the duration of the Work.

B. Following completion of the installation, the piping and valves shall be performance tested. All piping and valves shall be adjusted and analyzed for misalignment, leaks, excessive vibration, safety, and overall performance.

C. The Contractor shall provide replacement parts as needed.

D. The Contractor shall monitor the performance of the piping and all valves. Contractor shall repair leaks and shall repair or replace piping and/or valves as needed. The piping and associated appurtenances shall be routinely inspected for wear, tear and ultraviolet damage.

E. The Manufacturer recommended pressure ratings for piping and valves shall not be exceeded.

F. The system shall be protected from vehicular traffic and worker slip, trips and fall hazards.

END OF SECTION

SECTION 44 42 19

WATER TREATMENT BLOWERS

PART 1 GENERAL

1.0 SECTION INCLUDES

A. Regenerative Blower

1.1 RELATED SECTIONS

A. Division 26 - Electrical

1.2 DESCRIPTION

A. General

1. The Waste Water Pre-treatment System shall be operated to treat extracted groundwater and surface water pumped from the excavation and construction activities. The vapor from the frac tank(s) and weir tank shall be treated and discharged.

B. Design Criteria

1. As shown in the Contract Documents.

2. As provided in Pump product literature.

C. Performance Requirements

1. Regenerative Blower- to transport vapors from the frac tank(s) and weir tank through two vapor activated carbon filters to the atmosphere.

2. Other construction related activities as needed and as directed by the Engineer.

1.3 SUBMITTALS

A. Provide submittals as per Section 01 33 00 for the blower and required piping, duct work, valves, and fittings.

B. Manufacturer’s information.

D. Blower specification.

F. Operation Logs.

G. Proposed changes or modifications.

1.4 QUALITY ASSURANCE

A. Quality assurance activities shall be performed in compliance with the Engineer approved Contractor Quality Control Plan as specified in Section 01 43 00 QUALITY ASSURANCE/QUALITY CONTROL.

B. The Engineer will monitor discharge to evaluate compliance with the air emission requirements.

1.5 QUALITY CONTROL

A. The Contractor shall be responsible for quality control activities during installation, start up and operation of the blowers and associated appurtenances.

B. The Contractor shall perform routine performance monitoring by monitoring the vapor discharge VOC concentrations. And, the Contractor shall change out blowers and fittings as needed based on performance.

C. The Contractor shall comply with all applicable Federal, State and local laws or ordinances as well as applicable codes, standards and regulations.

D. The Contractor shall provide QC documentation to the Engineer.

PART 2 MATERIALS

2.0 BLOWERS

A. The blowers shall meet the requirements shown on the drawings and shall be approved by the Engineer.

B. The Contractors shall select blowers with adequate capacity to convey vapor through the activated carbon units.

C. The Contractor shall select the number of blowers required based on field conditions encountered during construction.

PART 3 METHODS

3.0 INSTALLATION

A. The Contractor shall furnish and install the blowers, piping and duct, valves, fittings, controls, electrical, incidentals and associated appurtenances in accordance with Manufacturers' instructions.

B. The Contractor shall select blower size to meet planned operations (e.g. hours per day).

3.1 OPERATION

A. The Contractor shall be responsible for the satisfactory operation, maintenance and troubleshooting of the blowers as needed for the duration of the contract work.

B. Following completion of the installation, the blowers shall be performance tested. All equipment shall be adjusted and analyzed for misalignment, leaks, excessive vibration, safety protocol and overall performance, and the installation shall be subject to inspection by the Engineer.

C. The Contractor shall provide replacement parts as needed.

END OF SECTION

SECTION 44 42 56

WATER TREATMENT PUMPS

PART 1 GENERAL

1.0 SECTION INCLUDES

A. Sump Pump

B. Dewatering Pump

C. Transfer Pump

D. Stand-by Booster Pump

1.1 RELATED SECTIONS

A. Division 26 01 00 - Electrical

B. Section 44 23 19 – PROCESS PLANT WATER PIPING AND VALVES

1.2 DESCRIPTION

A. General

1. The Contractor shall operate The Waste Water Pre-treatment System to treat extracted groundwater and surface water pumped from the excavation and construction activities. The treated effluent shall be discharged to the existing sanitary sewer system in accordance with Village of Dansville Wastewater Discharge Permit requirements.

B. Design Criteria

1. As shown in the Contract Documents.

2. As provided in Pump product literature.

C. Performance Requirements

1. Sump Pump – to pump water from the sump to the weir tank.

2. Dewatering Pump – to transfer water from an excavation to the weir tank.

3. Transfer Pump – to transfer water from the weir tank to bag filters.

4. Stand-by Booster Pump – to provide additional head for pumping water to activated carbon units.

5. Other construction related activities as needed and as directed by the Engineer.

1.3 SUBMITTALS

A. Provide submittals as per Section 01 33 00 for all pumps except sump pumps and dewatering pumps.

B. Manufacturer's information.

C. Shop Drawings: Show pumps and connection details.

D. Pump specification.

F. Operation Logs.

G. Proposed changes or modifications.

1.4 QUALITY ASSURANCE

A. Quality assurance activities shall be performed in compliance with the Engineer approved Contractor Quality Control Plan as specified in Section 01 43 00 QUALITY ASSURANCE/QUALITY CONTROL.

B. The Engineer will collect discharge samples to evaluate compliance with the local Village of Dansville Wastewater Discharge Permit requirements.

1.5 QUALITY CONTROL

A. The Contractor shall be responsible for quality control activities during installation, start up and operation of the pumps and associated appurtenances.

B. The Contractor shall perform routine performance monitoring by collecting samples from the in-system sample ports. And, the Contractor shall change out Pumps and fittings as needed based on performance.

C. The Contractor shall comply with all applicable Federal, State and local laws or ordinances as well as applicable codes, standards and regulations.

D. The Contractor shall provide QC documentation to the Engineer.

PART 2 MATERIALS

2.0 PUMPS

A. The pumps shall meet the requirements shown on the drawings and shall be approved by the Engineer.

B. The Contractors shall select dewatering pumps with adequate capacity for efficient dewatering based on excavation conditions.

C. The Contractor shall select the number of pumps required based on field conditions encountered during construction.

PART 3 METHODS

3.0 INSTALLATION

A. The Contractor shall furnish and install the pumps, piping, valves, camlocks, controls, electrical, incidentals and associated appurtenances in accordance with Manufacturers' instructions.

B. The Contractor shall select pump sizes to meet planned operations (e.g. hours per day).

3.1 OPERATION

A. The Contractor shall be responsible for the satisfactory operation, maintenance and troubleshooting of the Pumps as needed for the duration of the contract work.

B. Following completion of the installation, the Pumps shall be performance tested. All equipment shall be adjusted and analyzed for misalignment, leaks, excessive vibration, safety protocol and overall performance, and the installation shall be subject to inspection by the Engineer.

C. The Contractor shall provide replacement parts as needed.

END OF SECTION

SECTION 44 42 73

WATER TREATMENT TANKS

PART 1 GENERAL

1.0 SECTION INCLUDES

A. Water Treatment Tanks (Tanks).

1.1 RELATED SECTIONS

A. Division 26 – ELECTRICAL

B. Section 44 42 56 – WATER TREATMENT PUMPS

1.2 DESCRIPTION

A. General

1. The Waste Water Pre-treatment System shall treat extracted groundwater and surface water pumped from the excavation. The treated effluent shall be discharged to the existing sanitary sewer system in accordance with discharge permit requirements.

B. Design Criteria

1. As shown in the Contract Documents.
2. Refer to Tank product literature.

C. Performance Requirements

1. The Tanks and associated appurtenances shall be installed in order to perform the following functions:

i. Weir Tank – sedimentation of solids
ii. Frac Tank – equalization and temporary storage

2. The Waste Water Pre-treatment System shall be operated by the Contractor in order to achieve Village of Dansville Wastewater Discharge Permit requirements.

1.3 SUBMITTALS

A. Provide submittals as per Section 01 33 00 SUBMITTALS

B. Manufacturer’s information

C. Shop Drawings: Show Tank and connection details

D. Tank specification information

F. Tank installation and operational logs

G. Proposed changes or modifications

1.4 QUALITY ASSURANCE

A. Quality assurance activities shall be performed in compliance with the Engineer approved Contractor Quality Control Plan as specified in Section 01 43 00 QUALITY ASSURANCE/QUALITY CONTROL.

B. The Engineer will collect discharge samples to evaluate compliance with the Village of Dansville Wastewater Discharge Permit requirements.

1.5 QUALITY CONTROL

A. The Contractor shall be responsible for quality control activities during installation, start up and operation of the Water Pre-treatment System.

B. The Contractor shall comply with all applicable Federal, State and local laws or ordinances as well as applicable codes, standards and regulations.

C. The Contractor shall provide QC documentation to the Engineer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Use proper equipment and methods during unloading and transporting tanks to ensure safety and to prevent damage.

B. Handle and store materials in accordance with suppliers recommendations.

PART 2 MATERIALS

2.0 TANKS

A. The Tanks shall meet the requirements shown on the drawings and shall be approved by the Engineer. Tanks must be free of contamination by volatile, semivolatile and inorganic constituents at the time of delivery to the Site and shall be inspected and accepted or rejected by the Engineer upon delivery and prior to installation.

B. The Contractor shall select the number of Tanks required based on field conditions encountered during construction and based on economic considerations and Engineer approval.

PART 3 METHODS

3.0 INSTALLATION

A. The Contractor shall furnish and install the Tanks, piping, controls, level switches, electrical, incidentals and associated appurtenances in accordance with Manufacturers instructions.

B. Confined Space Entry placards shall be placed on the tanks.

3.1 OPERATION

A. The Contractor shall be responsible for the satisfactory operation, maintenance (e.g. remove solids that have accumulated) and troubleshooting of the Tanks as needed for the duration of the contract Work.

B. Following completion of the installation, the Tanks will be performance tested. All equipment shall be adjusted and analyzed for misalignment, leaks, excessive vibration, safety protocol and overall performance, and the installation shall be subject to inspection by the Engineer.

C. The Contractor shall provide replacement parts as needed.

D. Covers shall be maintained on the tanks at all times.

E. Level control switches shall be maintained in order to regulate the water levels and prevent overflow.

F. Ladders shall be maintained to facilitate inspection.

END OF SECTION

SECTION 44 43 13

WATER TREATMENT FILTERS

PART 1 GENERAL

1.0 SECTION INCLUDES

A. Bag Filters and Granular Activated Carbon (GAC) Filters

1.1 RELATED SECTIONS

A. Division 26 – Electrical

B. Section 44 42 19 – WATER TREATMENT BLOWERS

C. Section 44 42 56 – WATER TREATMENT PUMPS

1.2 DESCRIPTION

A. General

1. The Waste Water Pre-treatment System shall treat extracted groundwater and surface water pumped from the excavation. The treated effluent shall be discharged to the existing sanitary sewer system in accordance with Village of Dansville Wastewater Discharge Permit requirements.

B. Design Criteria

1. As shown in the Contract Documents.

2. Refer to product literature.

C. Performance Requirements

1. Bag filters – remove suspended and dissolved solids larger than 25 um from the wastewater.
2. GAC filters - remove organic constituents of concern (COC) from the wastewater.
3. Vapor activated carbon units – remove organic constituents of concern (COC) from the frac tank and weir tank off gas.
4. The Waste Water Pre-treatment System shall be operated by the Contractor in order to achieve Village of Dansville Wastewater Discharge Permit requirements.
5. The contractor shall install and operate the system in accordance with all applicable NYDEC requirements.

1.3 SUBMITTALS

A. Provide submittals as per Section 01 33 00 SUBMITTALS

B. Manufacturer's information

C. Shop Drawings: Show product and connection details

D. GAC specification information

E. Bag Filter specification information

F. Operation Logs

G. Proposed changes or modifications

1.4 QUALITY ASSURANCE

A. Quality assurance activities shall be performed in compliance with the Engineer approved Contractor Quality Control Plan as specified in Section 01 43 00 QUALITY ASSURANCE/QUALITY CONTROL.

B. The Engineer will collect discharge samples to evaluate compliance with the Village of Dansville Wastewater Discharge Permit requirements.

C. The Contractor will monitor the vapor discharge to determine when Carbon change out should occur.

1.5 QUALITY CONTROL

A. Quality control activities shall be followed during installation, start up and operation of the Filters and associated appurtenances.

B. Routine performance monitoring shall be performed by collecting samples from the in-system sample ports and monitoring the vapor carbon unit vapor discharge.

C. The Filters shall be constructed and installed to comply with all applicable Federal, State and local laws or ordinances as well as applicable codes, standards and regulations.

D. Quality Control activities shall be performed in accordance with the Engineer approved Contractor Quality Control Plan as specified in Section 01 43 00 QUALITY ASSURANCE/QUALITY CONTROL. During remedial activities all Quality Control documentation shall be provided to the Engineer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in Manufacturer's unopened packaging until ready for installation.

B. Use proper equipment and methods during unloading and transporting material to ensure safety and to prevent damage.

C. Handle and store materials in accordance with Manufacturer’s recommendations.

PART 2 MATERIALS

2.0 GAC WATER FILTERS

The GAC filters and GAC media shall meet the requirements shown on the drawings and shall be approved by the Engineer.

2.1 BAG FILTERS

A. The filter bag housing shall meet the requirements shown on the drawings and shall be approved by the Engineer.

B. The filters shall be high capacity process filters and compatible with the housing units as recommended by the Manufacturer. Filter housing shall be provided complete with filter bags in place and with additional filter bags for each housing.

2.2 ORGANOCLAY FILTERS

The filter housing and media shall meet the requirements shown on the drawings and shall be approved by the Engineer.

2.3 VAPOR ACTIVATED CARBON UNITS

Two (2) vapor phase activated carbon drums as shown on the Drawings will treat vapors from the tanks and discharge to the atmosphere.

PART 3 METHODS

3.0 INSTALLATION

A. The Contractor shall furnish and install the filters, piping, duct, ball valves, pressure relief valves, camlocks, pressure gauges, a flow meter, rupture disks, electrical, controls, incidentals, and associated appurtenances in accordance with Manufacturer’s instructions.

B. Pressure relief valves and rupture disks shall be placed on filter influent pipes.

3.1 OPERATION

A. The Contractor shall be responsible for the satisfactory operation, maintenance and troubleshooting of the filters as needed for the duration of the contract Work.

B. Following completion of the installation, the filters shall be performance tested. All equipment shall be adjusted and analyzed for misalignment, leaks, excessive vibration, safety protocol and overall performance, and the installation shall be subject to approval by the Engineer.

C. The Contractor shall provide replacement parts as needed.

D. The Contractor shall monitor the performance of the filter media and replace the spent media as needed for the duration of the contract work.

E. The spent filter media shall be disposed of at the same thermal treatment facilities utilized for disposal of all onsite impacted soils.

F. The Manufacturer recommended pressure drops for filters shall not be exceeded.

END OF SECTION

APPENDIX A

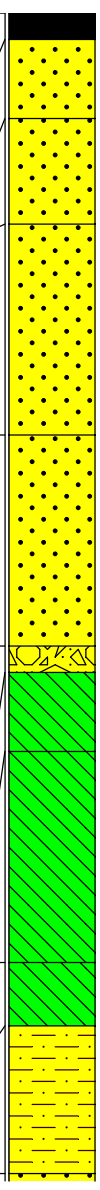
Boring Logs, Boring Location Map and Geotechnical Data

GB01

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/19/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 689.64 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
0						
-1	0-2	47	0		7,7,7	ASPHALT
-2						SAND: Orange/brown, fine to coarse sand, with some round gravel
-3	2-4	35	0		3,3,3,5	SAND: Moist to wet, orange/brown, fine to coarse sand, with some round gravel, trace clay
-4						
-5	4-6	50	0		6,8,12,10	SAND: Moist, orange/brown coarse sand, with trace fine gravel
-6						
-7	6-8	60	0		7,9,8,9	
-8						
-9	8-10	65	0		7,12,14,10	SAND: Wet at 11.7 ft bgs, orange brown, coarse sand and gravel, with trace to some silt and clay, stained silver at 11.6 ft bgs, with moderate MGP-like odor, and trace NAPL globules
-10						
-11	10-12	60	17.6		8,8,10,10	
-12						
-13	12-14	95	18.2		7,5,5,6	GRAVEL: Fine to coarse, angular gravel, moderate MGP-like odor, sheen, trace to some NAPL globules
-14						
-15	14-16	85	0		wor,2,3,4	CLAY: Brown to gray, silty clay, with trace fine sand, slight odor
-16						CLAY: Moist, gray clay, with some silt, trace fine to medium gravel
-17	16-18	100	0		6,6,8,7	
-18						
-19	18-20	80	0		2,4,5,5	CLAY: Moist, gray clay, with some silt, trace fine gravel
-20						SILT: Wet, gray, silt and clay, with trace gravel
-21	20-22	80	0		4,5,6,7	
-22						



PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB01

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/19/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 689.64 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
-22						
-23	22-24	100	0		5,6,6,7	SAND: Wet, gray, clayey, medium sand, with some medium sand lenses up to 0.2 ft thick
-24						
-25	24-26	5	0		3,5,7,8	SAND: Gray, medium sandy, silt, with some clay
-26						
-27						
-28						
-29						
-30						
-31	30-32	-	-			NO RECOVERY: Attempted Shelby tube, no recovery
-32						
-33						
-34						
-35						
-36	35-37	100	0		wor, wor,1,5	SAND: Wet, gray, fine to medium sand, with some silt
-37						
-38						
-39						
-40						
-41	40-42	70	0		5,7,8,7	SAND: Wet, gray, silty, fine to medium sand
-42						End of Boring

PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB02

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/18/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 689.02 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
0						
-1	0-2	80	0		15,17,13	ASPHALT
-2						FILL: Dark brown, sand, silt, and fine gravel
-3	2-4	20	0		7,7,5,10	SAND: Tan/brown, loose, fine to coarse sand and fine gravel
-4						
-5	4-6	60	0		3,5,7,3	SILT: Moist, orange, clay and silt, with some sand and gravel
-6						
-7	6-8	25	0		5,6,6,6	GRAVEL: Brown, coarse sandy, fine to medium gravel, with some trace clay, moist no odor
-8						
-9	8-10	20	0			Inadvertently augered through interval
-10					5,6	GRAVEL: Gravel, with some clay and trace sand
-11	10-12	15	0		6,7,12,15	
-12						
-13	12-14	75	0		10,5,5,4	GRAVEL: Wet, orange/tan, fine to medium gravel, with some medium to coarse sand, trace silt
-14						
-15	14-16	80	0		3,5,5,4	SILT: Wet, orange/tan, silt, with trace to some clay
-16						SILT: Wet, gray, silt, with some clay, no odor
-17	16-18	70	0		5,6,12,13	CLAY: Wet, gray clay, with some silt and trace sand
-18						
-19	18-20	80	0		5,6,8,9	SAND: Wet, gray medium sand, with trace silt
-20						CLAY: Wet, gray clay, with some silt and trace sand
-21	20-22	75	0		5,7,7,7	CLAY: Wet, gray clay, with trace to no silt
-22						CLAY: Wet, gray, silty clay, with some fine sand

PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB02

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/18/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 689.02 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
-22 to -24	22-24	100	0		7,12,12,10	SAND: Wet, gray, fine to medium sand, with some silt
-24 to -26	24-26	95	0		4,6,5,6	CLAY: Wet, gray, clay, with some sand and silt CLAY: Wet, gray, silty clay, with trace to some fine to medium sand, trace fine gravel
-30 to -32	30-32	90	0		2,5,7,10	CLAY: Moist, gray, clay, with trace to no silt, trace fine gravel
-35 to -37	35-37	70	0		4,5,7	SAND: Wet, gray, silty, fine to medium sand, with trace fine gravel and clay
-40 to -42	40-42	-	-			Attempted shelby tube, no recovery End of Boring

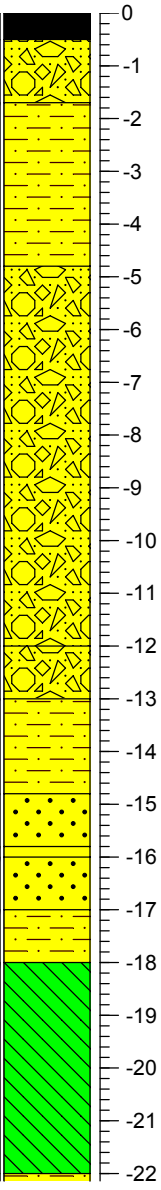
PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB03

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/20/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 688.39 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
0						
-1	0-2	80	0		4,4,3	ASPHALT
-2						GRAVEL: Brown/orange/red, medium gravel, with silt and sand, trace bricks and coal-like material
-3	2-4	60	0		2,3,4,4	
-4						SILT: Moist, brown silt, with some fine to medium sand
-5	4-6	35	0		3,6,7,7	GRAVEL: Brown/orange, fine to medium gravel, with some medium to coarse sand and clay, wet at 11.8, moderate MGP-like odor, sheen
-6						
-7	6-8	10	0		7,10,10,13	
-8						
-9	8-10	70	0		6,7,10,16	
-10						
-11	10-12	55	67.5		5,23,19,15	
-12						
-13	12-14	75	274		13,9,8,11	GRAVEL: Fine to medium gravel, with trace to some sand, wet, moderate to strong MGP-like odor, some NAPL stringers
-14						
-15	14-16	85	3.5		2,4,6,4	SILT: Wet, brown/orange, clayey silt, with some fine sand, slight odor
-16						SAND: Gray, fine to medium sand, with trace clay
-17	16-18	100	0		1,4,5,5	SILT: wet, gray, clayey silt
-18						SAND: Wet, gray, fine sand, with some silt
-19	18-20	100	0		2,2,2,4	SILT: Wet, gray silt, with some fine sand, trace clay
-20						
-21	20-22	100	0		1,1,2,3	CLAY: Gray clay, with trace silt, fine sand lenses (0.01-0.15 ft thick) throughout
-22						



PID (ppm) = Photo-Ionization Detector, readings in parts per million

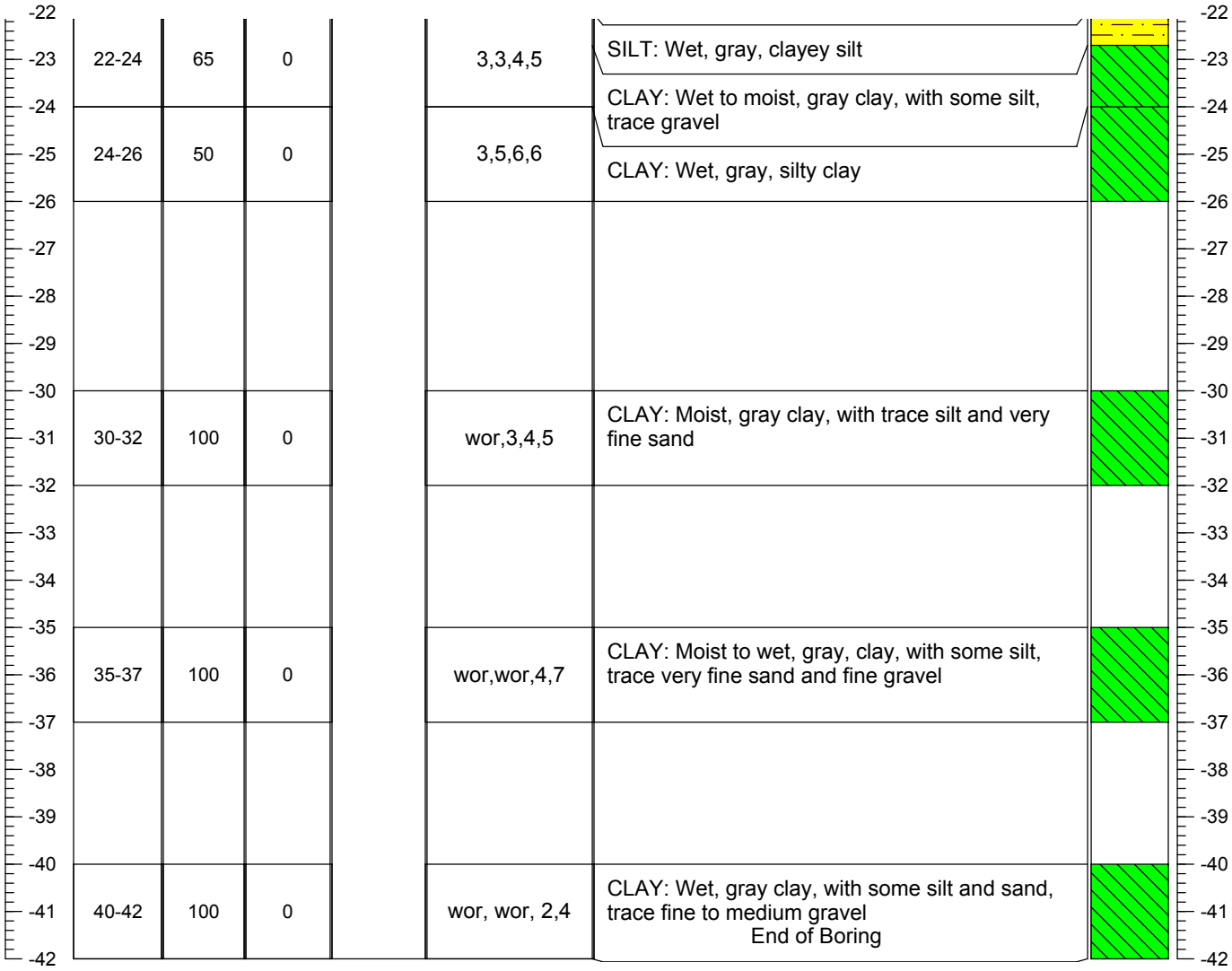
wor = weight of rod

GB03

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/20/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 688.39 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
-22						
-23	22-24	65	0		3,3,4,5	SILT: Wet, gray, clayey silt
-24						CLAY: Wet to moist, gray clay, with some silt, trace gravel
-25	24-26	50	0		3,5,6,6	CLAY: Wet, gray, silty clay
-26						
-27						
-28						
-29						
-30						
-31	30-32	100	0		wor,3,4,5	CLAY: Moist, gray clay, with trace silt and very fine sand
-32						
-33						
-34						
-35						
-36	35-37	100	0		wor,wor,4,7	CLAY: Moist to wet, gray, clay, with some silt, trace very fine sand and fine gravel
-37						
-38						
-39						
-40						
-41	40-42	100	0		wor, wor, 2,4	CLAY: Wet, gray clay, with some silt and sand, trace fine to medium gravel
-42						End of Boring



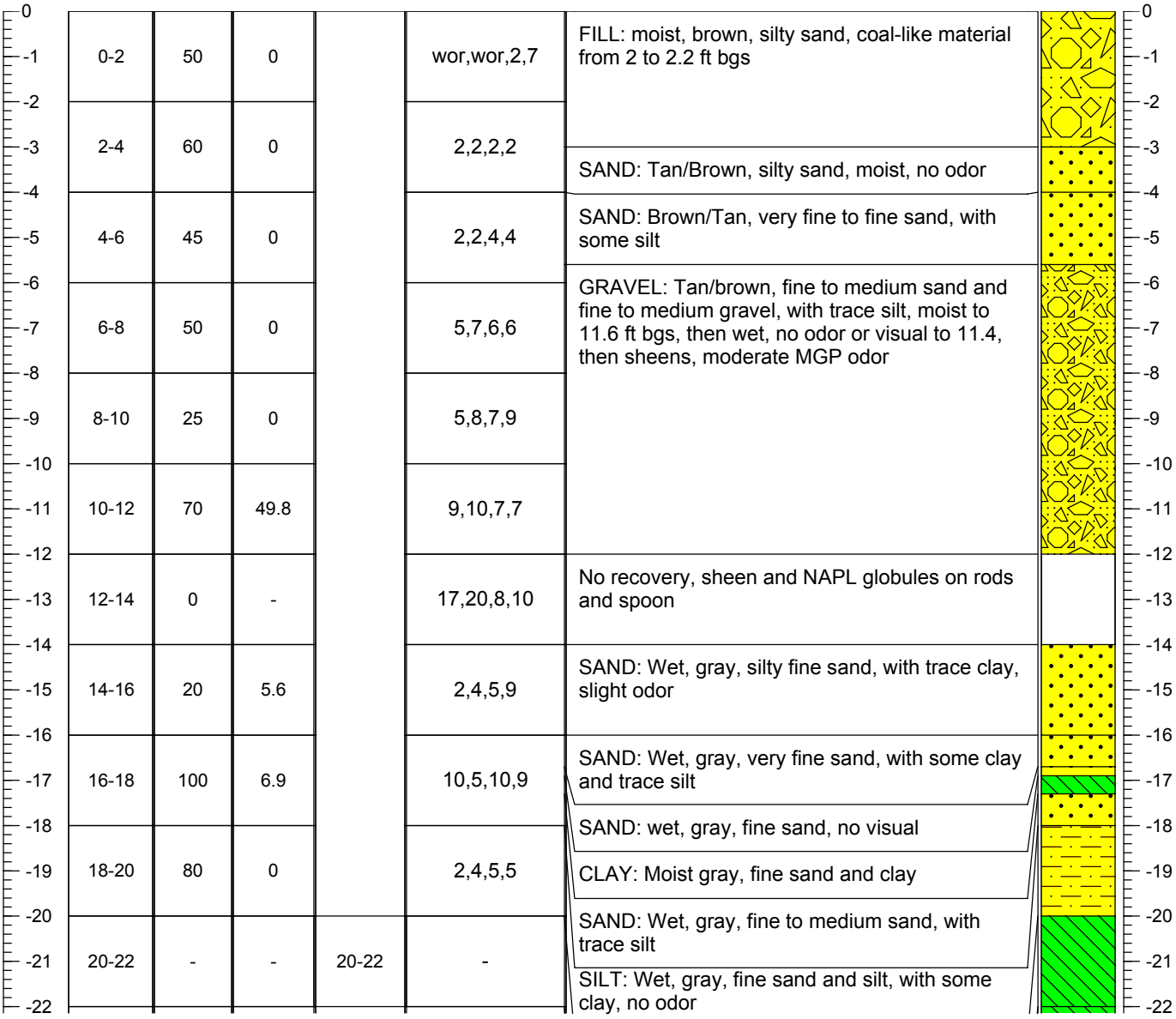
PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB04

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/17/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 689.25 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
0 to -2	0-2	50	0		wor,wor,2,7	FILL: moist, brown, silty sand, coal-like material from 2 to 2.2 ft bgs
-2 to -4	2-4	60	0		2,2,2,2	SAND: Tan/Brown, silty sand, moist, no odor
-4 to -6	4-6	45	0		2,2,4,4	SAND: Brown/Tan, very fine to fine sand, with some silt
-6 to -8	6-8	50	0		5,7,6,6	GRAVEL: Tan/brown, fine to medium sand and fine to medium gravel, with trace silt, moist to 11.6 ft bgs, then wet, no odor or visual to 11.4, then sheens, moderate MGP odor
-8 to -10	8-10	25	0		5,8,7,9	
-10 to -12	10-12	70	49.8		9,10,7,7	
-12 to -14	12-14	0	-		17,20,8,10	No recovery, sheen and NAPL globules on rods and spoon
-14 to -16	14-16	20	5.6		2,4,5,9	SAND: Wet, gray, silty fine sand, with trace clay, slight odor
-16 to -18	16-18	100	6.9		10,5,10,9	SAND: Wet, gray, very fine sand, with some clay and trace silt
-18 to -19						SAND: wet, gray, fine sand, no visual
-19 to -20	18-20	80	0		2,4,5,5	CLAY: Moist gray, fine sand and clay
-20 to -21						SAND: Wet, gray, fine to medium sand, with trace silt
-21 to -22	20-22	-	-	20-22	-	SILT: Wet, gray, fine sand and silt, with some clay, no odor



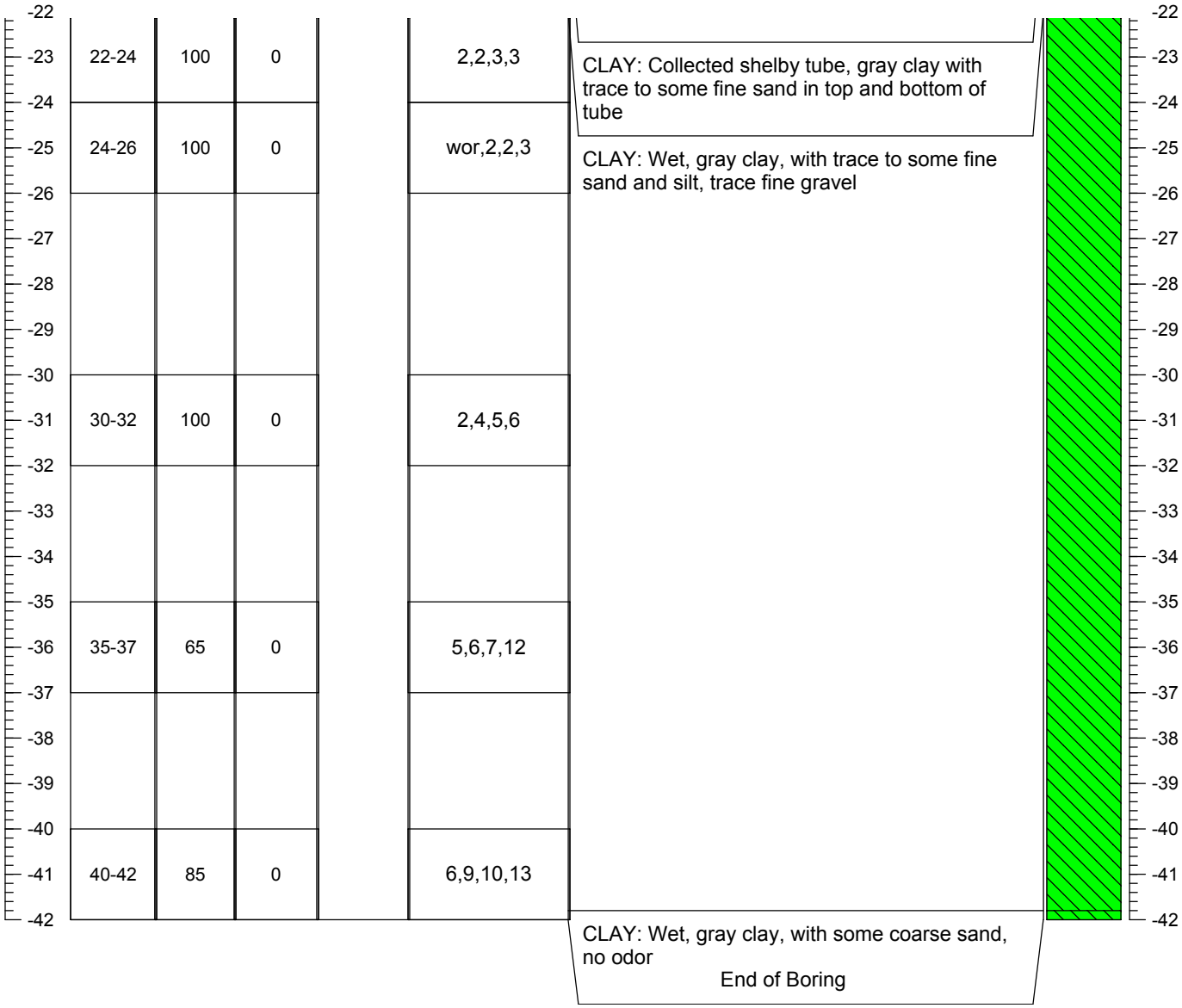
PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB04

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/17/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 689.25 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
-22						
-23	22-24	100	0		2,2,3,3	CLAY: Collected shelby tube, gray clay with trace to some fine sand in top and bottom of tube
-24						
-25	24-26	100	0		wor,2,2,3	CLAY: Wet, gray clay, with trace to some fine sand and silt, trace fine gravel
-26						
-27						
-28						
-29						
-30						
-31	30-32	100	0		2,4,5,6	
-32						
-33						
-34						
-35						
-36	35-37	65	0		5,6,7,12	
-37						
-38						
-39						
-40						
-41	40-42	85	0		6,9,10,13	
-42						CLAY: Wet, gray clay, with some coarse sand, no odor End of Boring



PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB05

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/19/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 689.47 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
0						
-1	0-2	73	0		5,4,3	ASPHALT
-2						SAND: Dark brown, medium to coarse sand, with some silt, gravel, and glass, coal-like material from 1.8 - 2 ft bgs
-3	2-4	45	0		1,2,2,1	
-4						SILT: Moist, dark brown silt, with trace to some gravel, slag, coal-like material, bricks, and concrete fragments
-5	4-6	25	0		1,1,2,4	
-6						
-7	6-8	20	0		5,3,4,6	
-8						
-9	8-10	40	0.5		6,14,14,13	GRAVEL: Fine to medium gravel, with some medium to coarse sand and clay, stained black from 10.6 - 12 ft bgs, wet at 11.6 ft bgs with a moderate diesel odor
-10						
-11	10-12	70	363		10,12,10,10	
-12						
-13	12-14	65	134		14,9,9,12	GRAVEL: Wet, medium to coarse sand and fine to medium gravel, moderate MGP-like odor, sheen, stained black
-14						
-15	14-16	-	-			CLAY: Moist, brown, silty clay, slight odor
-16						Collected Shelby tube
-17	16-18	75	3.5		3,4,8,8	CLAY: Wet, gray, silty clay, trace sand, fine sand lens at 17.5-17.6 ft bgs
-18						
-19	18-20	95	11.4		4,4,4,5	CLAY: Wet, gray, fine sandy clay, with some silt
-20						
-21	20-22	100	4.5		2,2,7,6	
-22						
-23	22-24	100	0		5,4,7,8	SAND: Wet, gray, clayey, fine sand

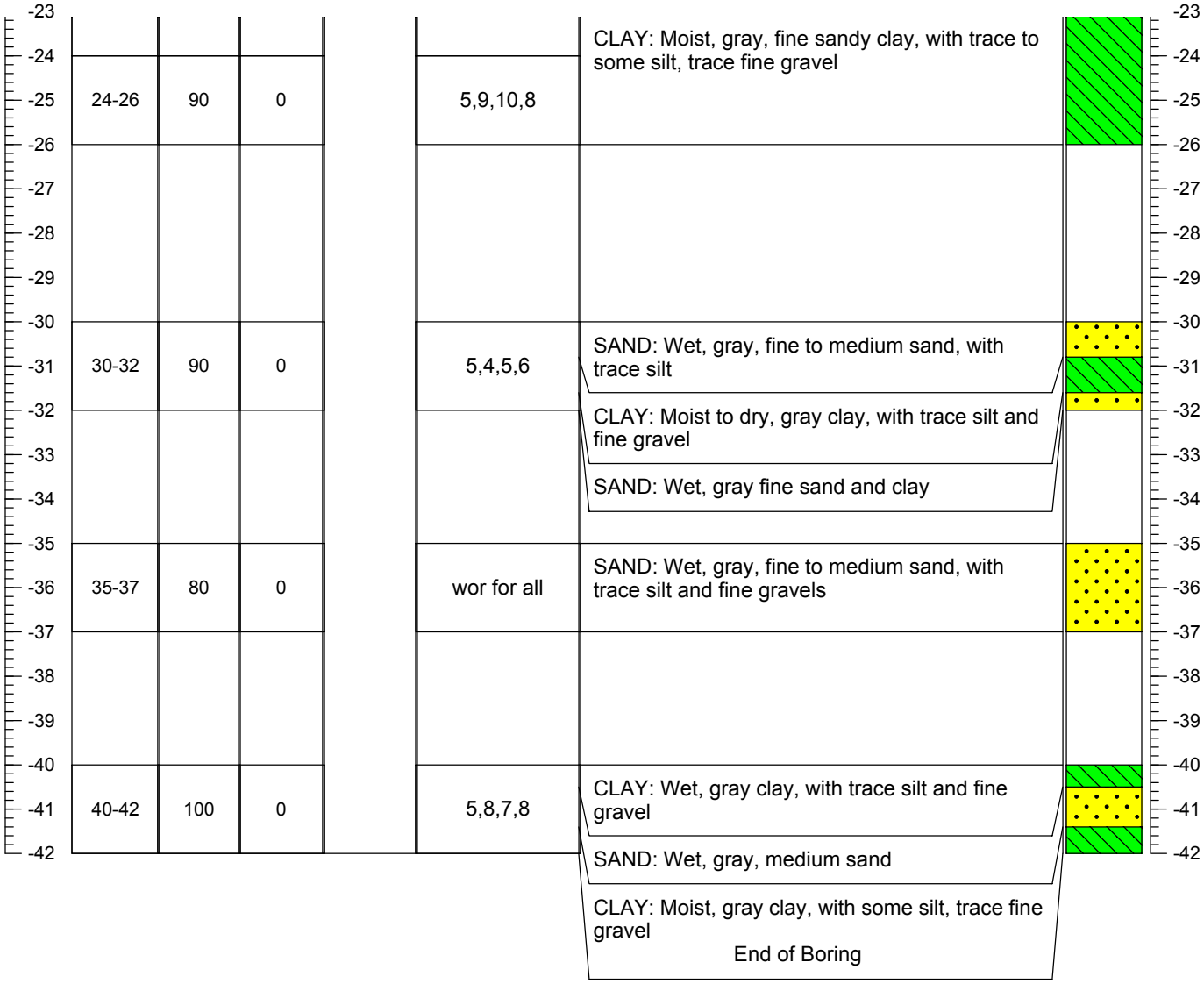
PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB05

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/19/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 689.47 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
-23						
-24						CLAY: Moist, gray, fine sandy clay, with trace to some silt, trace fine gravel
-25	24-26	90	0		5,9,10,8	
-26						
-27						
-28						
-29						
-30						
-31	30-32	90	0		5,4,5,6	SAND: Wet, gray, fine to medium sand, with trace silt
-32						CLAY: Moist to dry, gray clay, with trace silt and fine gravel
-33						SAND: Wet, gray fine sand and clay
-34						
-35						
-36	35-37	80	0		wor for all	SAND: Wet, gray, fine to medium sand, with trace silt and fine gravels
-37						
-38						
-39						
-40						
-41	40-42	100	0		5,8,7,8	CLAY: Wet, gray clay, with trace silt and fine gravel
-42						SAND: Wet, gray, medium sand
						CLAY: Moist, gray clay, with some silt, trace fine gravel
						End of Boring



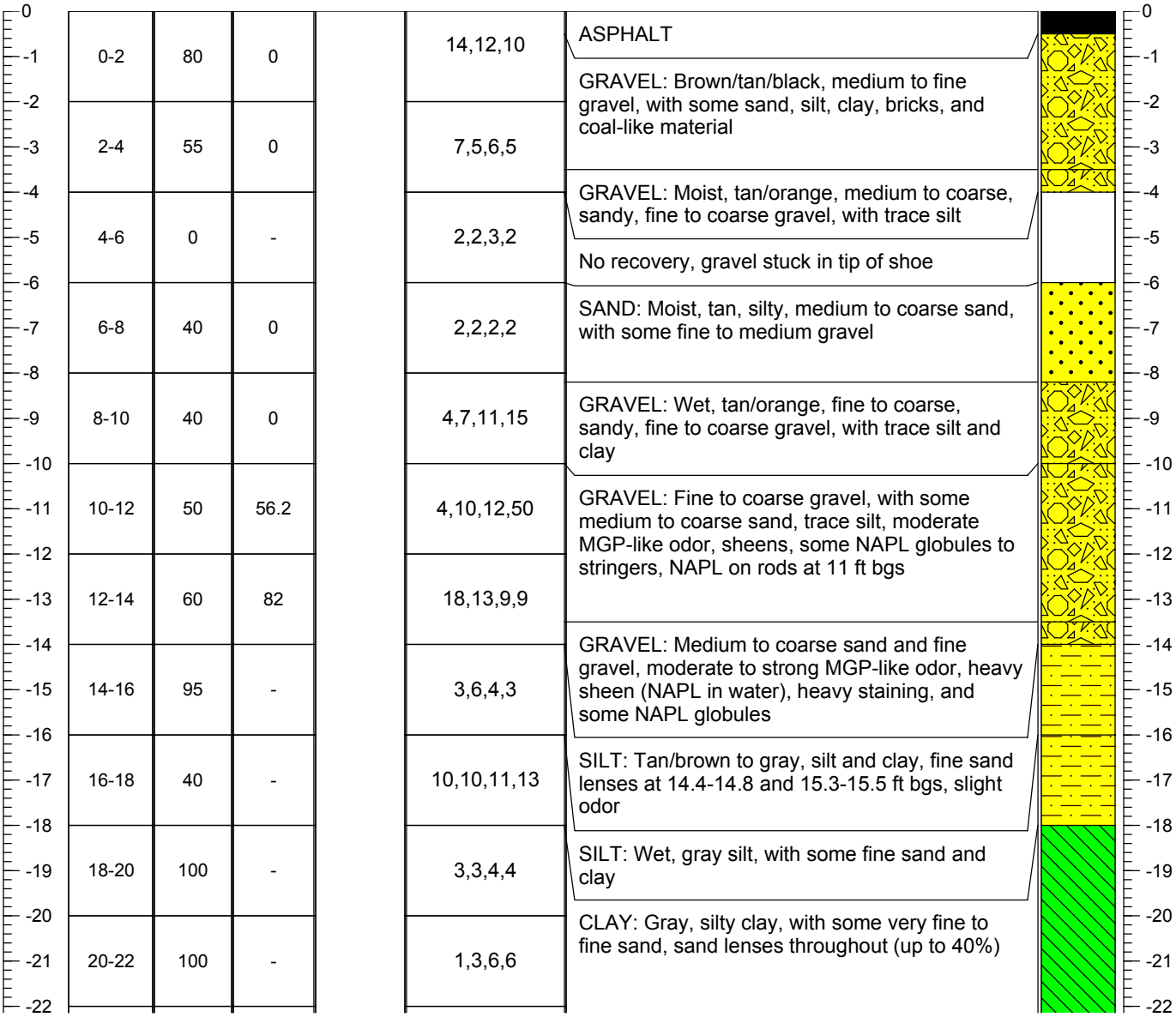
PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB06

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/20/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 688.02 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
0						
-1	0-2	80	0		14,12,10	ASPHALT GRAVEL: Brown/tan/black, medium to fine gravel, with some sand, silt, clay, bricks, and coal-like material
-2						
-3	2-4	55	0		7,5,6,5	
-4						GRAVEL: Moist, tan/orange, medium to coarse, sandy, fine to coarse gravel, with trace silt
-5	4-6	0	-		2,2,3,2	No recovery, gravel stuck in tip of shoe
-6						
-7	6-8	40	0		2,2,2,2	SAND: Moist, tan, silty, medium to coarse sand, with some fine to medium gravel
-8						
-9	8-10	40	0		4,7,11,15	GRAVEL: Wet, tan/orange, fine to coarse, sandy, fine to coarse gravel, with trace silt and clay
-10						
-11	10-12	50	56.2		4,10,12,50	GRAVEL: Fine to coarse gravel, with some medium to coarse sand, trace silt, moderate MGP-like odor, sheens, some NAPL globules to stringers, NAPL on rods at 11 ft bgs
-12						
-13	12-14	60	82		18,13,9,9	
-14						GRAVEL: Medium to coarse sand and fine gravel, moderate to strong MGP-like odor, heavy sheen (NAPL in water), heavy staining, and some NAPL globules
-15	14-16	95	-		3,6,4,3	
-16						
-17	16-18	40	-		10,10,11,13	SILT: Tan/brown to gray, silt and clay, fine sand lenses at 14.4-14.8 and 15.3-15.5 ft bgs, slight odor
-18						
-19	18-20	100	-		3,3,4,4	SILT: Wet, gray silt, with some fine sand and clay
-20						
-21	20-22	100	-		1,3,6,6	CLAY: Gray, silty clay, with some very fine to fine sand, sand lenses throughout (up to 40%)
-22						



PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB06

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/20/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 688.02 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
-22						
-23	22-24	100	0		6,12,13,15	Gray, silty clay, with some very fine to fine sand, sand lenses throughout (up to 40%)
-24						
-25	24-26	100	0		4,4,6,9	CLAY: Wet, gray clay, with trace silt, very fine sand, and gravel
-26						
-27						
-28						
-29						
-30						
-31	30-32	-	-			Collected Shelby tube
-32						
-33						
-34						
-35						
-36	35-37	100	0		4,4,6,10	CLAY: Moist, gray clay, with trace silt and fine gravel
-37						CLAY: Moist, gray clay, with some very fine sand, trace silt and fine gravel
-38						
-39						
-40						
-41	40-42	75	0		3,7,9,12	SILT: Moist, gray, very fine to fine, sandy silt, with trace clay
-42						End of Boring

PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB07

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/20/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 686.95 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
0						
-1	0-2	85	0		7,8,8	ASPHALT SAND: Tan, medium to coarse sand and fine to medium rounded gravel
-2						
-3	2-4	45	0		1,1,2,1	SILT: Moist, dark brown silt, with trace sand, clay, and coal-like material
-4						
-5	4-6	50	0		1,1,2,3	CLAY: Moist, dark gray clay, with trace to some silt
-6						
-7	6-8	80	2.6		5,4,4,6	CLAY: Brown/gray clay, medium sand, and fine to medium gravel
-8						
-9	8-10	65	0		14,10,9,5	CLAY: Moist, brown and gray clay, with some silt and gravel
-10						
-11	10-12	70	0		6,5,3,6	GRAVEL: Brown, fine to coarse gravel, withsome medium to coarse sand, trace silt and clay, wet at 9.7 ft bgs
-12						
-13	12-14	60	0		9,8,10,11	SAND: Wet, brown, medium to coarse sand, with trace gravel
-14						GRAVEL: Wet, brown, fine to medium gravel, with some medium to coarse sand
-15	14-16	75	0		3,8,6,6	SILT: Wet, tan, fine sandy silt, with trace clay
-16						
-17	16-18	80	0		9,7,9,10	CLAY: Wet, Tan/gray, silty clay, with some 0.1 ft thick fine to medium sand lenses
-18						SILT: Wet, gray, fine to medium, sandy silt
-19	18-20	90	0		2,4,5,8	CLAY: Gray, silty clay, with trace to some fine to medium sand, wet
-20						
-21	20-22	100	0		4,4,6,7	CLAY: Gray, fine to medium, sandy clay, sand lenses from 16.4-16.6 and 17.6-17.7 ft bgs, wet
-22						CLAY: Gray clay, with trace silt, interbedded with thin (0.02 - 0.08 ft thick) sand lenses

PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB07

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/20/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 686.95 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
-23	22-24	75	0		5,5,6,5	
-24	24-26	100	0		wor,wor,4,4	CLAY: Gray clay, with trace to some silt, trace fine gravel, wet
-25						
-26						
-27						
-28						
-29						
-30	30-32	100	0		4,5,5,4	CLAY: Gray clay, with trace to some silt, trace fine gravel, medium to coarse sand lens at 31.6-31.7 ft bgs, wet
-31						
-32						
-33						
-34						
-35	35-37	100	0		wor,3,4,5	CLAY: Gray clay, with trace to some silt, trace fine gravel, wet
-36						
-37						
-38						
-39						
-40	40-42	-	-		-	Attempted Shelby tube
-41						End of Boring
-42						

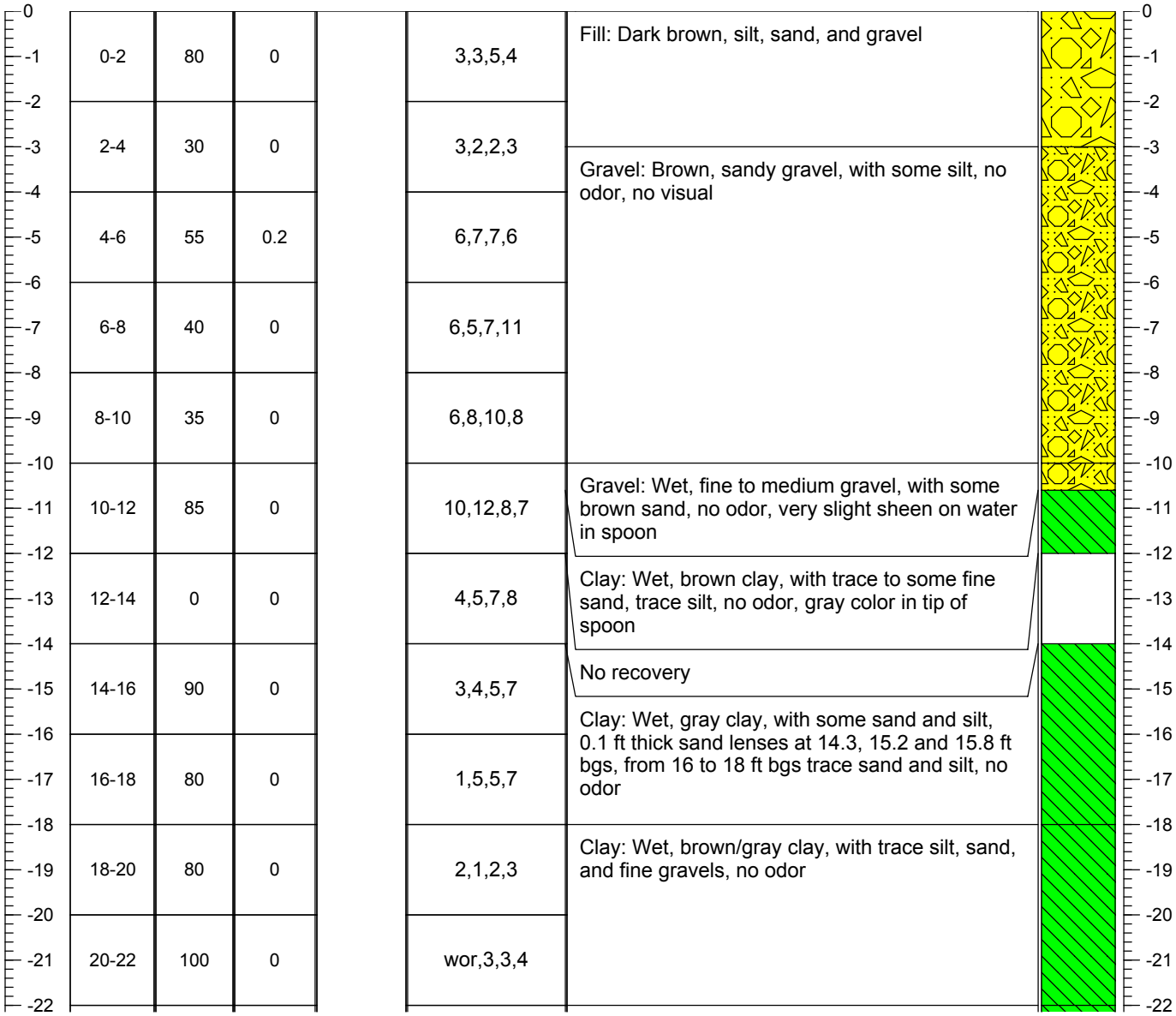
PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB08

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/17/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 688.06 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
0						
-1	0-2	80	0		3,3,5,4	Fill: Dark brown, silt, sand, and gravel
-2						
-3	2-4	30	0		3,2,2,3	
-4						Gravel: Brown, sandy gravel, with some silt, no odor, no visual
-5	4-6	55	0.2		6,7,7,6	
-6						
-7	6-8	40	0		6,5,7,11	
-8						
-9	8-10	35	0		6,8,10,8	
-10						
-11	10-12	85	0		10,12,8,7	Gravel: Wet, fine to medium gravel, with some brown sand, no odor, very slight sheen on water in spoon
-12						
-13	12-14	0	0		4,5,7,8	Clay: Wet, brown clay, with trace to some fine sand, trace silt, no odor, gray color in tip of spoon
-14						
-15	14-16	90	0		3,4,5,7	No recovery
-16						Clay: Wet, gray clay, with some sand and silt, 0.1 ft thick sand lenses at 14.3, 15.2 and 15.8 ft bgs, from 16 to 18 ft bgs trace sand and silt, no odor
-17	16-18	80	0		1,5,5,7	
-18						
-19	18-20	80	0		2,1,2,3	Clay: Wet, brown/gray clay, with trace silt, sand, and fine gravels, no odor
-20						
-21	20-22	100	0		wor,3,3,4	
-22						



PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GB08

PROJECT: Dansville MGP-NYSEG
PROJECT NO: I03033
LOCATION: Dansville, NY
DATE: 11/17/2008
DRILLING CONTRACTOR: Nothnagle Drilling
DRILLER: Steve Gelser
DRILLING METHOD: 3.25" Hollow Stem Auger

SAMPLING METHOD: 2" by 24" Split Spoons
WELL ELEVATION: N/A
GROUND ELEVATION: 688.06 ft. above MSL
OUTER CASING ELEVATION: N/A
DEPTH TO WATER: N/A
BOREHOLE DEPTH: 42 ft. bgs
WEATHER: Not recorded
GEOLOGIST: S. Pesch

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	ANALYTICAL SAMPLE	BLOW COUNT	SOIL DESCRIPTION and LITHOLOGIC SYMBOL
-22						
-23	22-24	100	0		wor,2,3,4	Clay: Wet, gray, soft clay, with trace to some silt and fine gravels, dry to moist at 35 to 37 ft bgs, no odor
-24						
-25	24-26	100	0		1,3,3,6	
-26						
-27						
-28						
-29						
-30						
-31	30-32	100	0		wor,3,4,5	
-32						
-33						
-34						
-35						
-36	35-37	100	0		3,6,9,9	
-37						
-38						
-39						
-40						
-41	40-42	100	0		wor,2,5,5	End of Boring
-42						

PID (ppm) = Photo-Ionization Detector, readings in parts per million
wor = weight of rod

GEOTECHNICAL TEST RESULTS
GB-01 to GB-08
Dansville Former MGP Site
Operable Unit 1
Dansville, Livingston County, New York

	Depth (ft)					Triaxial Test				Atterberg Limits				Gradation			
						Total		Effective									
Sample No.	From	To	Sample Type	Natural Moisture (%)	Dry Density (pcf)	C (psi)	Phi (°)	C (psi)	Phi (°)	LL	PL	PI	% Gravel	% Sand	% Fines	Specific Gravity	Permeability, K (cm/sec) at 20°C
GB-01	6	8	Jar	7.6	---	---	---	---	---	---	---	---	62.8	20.7	16.5	---	---
GB-02	30	32	Jar	16.5	---	---	---	---	---	NP	NP	NP	1	13	86	---	---
GB-03	2	4	Jar	18.9	---	---	---	---	---	---	---	---	0	45.9	54	---	---
GB-04	2	4	Jar	14.7	---	---	---	---	---	---	---	---	5.2	53.1	41.7	---	---
GB-04	10	12	Jar	8.2	---	---	---	---	---	---	---	---	48.8	31.1	20.1	---	---
GB-05	35	37	Jar	13.8	---	---	---	---	---	NP	NP	NP	0.4	52.1	47.5	---	---
GB-06	16	18	Jar	21.4	---	---	---	---	---	NP	NP	NP	0	6.5	93.5	---	---
GB-06	24	26	Jar	26.5	---	---	---	---	---	34	19	15	0	2.4	97.6	---	---
GB-08	35	37	Jar	21.2	---	---	---	---	---	31	19	12	0	2.1	97.9	---	---
GB-04	20	22	Tube	26.25	98.55	4.16	25.9	0.49	29.3	NP	NP	NP	0.3	0.2	99.5	2.72	3.66E-07
GB-05	14	16	Tube	23.05	104.12	8.65	26.5	2.07	26.8	NP	NP	NP	0	0.1	99.9	2.73	2.69E-07
GB-07	40	42	Tube	16.51	117.4	33.48	11.8	24.83	17	NP	NP	NP	1.6	22.7	75.7	2.73	---

	Water Content						Dry Density				
Sample No.	1	2	3	Test	Average		1	2	3	Test	Average
GB-04	27.26	25.96	26.40	25.37	26.25		97.30	99.40	98.70	98.81	98.55
GB-05	22.70	23.89	22.90	22.69	23.05		104.90	102.90	104.70	103.97	104.12
GB-07	16.58	16.61	16.34	---	16.51		117.20	117.20	117.80	---	117.40

Notes:
LL - Liquid Limit
PL - Plastic Limit
PI - Plasticity Index

GB09

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/29/13
DRILLING CONTRACTOR: MICAH
DRILLER: Ryan Brown
DRILLING METHOD: Direct Push

SAMPLING METHOD: 5 ft. Geoprobe Macro-Cores
GROUND ELEVATION: 687.84 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 20 Feet
WEATHER: Rain, 40-50 Degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	Analytical Sample	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	REMARKS
0						
-1			0		ASPHALT: Asphalt and gravel base	
-2	0-5	34	0		SAND: Moist, brown and tan sandy, gravelly fill, trace silt and clay	
-3					SANDY SILT: Moist, tan, fine sandy silt	
-4			0			
-5			0		SILTY SAND: Moist, tan and brown silty sand, some angular gravel fragments, odors and brown/black staining at 6 ft bgs	
-6	5-10	44				
-7			0		SILTY SAND: Moist, tan silty sand, trace angular gravel fragments	
-8						
-9			0		CLAY: Moist, orange-brown clayey gravel fill	
-10						
-11			0		SAND: Wet, gray, gravelly sand, odors and sheen present	
-12	10-15	45	91		SILTY SAND: Moist, tan and orange, fine silt and sand	
-13						
-14			0			
-15			3.6		SILTY CLAY: Wet, gray, silt, clay, and firm sand	
-16						
-17	15-20	90	0			
-18			0			
-19					Boring terminated at 20 ft bgs.	
-20			0			

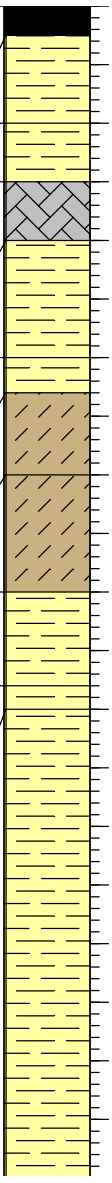
PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB09 offset 16' 4" south

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/29/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 688.10 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 52 Feet
WEATHER: Rain, 40-50 degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	GEOTECHNICAL SAMPLE	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	BLOW COUNT
0					ASPHALT: Asphalt	
-1	0.5-2	67	0		GRAVEL: Moist, brown clayey gravel	23,17,8
-2			0		GRAVEL: Moist, brown clayey gravel	
-3	2-4	50	0		CLAYEY SILT AND DEBRIS: Moist, tan clayey silt, little ash-like material, trace coal fragments	3,3,4,4
-4			0			
-5	4-6	25	0		SANDY SILT: Moist, tan, sandy silt, trace gravel	3,3,2,3
-6			0			
-7	6-8	84	0		SAND: Moist, gray brown gravelly sand	3,3,5,6
-8			0		CLAYEY SILT: Moist, tan clayey silt, trace gravel, trace root hairs	
-9	8-10	0			CLAYEY SILT: No recovery	5,9,12,7
-10						
-11	10-12	71			GRAVEL: Moist, brown tan, silty sandy gravel,	5,10,11,9
-12					GRAVEL: Moderate NAPL globules 11.6' to 12.0'	
-13	12-14	0			SILTY SAND: Wet, gray, fine silty sand, some clay varves	4,7,9,11
-14						
-15	14-16	100				7,6,6,5
-16						
-17						
-18						
-19						
-20						



PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB09 offset 16' 4" south

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/29/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 688.10 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 52 Feet
WEATHER: Rain, 40-50 degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	GEOTECHNICAL SAMPLE	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	BLOW COUNT
-20						
-21	20-22	5			SILTY SAND: Wet, gray, fine silty sand, some clay varves, rock fragments stuck in sampler	7,6,6,5
-22						
-23						
-24						
-25	25-27	59			SILTY SAND: Wet, gray, fine silty sand, some clay varves	2,2,4,3
-26						
-27						
-28						
-29						
-30	30-32	63	0		SILTY SAND: Wet, gray, very loose, fine silty sand, some clay varves	W.O.H.
-31			0			
-32			0			
-33						
-34						
-35	35-37	75	0		SANDY SILT: Wet, gray, very loose, fine sandy silt	8,7,8,12
-36						
-37			0			
-38						
-39						
-40						

PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB09 offset 16' 4" south

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/29/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 688.10 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 52 Feet
WEATHER: Rain, 40-50 degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	GEOTECHNICAL SAMPLE	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	BLOW COUNT
-40						
-41	40-42	92	0		SANDY SILT: Wet, gray, very loose, fine sandy silt	3,5,6,6
			0			
-42			0			
-43						
-44						
-45						
-46	45-47	100			SANDY SILT: Wet, gray, very loose, fine sandy silt	2,6,6,5
-47						
-48						
-49						
-50			0		SANDY SILT: Wet, gray, very loose, fine sandy silt	
-51	50-52	71	0			1,3,3,5
			0			
-52					Boring terminated at 52 ft bgs	

PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB10

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/29/13
DRILLING CONTRACTOR: MICAH
DRILLER: Ryan Brown
DRILLING METHOD: Direct Push

SAMPLING METHOD: 5 ft. Geoprobe Macro-Cores
GROUND ELEVATION: 688.48 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 20 Feet
WEATHER: Rain, 40-50 Degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	Analytical Sample	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	REMARKS
0	0-5	34	1		ASPHALT: Asphalt	
-1			0.5		GRAVEL AND DEBRIS: Moist, brown, white, orange, tan gravel, some silt, some sand, little ash-like material, little brick fragments, trace coal-like material	
-2						
-3			0.4			
-4			0.4			
-5	5-10	27	0.4		GRAVEL: Moist, brown, white, orange, tan gravel, some silt, some sand	
-6						
-7			0.3			
-8						
-9			1			
-10	10-15	42	7		SILTY SAND: Moist, brown, white, orange, tan gravel, some silt, some sand with a trace sheen from 11.2 ft to 11.6 ft	
-11						
-12			7		SANDY SILT: Wet, yellowish tan to gray, fine, sandy silt, some clay	
-13						
-14			6			
-15	15-20	100	12		SANDY SILT: Wet, yellowish tan to gray, fine, sandy silt, some clay	
-16			7			
-17			5			
-18			4.5			
-19			7		Boring terminated at 20 ft bgs.	
-20						

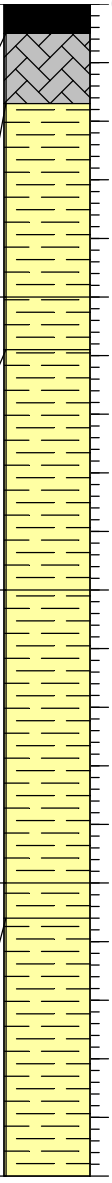
PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB11

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/29/13
DRILLING CONTRACTOR: MICAH
DRILLER: Ryan Brown
DRILLING METHOD: Direct Push

SAMPLING METHOD: 5 ft. Geoprobe Macro-Cores
GROUND ELEVATION: 687.29 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 20 Feet
WEATHER: Rain, 40-50 Degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	Analytical Sample	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	REMARKS
0						
-1						
-2	0-5	49	0.5		ASPHALT: Asphalt	
-3			0.8		GRAVEL AND DEBRIS: Moist, brown, black, white gravel, some silt, trace ash-like material, trace coal fragments	
-4			0.4		SANDY SILT: Moist to wet, tan, fine sandy silt, red iron staining	
-5			0.3			
-6	5-10	49	0.4		SANDY SILT: Moist to wet, tan, fine sandy silt, red iron staining	
-7			0.3		GRAVEL: Moist, brown, gravel, some silt, some sand	
-8			1			
-9			1.5			
-10	10-15	40	3		GRAVEL: Moist, brown, gravel, some silt, some sand, with moderate NAPL globules from 10-11.3 ft, moderate sheens from 11.3-15 ft, increasing gravel fraction with depth	
-11			47			
-12			23			
-13			69			
-14			7.9			
-15	15-20	100	4		SANDY SILT: Moist, brown, gravel, some silt, some sand, with, slight NAPL globules	
-16			12		SILTY CLAY: Wet, gray silty clay	
-17			3.2			
-18			3.5		Boring terminated at 20 ft bgs.	
-19						
-20						



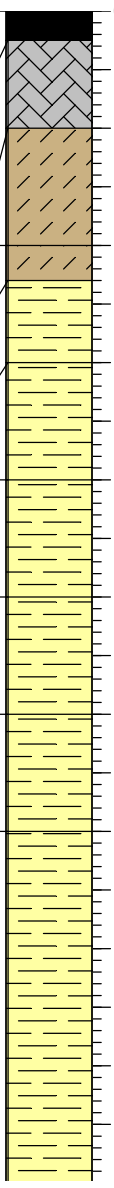
PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB11 offset 14' 4" south

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/30/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 687.65 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 47 Feet
WEATHER: Rain, 50-60 Degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	GEOTECHNICAL SAMPLE	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	BLOW COUNT
0					ASPHALT: Asphalt	
-1	0.5-2	34			CLAYEY SILT AND DEBRIS: Moist, brown black clayey silt, little rock fragments, trace coal, cinders, etc.	27,11,4
-2						
-3	2-4	50			CLAYEY SILT: Same	5,3,3,3
-4			0		CLAYEY SILT: Same	
-5	4-6	71	0		SILTY CLAY: Moist, orange grading to gray silty clay, soft, trace gravel, trace roots	2,1,2,2
-6			0			
-7	6-8	50	0		SILTY CLAY: Same, slight NAPL globules and stringers 7-8 ft	3,2,3,7
-8			0			
-9	8-10	59	0		GRAVEL: Moist, light green to tan sandy gravel, medium dense, some silt, slight NAPL globules and slight coal-tar odor	10,14,14,17
-10			0			
-11	10-12	59			GRAVEL: Moist, light green to tan sandy gravel, medium dense, some silt,, slight NAPL stingers	11,11,12,14
-12						
-13	12-14	50	82		GRAVEL: Wet, light green to tan sandy gravel, medium dense, some silt, slight NAPL globules	7,8,12,8
-14			35			
-15	14-16	42	8.5		SANDY SILT: Wet, gray, fine sandy silt, little clay	5,6,5,6
-16			20			
-17						
-18						
-19						
-20						



PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB11 offset 14' 4" south

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/30/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 687.65 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 47 Feet
WEATHER: Rain, 50-60 Degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	GEOTECHNICAL SAMPLE	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	BLOW COUNT
-20						
-21	20-22	0			No recovery	6,6,14,19
-22					SANDY SILT: Wet, gray, fine sandy silt, with some clay	
-23						
-24						
-25			2.5			
-26	25-27	100	30			6,7,10,10
-27			6			
-28						
-29						
-30			2			
-31	30-32	100	4.7		SILTY CLAY: Wet, gray silty clay, little fine sand	3,3,3,2
-32			6			
-33			6			
-34						
-35			1.3			
-36	35-37	92	1.6		SILTY CLAY: Wet, gray silty clay, little fine sand, increase in clay fraction	3,3,3,3
-37			3			
-38			2.5			
-39						
-40						

PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB11 offset 14' 4" south

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/30/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 687.65 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 47 Feet
WEATHER: Rain, 50-60 Degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	GEOTECHNICAL SAMPLE	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	BLOW COUNT
-40						
-41	40-42	92	0 0.2 0.3 0		SILTY CLAY: Wet, gray silty clay, little fine sand, decrease in clay fraction	4,4,5,9
-42						
-43						
-44						
-45						
-46	45-47	63	0 0.1 0.2 0		SILTY CLAY: Same, fine to medium sand lens 0.5 in. thick in middle of sample Boring terminated 47 ft bgs	4,5,9,11
-47						

PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB12

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/31/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 688.92 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 47 Feet
WEATHER: Snow, 20 Degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	GEOTECHNICAL SAMPLE	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	BLOW COUNT
0					ASPHALT: Asphalt	
-1	0.5-2	73	0		GRAVEL: Moist, brown, gravel, trace coal-like material at 1.8-2 ft	14,15,19
-2			0			
-3	2-4	88	0		GRAVEL: Moist, brown, gravel, trace coal-like material	12,5,4,4
-4			0		SILTY SAND: Moist, brown, silty sand, trace gravel	
-5	4-6	13			SILTY SAND: Moist, brown, silty sand, trace gravel	2,2,3,5
-6						
-7	6-8	25			SILTY SAND: Wet, brown, silty sand, some gravel	5,11,8,9
-8						
-9	8-10	55			SANDY GRAVEL: Moist, tan/brown sandy gravel, medium dense, some clay and silt, rock stuck in shoe	8,9,17,21
-10			0.5			
-11	10-12	100	1		SANDY GRAVEL: Dry/moist, tan/brown sandy gravel, medium dense, some clay and silt, augers grinding at 10-11 ft	11,17,18,15
-12			1.5			
-13	12-14	50	11		SANDY GRAVEL: Wet, tan/brown sandy gravel, medium dense, some clay and silt, slight NAPL globules 12.5-13 ft	12,16,16,9
-14			80			
-15	14-16	67	1		SANDY SILT: Wet, tan fine sandy silt, little clay	5,6,5,6
-16			6.8		SANDY SILT: Wet,gray fine sandy silt, little clay	
-17			1.5			
-18						
-19						
-20						

PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB12

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/31/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 688.92 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 47 Feet
WEATHER: Snow, 20 Degrees
GEOLOGIST: Ben Staud

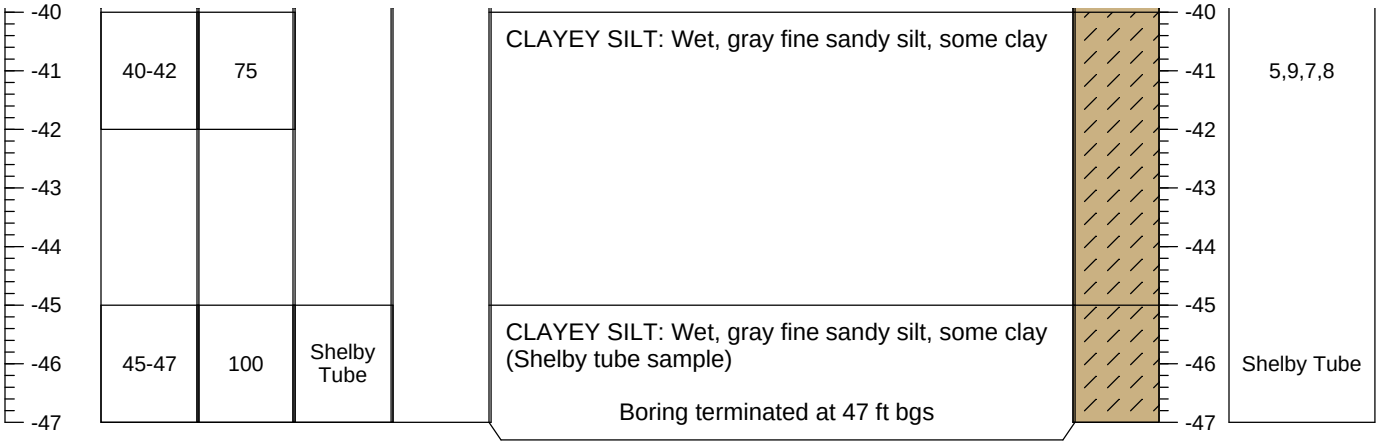
DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	GEOTECHNICAL SAMPLE	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	BLOW COUNT
-20 to -25	20-22	100			SANDY SILT: Wet,gray fine sandy silt, little clay	3,3,2,4
-25 to -30	25-27	59			SANDY SILT: Wet, gray fine sandy silt, some clay	3,2,2,2
-30 to -35	30-32	100			CLAYEY SILT: Wet, gray fine sandy silt, some clay	6,6,7,9
-35 to -40	35-37	13	Shelby Tube		CLAYEY SILT: Wet, gray fine sandy silt, some clay, (Shelby tube not saved)	Shelby Tube

PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB12

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/31/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 688.92 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 47 Feet
WEATHER: Snow, 20 Degrees
GEOLOGIST: Ben Staud



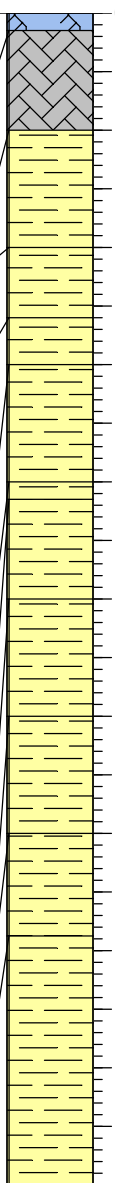
PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB13

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/31/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 688.75 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 47 Feet
WEATHER: Snow, 20 Degrees
GEOLOGIST: Ben Staud

DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	GEOTECHNICAL SAMPLE	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	BLOW COUNT
0					TOPSOIL: Moist, black topsoil	
-1	0-2	50			SANDY SILT AND DEBRIS: Moist, tan, dark brown, black sandy silt, trace coal-like material, trace cinders	2,3,3,3
-2						
-3	2-4	71			SILTY SAND: Moist, orange-tan silty sand, medium stiff, trace gravel	3,2,3,6
-4						
-5	4-6	75			SILTY SAND: Moist, orange-tan silty sand, medium stiff, trace gravel	6,11,15,21
-6						
-7	6-8	34			SILTY SAND: Moist, orange-tan silty sand, medium stiff, trace gravel, some orange-tan sandstone gravel fragments (broken by spoon) and rounded gravel fragments 0.125-0.25 in. diameter	9,10,14,14
-8						
-9	8-10	67			SILTY SAND: Moist, orange-tan silty sand, medium stiff, little gray gravel fragments, augers grinding 7-8 ft	15,16,18,18
-10						
-11	10-12	59			SILTY SAND: Moist, orange-tan silty sand, medium stiff, little gray gravel fragments	14,17,16,12
-12					GRAVEL: Moist, orange/brown sandy gravel, hard, little silt, little clay, little sandstone and granite gravel fragments	
-13	12-14	0				4,2,4,7
-14					GRAVEL: Moist, orange/brown sandy gravel, hard, little silt, little clay, little sandstone and granite gravel fragments, trace topsoil, trace brick fragment	
-15	14-16	46			GRAVEL: No recovery	7,6,5,6
-16					SILTY SAND: Wet, orange and tan grading to gray silty sand, stiff, little clay	
-17						
-18					SILTY SAND: Wet, gray, silty sand, stiff, little clay	
-19						
-20						



PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB13

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/31/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 688.75 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 47 Feet
WEATHER: Snow, 20 Degrees
GEOLOGIST: Ben Staud

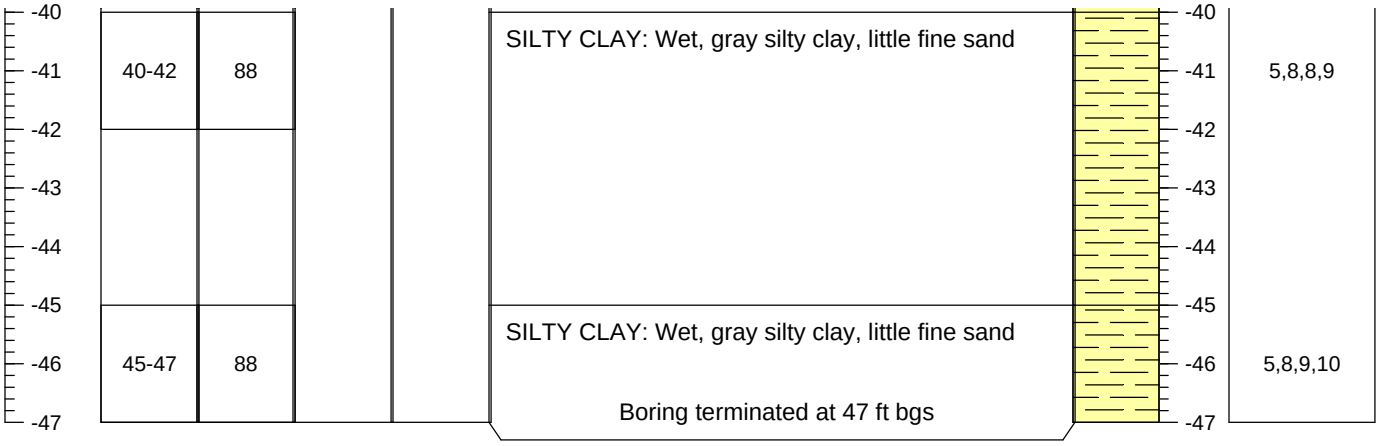
DEPTH (ft.)	SAMPLE INTERVAL (ft.)	% RECOVERY	PID (ppm)	GEOTECHNICAL SAMPLE	SOIL DESCRIPTION and LITHOLOGIC SYMBOL	BLOW COUNT
-20						
-21	20-22	50			SILTY SAND: Wet, gray, silty sand, stiff, little clay	5,4,4,8
-22						
-23						
-24						
-25						
-26	25-27	0			SILTY SAND: No recovery (two Shelby tube attempts, both bent by obstruction at auger tip)	Shelby Tube
-27						
-28					SILTY CLAY: Wet, gray silty clay, little fine sand (Shelby tube sample)	
-29						
-30						
-31	30-32	92				Shelby Tube
-32						
-33						
-34						
-35						
-36	35-37	84			SILTY CLAY: Wet, gray silty clay, little fine sand (Shelby tube sample)	Shelby Tube
-37						
-38						
-39						
-40						

PID (ppm) = Photo-Ionization Detector, readings in parts per million

GB13

PROJECT: Dansville
PROJECT NO: 103023/74
LOCATION: Dansville, NY
DATE: 1/31/13
DRILLING CONTRACTOR: SJB Drilling
DRILLER: Nathanial Hintz and Jason Murphy
DRILLING METHOD: Hollow Stem Auger (HSA)

SAMPLING METHOD: 2 ft. Split Spon and HSA
GROUND ELEVATION: 688.75 Feet above MSL
WELL ELEVATION: NA
OUTER CASING ELEVATION: NA
DEPTH TO WATER: NA
BOREHOLE DEPTH: 47 Feet
WEATHER: Snow, 20 Degrees
GEOLOGIST: Ben Staud

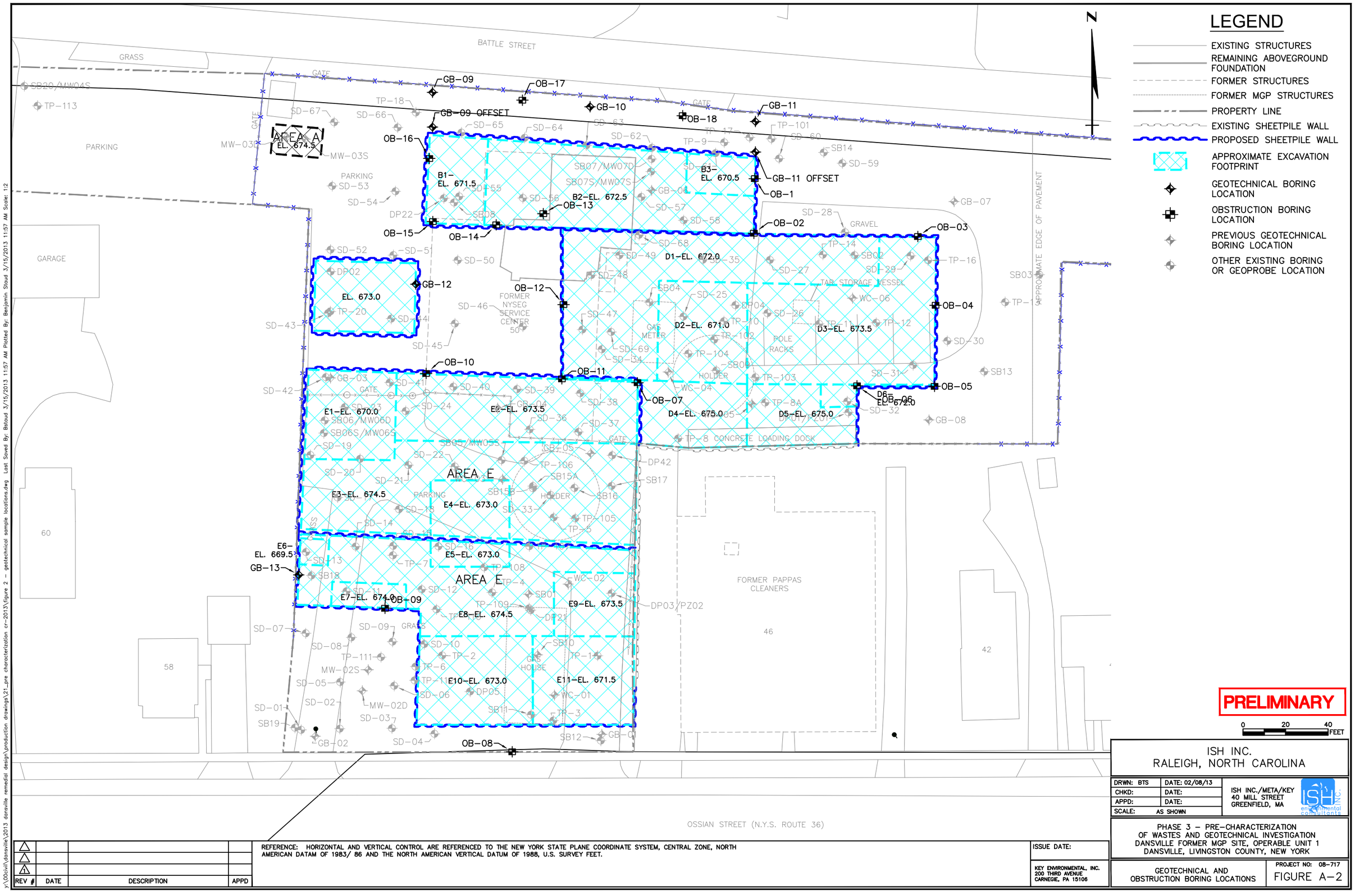


PID (ppm) = Photo-Ionization Detector, readings in parts per million

GEOTECHNICAL TEST RESULTS
GB-09 to GB-13
Dansville Former MGP Site
Operable Unit 1
Dansville, Livingston County, New York

	Depth (ft)					Triaxial Test				Atterberg Limits				Gradation			
						Total		Effective									
Sample No.	From	To	Sample Type	Natural Moisture (%)	Dry Density (pcf)	C (psi)	Phi (°)	C (psi)	Phi (°)	LL	PL	PI	% Gravel	% Sand	% Fines	Specific Gravity	Permeability, K (cm/sec) at 20°C
GB-09	4	6	Jar	13.2	---	---	---	---	---	---	---	---	9.9	44.5	45.6	---	---
GB-09	14	16	Jar	26.4	---	---	---	---	---	---	---	---	3.8	26.3	69.9	---	---
GB-09	20	22	Jar	13.5	---	---	---	---	---	---	---	---	48.1	16.3	35.6	---	---
GB-11	25	27	Jar	25.9	---	---	---	---	---	---	---	---	0.7	7.2	92.1	---	---
GB-11	35	37	Jar	30.1	---	---	---	---	---	35	18	17	0.2	7.7	92.1	---	---
GB-12	30	32	Jar	24.2	---	---	---	---	---	24	14	10	0.3	18.4	81.3	---	---
GB-13	8	10	Jar	5.1	---	---	---	---	---	---	---	---	45.6	37.0	17.4	---	---

Notes:
LL - Liquid Limit
PL - Plastic Limit
PI - Plasticity Index



LEGEND

- EXISTING STRUCTURES
- REMAINING ABOVEGROUND FOUNDATION
- FORMER STRUCTURES
- FORMER MGP STRUCTURES
- PROPERTY LINE
- EXISTING SHEETPILE WALL
- PROPOSED SHEETPILE WALL
- APPROXIMATE EXCAVATION FOOTPRINT
- GEOTECHNICAL BORING LOCATION
- OBSTRUCTION BORING LOCATION
- PREVIOUS GEOTECHNICAL BORING LOCATION
- OTHER EXISTING BORING OR GEOPROBE LOCATION

PRELIMINARY

0 20 40 FEET

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE: HORIZONTAL AND VERTICAL CONTROL ARE REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATAM OF 1983/ 86 AND THE NORTH AMERICAN VERTICAL DATUM OF 1988, U.S. SURVEY FEET.

ISSUE DATE:

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106

ISH INC.
RALEIGH, NORTH CAROLINA

DRWN: BTS	DATE: 02/08/13	ISH INC./META/KEY 40 MILL STREET GREENFIELD, MA
CHKD:	DATE:	
APPD:	DATE:	
SCALE: AS SHOWN		

PHASE 3 – PRE-CHARACTERIZATION
OF WASTES AND GEOTECHNICAL INVESTIGATION
DANSVILLE FORMER MGP SITE, OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

GEOTECHNICAL AND
OBSTRUCTION BORING LOCATIONS

PROJECT NO: 08-717

FIGURE A-2

y:\00civil\dansville\2013 dansville remedial design\production drawings\21_pre characterization cr-2013\figure 2 – geotechnical sample locations.dwg Last Saved By: Batoud 3/15/2013 11:57 AM Plotted By: Benjamin Stoud 3/15/2013 11:57 AM Scale: 1:2

APPENDIX A
CITIZENS PARTICIPATION PLAN (CPP)

CITIZEN PARTICIPATION PLAN (CPP)

DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

Prepared for:

New York State Electric & Gas Corporation
Mr. John Ruspantini
Kirkwood Industrial Park
Binghamton, NY 13902

Prepared by:

Ish Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

MARCH 2013

Table of Contents

1.0 Introduction

This Citizen Participation Plan (CPP) has been prepared in association with the remedial action design activities for the Operable Unit 1 (OU1) selected remedy at the Dansville former manufactured gas plant (MGP) site (Site) located in Dansville, New York (Site No. 8-26-012). The New York State Department of Environmental Conservation (NYSDEC) selected remedy is presented in the Dansville OU1 Record of Decision (OU1 ROD) dated March 2008 (NYSDEC, 2008). The focus of the remediation project is to remove coal tar impacted soils from the Site and to subsequently restore the Site to original conditions using clean materials. This CPP describes citizen participation opportunities available concerning the remediation project.

2.0 Project Objective

The primary objectives of the remediation project, in accordance with the ROD issued March 2008, include eliminating or reducing to the extent practicable the following:

- Exposures of persons at or around the site to soil contaminated with volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and non-aqueous phase liquid (NAPL);
- The release of contaminants from the soil into groundwater in order to avoid exceeding groundwater quality standards; and,
- The release of contaminants from the soil into indoor air, outside air, or off-site soil and groundwater through soil vapors.

Furthermore, the remediation goals include attaining to the extent practicable the following:

- Soil cleanup objectives; and,
- Ambient water quality standards.

3.0 Basic Site Information

The Site is the location of a former MGP that encompassed an area of approximately 2.25 acres at 50 Ossian Street. Ossian Street is an asphaltic street that provides access to the Site at the southern end. The majority of the area surrounding the Site is residential, although some commercial uses are present along Ossian Street. The Site is located in Dansville, New York, a small urban community situated at the western end of the Finger Lakes Region.

Nearly 75 percent of the Site is paved or occupied by the New York State Electric & Gas Corporation (NYSEG) Service Center building footprint, the building having recently been demolished. The remainder of the Site consists of either lawn or gravel. The Site is generally level with no significant topographic or geologic features. Besides the former Service Center

building footprint, the only other structures on-Site are the Battle Street Gas Regulator Station, a small shed in the northwest corner, as well as a concrete loading dock in the southeast corner.

When the plant was in operation, an assortment of equipment and structures were utilized to produce gas for lighting and heating homes. The waste generated at the Site included tar, coal ash, purifier waste, and other liquids and was managed in part by the use of an in-ground tar storage vessel. Limited information is available regarding the disposal of process waste from the Site. In more recent years, two underground storage tanks (USTs) were used at the Site for dispensing motor vehicle fuels. The USTs have since been taken out of service and closed in accordance with the NYSDEC regulations.

Southeast of the Site is the location of a former commercial dry cleaning facility, which was recently listed as a Class 2 inactive hazardous waste disposal site. The facility buildings have since been demolished and remedial activities were completed at the property by the NYSDEC in 2012.

Based on previous Site activities and the history of the Site, it has been determined that the contaminants of concern are MGP related chemicals, including coal tar NAPL, VOCs (benzene, toluene, ethylbenzene, and xylenes), and SVOCs (PAHs).

The remedial action design consists of four phases during which excavation of soils will occur in four specified areas. The project phases are as follows:

- Phase 1 involves excavation in areas B and C which have areas of approximately 1,715 and 6,160 square feet, respectively. Phase 1 work is concentrated in the northwest portion of the site;

- Phase 2 consists of excavation of area D which has an area of nearly 15,525 square feet. Area D is located in the northeast portion of the site;

- Phase 3 involves excavation in the northern 12,310 square feet approximately of area E, located in the mid-western portion of the site; and,

- Phase 4 consists of the excavation of the remaining 10,900 square feet approximately of area E, located in the southwest portion of the site.

4.0 Previous Investigations and Reports

1. "Investigation of the Former Coal Gasification Site in Dansville, New York; Task 1 Report, Preliminary Site Evaluation." Prepared by TRC Environmental Consultants, Inc., August 20, 1986.

2. "Investigation of the Former Coal Gasification Site in Dansville, New York; Task 2 Report, Initial Field Investigation Program." Prepared by TRC Environmental Consultants, Inc., December 5, 1988.

3. "Investigation of the Former Coal Gasification Site in Dansville, New York; Task 3 Report, Additional Field Investigation Program." Prepared by TRC Environmental Consultants, Inc., June 1990.

4. "Risk Assessment for the Former Coal Gasification Site in Dansville, New York; Task 4 Report." Prepared by TRC Environmental Consultants, Inc., May 1991.

5. "Supplemental Remedial Investigation Report for Operable Unit 1 at the Former MGP Site in Dansville, New York." Prepared by Ish Inc., January 2006.

6. "Feasibility Study Report for Operable Unit 1 and Feasibility Study Report Addendum for Operable Unit 1, NYESEG Former MGP Site Dansville, New York." Prepared by Ish Inc., October 2007.

7. "Record of Decision, NYSEG – Dansville MGP Site Operable Unit No. 1, Dansville, Livingston County, New York, Site Number 8-26-012." Prepared by NYSDEC, March 2008.

8. "Pre-Design Investigation Report for Operable Unit 1, NYSEG Former MGP Site, Dansville New York." Prepared by Ish Inc., June 2009.

9. "Supplemental Pre-Design Soil Boring Investigation." Prepared by Ish Inc., November 2012.

5.0 Document Repository

All of the documents associated with the Investigations and Reports listed in Section 4.0 of this document are available for public review at the following document repositories:

New York State Department of Environmental Conservation
Central Office, 625 Broadway 11th Floor
Albany, NY 12333-7014
Attn: Mr. Anthony Karwiel
518.402.9662 (by appointment only)

Dansville Public Library
200 Main St
Dansville, NY 14437
HOURS: Mon - Fri 10 - 8:30, Sat 12 - 4

6.0 Interested Public

All pertinent project information will be provided to interested public via the NYSDEC's list serve, which the public can join by visiting www.dec.ny.gov/chemical/61092.html.

7.0 Description of Citizen Participation Activities

In conjunction with the remedial action design process, the public and local officials will be informed of planned remedial activities. At a minimum, the public participation will consist of the following:

- Interested public identified in Section 6.0 of this document will receive a Fact Sheet (prepared by either NYSDEC or NYSEG) detailing the planned remedial activities;
- Planned remedial activities at the Site will also be described during a public availability session (held by NYSDEC in conjunction with the New York State Department of Health (NYSDOH) and NYSEG);
- The electronic mailing list along with the local media will be utilized to announce the date, time, and location of the public availability session; and,
- A phone number will be posted by NYSEG for interested public to call 24 hours per day regarding any questions or concerns that may arise during the project construction work.

8.0 Additional Information

For additional information concerning this project, any of the following individuals may be contacted:

New York State Electric & Gas (NYSEG)
Dick Marion, Public Affairs
89 East Avenue
Rochester, NY 14649
585.771.2230
Dick_Marion@rge.com

New York State Electric & Gas (NYSEG)
John Ruspantini, Project Manager
18 Link Dr, PO Box 5224
Binghamton, NY 13902
607.762.8787
jjruspantini@nyseg.com

New York State Department Environmental Conservation (NYSDEC)
Mr. Anthony Karwiel
Central Office, 625 Broadway 11th Fl
Albany, NY 12333-7014
518.402.9662
alkarwie@gw.dec.state.ny.us

New York State Department of Health (NYSDOH)
Mr. Albert DeMarco
Bureau of Environmental Exposure Investigation
ESP, Corning Tower, Room 1787
Albany, NY 12237
518.402.7860
BEEI@health.state.ny.us

APPENDIX B
CONSTRUCTION QUALITY ASSURANCE PLAN (CQA)

CONSTRUCTION QUALITY ASSURANCE (CQA) PLAN

REMEDIAL CONSTRUCTION
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

Prepared for:

New York State Electric & Gas Corporation
Mr. John Ruspantini
Kirkwood Industrial Park
Binghamton, NY 13902

Prepared by:

Ish Inc. Team
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

APRIL 2013

TABLE OF CONTENTS

TABLES

1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

This Construction Quality Assurance (CQA) Plan has been prepared on behalf of New York State Electric and Gas Corporation (NYSEG). This CQA Plan includes a description of the CQA activities associated with the Dansville Former MGP Site, Operable Unit 1 Remediation project at the Dansville Site (Site) located in Dansville, Livingston County, New York.

The Scope of Work addressed by this CQA Plan consists of the following primary components:

- Odor, Dust, and Vapor Control;
- Erosion and Sedimentation Controls;
- Installation of surface drainage channel;
- Demolition of existing utilities, concrete foundations and structures, and selected monitoring wells and piezometers;
- Installation of approximately 1,500 lineal feet of temporary steel sheet pile retaining wall around the remediation area;
- Construction and maintenance of Pre-Engineered Fabric Structure and appurtenances;
- Excavation and backfill of approximately 27,000 cy of soil;
- Restoration of the disturbed portions of the Site; and,
- On-Site pre-treatment and discharge to the local Publicly Owned Treatment Works of water collected during construction operations via a water pre-treatment system.

1.2 CQA OVERVIEW

This CQA Plan describes the testing procedures and testing frequencies, as well as procedures for visual inspection and documentation to be implemented as quality assurance measures for the construction components of Remediation at the Dansville Site. Primary stakeholders include Regulatory Agencies, NYSEG, the Engineer, and the Contractor which are subsequently defined. All submittals from the Contractor will be reviewed as specified in this CQA Plan for compliance with the Contract Documents (as defined in the Contract) and Permits. Copies of all submittals will be maintained in the Engineer's field trailer.

Prior to construction, laboratory tests will be performed on construction materials (as needed); and, equipment guarantees, certifications, and conformance test results (submitted by the Contractor) will be reviewed to determine if the procured materials conform to the Contract Documents. All laboratory tests will be documented, and the material will be accepted or rejected according to the results of these tests and reviews.

Construction Quality Assurance (CQA) includes field oversight/observations and tests for comparison to the Contract Document requirements. CQA is performed by an independent third party (i.e., independent from NYSEG and the Contractor) and includes the methods necessary for

quantitative acceptance of the final product. The oversight Engineer will be responsible for certifying that the construction was completed in general conformance with the Contract Documents (including any approved changes in scope-of-work). The Engineer will perform CQA inspection, monitoring, and approve/disapprove the Construction Quality Control activities performed by the Contractor as described below.

Construction Quality Control (CQC) includes the procedures required for measuring and controlling the specific properties of the construction products in order to meet the specifications of the final product. CQC activities are the responsibility of the Manufacturers, Installers, and the Contractor. Contractor CQC activities will also include the operational procedures necessary for the acceptable operation of the water pre-treatment system to ensure compliance with all Federal, State and Local regulations and permits. CQC activities will be completed as specified herein as well as the Contract Documents.

Following this introductory section, the CQA Plan is organized as follows:

- Section 2.0 - Project Organization and Structure;
- Section 3.0 - CQA Testing and Inspection; and,
- Section 4.0 - Documentation.

2.0 PROJECT ORGANIZATION AND STRUCTURE

2.1 GENERAL

The stakeholders involved consist of the Regulatory Agencies, NYSEG, the Engineer, and the Contractor. The Regulatory Agencies will consist of (at a minimum):

- Village of Dansville;
- Village of Dansville Waste Water Treatment Plant;
- New York State Department of Environmental Conservation (NYDEC); and,
- New York State Department of Health (NYSDOH).

The roles of NYSEG, the Engineer, and the Contractor, organization, and specific personnel are described within this CQA Plan.

2.2 ORGANIZATION AND RESPONSIBILITIES

The following section describes the responsibilities and lines of authority within each organization involved in implementation of the Work. Responsibilities of the non-regulatory project stakeholders are summarized in the remainder of this section.

NYSEG

NYSEG is responsible for overall administration of the project. NYSEG has overall responsibility for ensuring that the Dansville Remedial Construction is completed in accordance with the Contract Documents including the applicable information in the RAWP, the design drawings, and the applicable Permits. NYSEG responsibilities include the following:

- Select the Contractor and other firms involved in the Dansville Remedial Design project;
- Ensure that the project scope and objectives are defined and that procedures, schedules, budgets, and manpower requirements are established;
- Provide direction and guidance to the Contractor and Engineer; and,
- Compensate the Contractor for acceptable Work completed in accordance with the Contract Documents.

Contractor

The Contractor is directly responsible for implementation of the Dansville 100% Remedial Design components and maintaining a clear definition of and adherence to the scope, schedule, and budget of the project. As a part of this responsibility, the Contractor will:

- Furnish the personnel, materials, and equipment and utilize the specific means, methods, techniques, sequence, or procedure of construction as indicated in the Contract Documents;
- Designate a Project Manager and Site Superintendent;
- Procure Subcontractor services, as needed;
- Prepare Daily Reports;
- Initiate, maintain, and supervise all safety protocols in connection with the Work;
- If conflict, error, or discrepancy is found in Contract Documents and Permits or existing field conditions differ materially from those indicated, report in writing [via a Work Change Directive (WCD)] before proceeding;
- Conduct surveys for establishing pay quantities; and,
- Maintain at the Site one record copy of all Contract Documents, Permits and other key project documents.

Engineer

The Engineer is responsible for the design, certification, CQA, coordination, construction oversight, and reporting associated with designing and documenting the Work.

The Engineers' responsibilities include the following:

- Serve as the communication link between NYSEG, Regulatory Agencies, and Contractor; and, support community relations efforts;
- Verify the project is managed in accordance with the Contract Documents;
- The Engineer may require the Contractor to repair or reconstruct deficient Work;
- Have the authority to approve/disapprove WCDs and Change Orders (if any);
- The Engineer has the authority to temporarily "shut down" the Work due to imminent health and safety concerns or other unacceptable construction practices;
- Document the Work completed by the Contractor versus the Contract Documents and Permits;
- Approve or reject the materials and workmanship of the Contractor;
- Coordinate the resolution of design issues with the Contractor;
- Prepare Work Change Directives, if required;
- Review Community Air Monitoring Plan and Noise Monitoring data;
- Review vibration monitoring during steel sheet pile installation and removal;
- Review water sample data required for compliance with the POWT permit;
- Review and submit Daily Project Summary Reports;
- Prepare and submit Weekly Project Summary Reports;
- Review submittals, Change Orders and WCDs provided by the Contractor;
- Conduct pre-final and final inspections;
- Prepare transportation manifests for the transportation of non-hazardous waste, hazardous waste (if required), and conditionally exempt MGP remediation waste;

- Prepare a Construction Completion Report in accordance with NYSDEC DER-10, including as-built drawings; and,
- Serves as overall project emergency coordinator and specifies and facilitates any contingency action during any potential emergencies when the Construction Contingency Plan is implemented.

The Engineer will provide a full time representative (Engineer's Representative) to observe the Work. Specific tasks to be performed by the on-site Engineer's Representative will include the following:

- Inspect Work activities;
- Observe personnel and equipment working on Site;
- Perform CQA testing or inspections in accordance with the CQA Plan;
- Evaluate Contractor-performed CQC testing and results completed in accordance with the Technical Specifications;
- Oversee the collection and shipment of samples for laboratory testing, review testing reports, and report any deficiencies to the Engineer;
- Prepare Daily Reports;
- Establish and maintain a punch-list of Work that does not conform to the Contract Documents, design drawings, and Permits;
- Collect, review, and forward to the Engineer the technical submittals requiring approval by NYSEG;
- Receive, evaluate, and distribute WCDs received from the Contractor;
- Monitor the progress of Work and review invoices for verification of payments;
- Participate in pre-final and final inspections of the completed Work and verify that punch list items have been properly corrected; and,
- Maintain a photographic log of the project.

The Engineer will also provide a full time technician (Technician) to implement the Community Air Monitoring Plan and Noise Monitoring (CAMP) and conduct media sampling. Specific tasks to be performed by the Technician will include the following:

- Install maintain, and monitor the air monitoring and noise monitoring equipment;
- Install, maintain, and monitor the vibration monitoring equipment;
- Install, maintain and monitor the Site weather station;
- Communicate air monitoring and noise monitoring exceedances to the Engineer, Contractor, and NYSEG;
- Daily calibration of CAMP monitors;
- Prepare Daily CAMP reports for submittal to the NYSDOH, NYDEC, and NYSEG; and,
- Collection, packaging, and shipment of soil and water samples for laboratory analysis;

2.3 PROJECT MEETINGS

Project meetings will be held to review the current project status and to enhance coordination and communication. At a minimum, project meetings will be conducted on a weekly basis during construction. Additional meetings will also be conducted as deemed necessary.

At a minimum, NYSEG, the Engineer, the Engineer's Representative, and the Contractor's Superintendent will participate in the weekly project meetings. The Engineer will be available to attend the weekly progress meetings in person whenever present on Site or via teleconferencing when at remote locations. The Engineer will prepare and distribute minutes of the weekly progress meetings. Weekly progress meetings will include discussions of the following, as applicable:

- Review of the previous week's activities and accomplishments;
- Review of the current week's activities and upcoming activities;
- Discuss any potential issues;
- Discuss any existing construction issues and deficiencies, current status of resolution and action plans; and,
- Discuss status of submittals, WCDs, etc.

2.4 CONTRACT DOCUMENTS AND PERMITS

Purpose

This section describes the procedure for controlling the receipt, processing, and distribution of Contract Documents and Permits, including revisions to these documents in the form of approved field changes. The purpose of these procedures is to ensure that project personnel and Subcontractors use the most current Contract Documents.

General Requirements

The Contractor will maintain a master control register that identifies the current revision of all Contract Documents and Permits transmitted to the Site. It is the responsibility of the Contractor to receive, control, and distribute Contract Documents and Permits and design document changes at the Site.

Drawings

The Contractor is responsible for maintaining a complete set of shop drawings bearing the Contractor's executed review and approval marking, revision number, and Engineer's action marking. The Contractor shall also maintain a complete set of full sized (22" X 34") red-line Drawings, which are Construction Drawings reflecting the latest design changes and current as-built conditions. Red-line drawings will conform to the following:

- Red pen is used to indicate all changes to Construction Drawings and other Contract Documents;
- Surveyed measurements to final locations and elevations are indicated;
- Subcontractor-installed temporary Work, which is not removed, is indicated and appropriately marked;
- As revised Drawings are received, the Drawings are checked to determine whether as-built details have been incorporated into the revision. If any further as-built details pertinent to these drawings exist, the revisions are transferred onto the red-line Drawings; and,
- Other clarifying documents are noted on the affected red-line Drawings.

Changes to Contract Documents and Permits

If the Contractor or Engineer identifies an issue that requires clarification (i.e., information not provided by the Contract Documents and Permits) or necessitates a design modification, a WCD shall be prepared to document the issue and its resolution. The following procedure shall be used to document such changes:

- The Contractor or Engineer identifies the issue that requires clarification or modification;
- The Engineer develops a solution (with input from the Contractor if appropriate/necessary);
- The Contractor prepares a WCD outlining the scope and description of change;
- The Contractor shall outline the cost and schedule implications;
- The Engineer provides a recommendation to NYSEG regarding the change;
- NYSEG or the Engineer contacts the NYDEC regarding the change, if substantive;
- Upon approval (NYSEG) the change is implemented; and,
- A record of the change is maintained via filing of the WCD.

2.5 SUBCONTRACTORS

The Contractor may subcontract the various construction and CQC test activities to organizations qualified to perform such activities. The Contractor will retain the responsibility for CQC by performing inspections at various points during construction. It is the responsibility of the Contractor to ensure that each Subcontractor meets the technical and testing requirements of the Contract Documents and Permits applicable to their scope of Work.

Subcontract documents shall include requirements for subcontractor submittals, inspections, and tests that meet the Technical Specifications and this CQA Plan. Requirements may be included in referenced Contract Documents and Permits. Subcontract documents shall include indication of submittal requirements that are prerequisite to specific field activities.

3.0 CQA TESTING AND INSPECTION

This section presents the CQA testing requirements and inspection protocols for the project. For each project component, Table 3-1 presents the inspection method and frequency of inspection to document that the project is performed in accordance with the Contract Documents and Permits.

The CQA testing and inspection activities include:

- General construction activities;
- Site preparation;
- Erosion and sediment control;
- Earthwork/excavation;
- Backfilling and compaction;
- Geosynthetic material installation;
- Sheet pile wall construction;
- Restoration;
- Odor Control;
- Dust Control;
- Water Pre-Treatment System installation; and,
- Water Pre-Treatment System operation and maintenance.

The Engineer will monitor conformance with the Contract Documents and Permits.

4.0 DOCUMENTATION

The CQA Plan provides a mechanism to document the construction activities. The CQA Plan is utilized to evaluate the adequacy of construction, approve payment to the Contractor, and supplements the final complete report.

4.1 DAILY REPORTS

The Engineer's Representative will prepare a Daily Report which will include the following information:

- Date, project name, location, and other identification;
- Description of weather condition, including temperature, cloud cover, and precipitation;
- Equipment and personnel working on Site, including all Subcontractors;
- Written description and location references (see Figures below) for the work activities completed each day;
- Copies (8.5" X 11" or 11" X 17") of the Contract Drawings (Figures), as needed, with sufficient markings and notes to depict the work completed each day.
- Description of off Site materials received, including any quality verification documentation;
- A summary of CQA tests performed and results;
- A summary of the review of the CQC information (provided by the Contractor);
- A summary of any meetings held and actions recommended and/or taken;
- Decisions regarding approval of units of material or of Work;
- Deficient test results or construction activities requiring corrective action and the location of the deficiencies;
- Corrective actions to be taken in instances of substandard quality and,
- Summary of any conflicts, and/or resolutions.

The on-site Engineer's Representative will submit the Daily Reports to the Engineer in electronic format.

4.2 WEEKLY SUMMARY REPORTS

The Engineer will prepare a Weekly Summary Report that summarizes the results of all inspections, CQA activities, and corrective actions (if any). The Weekly Summary Report will be forwarded to key personnel, as required, and will include the following information:

- Summary of weekly construction activities and CQC test results;
- Corrective actions taken, or to be taken, in instances of substandard or suspect quality;
- CQA test results, including those in support of determination of substandard quality and proposed corrective measures;

- Details and reason for delays (that pertain to CQA) experienced by the Contractor; and,
- Status of comments on the submittals and WCDs.

4.3 COMPLETION REPORT

A Construction Completion Report (CCR) will be prepared, in accordance with NYSDEC DER-10, by the Engineer upon completion of the Work. The CCR will be sealed and signed by a registered Professional Engineer certified in the State of New York. At a minimum, the completion will contain the following:

- A general history of the Site;
- A description of the physical setting of the Site;
- A summary of the remedial construction activities completed including soil removal and Site restoration activities completed;
- A description of approved construction modifications;
- As-built drawings, sealed and signed by a registered Professional Surveyor certified in the State of New York;
- The volume of impacted soil addressed;
- QA/QC data;
- Copies of waste material disposal manifests;
- Copies of CQA Inspection Forms;
- Copies of Daily Logs and Progress Reports;
- Air monitoring results;
- Water Pre-Treatment System discharge monitoring results;
- Monitoring Well Abandonment Reports;
- Photographic documentation;
- Laboratory test results; and,
- Conclusions and recommendations.

The CCR will be submitted to the NYDEC.

TABLE

Table 3-1
Summary of CQA Inspection/CQA Testing Requirements
95% Remedial Design
Danville Former MGP Site, Operable Unit 1
Dansville, Livingston County, New York

Component/Element		Method of Inspection	Frequency of Inspection/ Testing	Work Description	CQA Procedure	Response to Failed Inspection/Test
1. Mobilization and Preconstruction Activities						
1.01	Plan of Operations (Project Schedule)., Submittals	Visual	As needed	Submit Plans, Schedule, equipment and material informations as required in Contract Documents.	Contractor to update Plan monthly (at a minimum). Engineer to review when submitted.	Increase equipment, manpower, etc. to achieve quality/deadlines, or potential termination of Contract.
1.02	Mobilization	Visual	Continuously	Provide materials, equipment, and labor necessary for satisfactory quality of Work and rate of progress that will insure the completion of the Work within the time stipulated in the Contract.	Engineer to Inspect	Notify Owner
1.03	Existing & Temporary Fencing	Visual	Daily	Install temporary fencing to the lines indicated on the Contract Documents. Maintain integrity of temporary and existing fencing.	Engineer to inpsect	Repair/restore fencing as required.
1.04	Visual Barrier	Visual	Daily	Install visual barrier on the temporary and existing fencing as shown on the Contract Documents. Maintain visual barrier during project.	Engineer to inspect.	Repair/restore visual barrier as required.
1.05	Survey	Visual and review survey data	As needed	Contractor to perform construction as-built survey and provide results to Engineer. Engineer to coordinate independent verification. Surveys to be conducted by a NY-licensed Professional Surveyor, and shall reference NY Central State Plane Coordinate System (NAD 1983), & NAVD 1988 .	Engineer to inspect CQC survey information. And, coordinate CQA survey.	Re-survey corrected condition.
1.06	Utilities Protection	Visual	Continuously	No disruption of existing utilities. Disconnect or re-route utilities on Site as needed.	Engineer to inspect.	Engineer may stop work.

Table 3-1
Summary of CQA Inspection/CQA Testing Requirements
95% Remedial Design
Danville Former MGP Site, Operable Unit 1
Dansville, Livingston County, New York

Component/Element		Method of Inspection	Frequency of Inspection/ Testing	Work Description	CQA Procedure	Response to Failed Inspection/Test
2. Demolition and Site Preparation						
2.01	Clearing	Visual	Daily during clearing.	Clear Site to lines on Drawings.	Engineer to inspect.	Remove and manage debris appropriately.
2.02	Abandon Wells and Piezometers	Visual	Continuously	Ensure wells are being abandoned and collect required documentation from drillers	Engineer to inspect	Request documentation
2.03	Demolition	Visual	Daily	Remove underground and above ground foundations, slab and obstructions as needed.	Engineer to inspect.	Remove and manage debris appropriately.
2.04	Protection of existing structures	Visual	Daily	Prevent damage to on-site monitoring wells, sparge wells, trees/vegetation, roadways, curbs, utilities, etc. outside limits of excavation.	Engineer to inspect.	Report damage to Owner. Repair/restore damaged structures to original condition.
2.05	Decontamination Pad	Visual	Daily	Contractor to prepare & submit Shop Drawings to Engineer, construct and maintain decontamination pad. Decontamination water to be treated in onsite Water Pre-Treatment System	Engineer to inspect.	Repair, restore, and maintain decontamination pad in accordance with Contract Documents requirements.
2.06	Stabilized Construction Entrance	Visual	Daily	Contractor to construct and maintain stabilized construction entrance.	Engineer to inspect	Stone shall be top dressed as necessary in accordance with Contract Documents.
2.07	Temporary Surface Drainage Channel	Visual	Continuously	Contractor to excavate to the width and depth to support adequate stormwater flow, and install geotextile and riprap as shown on the Drawings.	Engineer to inspect	Reject unsuitable drainage grade

Table 3-1
Summary of CQA Inspection/CQA Testing Requirements
95% Remedial Design
Danville Former MGP Site, Operable Unit 1
Dansville, Livingston County, New York

Component/Element		Method of Inspection	Frequency of Inspection/ Testing	Work Description	CQA Procedure	Response to Failed Inspection/Test
3.	**Erosion and Sediment Control**					
3.01	Silt Fence, Compost Filter Sock, Inlet Filter Bag	Visual	As needed	In accordance with approved submittals and Contract Documents.	Engineer to document installation & inspect materials.	Replace as needed.
3.02	Maintenance	Visual	As needed	Maintain sediment controls necessary to prevent erosion and discharge of sediment from Site.	Contractor to maintain, Engineer to inspect.	Replace unsuitable control features. Implement measures necessary to prevent erosion and discharge of sediment from Site.
4.	**Pre-Engineered Fabric Structure**					
4.01	Mobilization & Installation	Visual	Continuously	Record: Personnel, equipment, materials and methods.	Engineer to inspect.	Correct nonconformance with Technical Specifications.
5.	**Sheet Pile Wall Construction**					
5.01	Material	Visual	Prior to Installation	Evaluate compliance with material identified Technical Specifications.	Engineer to inspect.	Reject Material.
5.02	Installation	Visual	Continuously	Record: Sheet Pile Numbers, Pile Drive Activities, Interlock Sealant Placement.	Engineer to inspect.	Correct nonconformance with Technical Specifications.
5.03	Horizontal Limits	Measurement	Continuously	Complete the installation to the lines shown on the Drawings.	Contractor to perform CQC survey, Engineer to inspect and spot check as needed via CQA survey.	Inform Owner and Engineer
5.04	Vertical Limits	Measurement	Continuously	Complete the installation to the depths shown on the Drawings.	Contractor to record installation depths, Engineer verify.	Inform Engineer.

Table 3-1
Summary of CQA Inspection/CQA Testing Requirements
95% Remedial Design
Danville Former MGP Site, Operable Unit 1
Dansville, Livingston County, New York

Component/Element		Method of Inspection	Frequency of Inspection/ Testing	Work Description	CQA Procedure	Response to Failed Inspection/Test
6. Earthwork/Excavation						
6.01	Subsurface Obstructions	Visual	Continuously	Remove all underground obstructions to allow for excavation activities.	Engineer to inspect.	Remove obstructions.
6.02	Dewatering	Visual	As needed	Excavations to be free of standing water. Water removed from excavations to be treated in the onsite Water Pre-Treatment System (WPTS).	Engineer to inspect.	Stop excavating until Work area is dewatered.
6.03	Steel Sheet Pile Wall	Visual and review survey results.	As needed	Install Steel Sheet Pile Wall in accordance with Contract Documents, OSHA, state and federal rules, and regulation. Sheeting/bracing shall be removed after work complete.	Engineer to inspect.	Stop excavating and comply with requirements.
6.04	Soil Excavation	Visual.	Continuously	Soils to be directly loaded for off-site disposal. Limits of excavation to be as shown on the Contract Documents or as directed by the Engineer.	Engineer to inspect and verify. Contractor to Survey.	Report unacceptable procedures or modified excavation limits to Owner.
6.05	Truck Loading	Visual	Continuously during loading operations	Contractor to ensure trucks do not track materials around the Site or load materials with free liquids. Contractor ensure trucks have rubber gasket sealed tailgates and are lined with plastic prior to loading. Contractor to place plastic sheeting under truck and over side of trucks during loading operations.	Contractor to perform, Engineer to inspect.	Stop trucks prior to leaving Site. Clean tires and/or truck sides.
6.06	Truck Departure from Site	Visual	Before any truck leaves Site.	Contractor to ensure trucks are tarped, not leaking free liquids, tires have been decontaminated and are not tracking materials off-site, and have the appropriate manifest documents prior to leaving the Site. The Contractor shall also verify that truck drivers are aware of the approved trucking routes prior to leaving the Site.	Contractor to perform, Engineer to inspect.	Stop trucks prior to leaving Site. Clean tires and/or truck sides. Inspect truck and review paper work.

Table 3-1
Summary of CQA Inspection/CQA Testing Requirements
95% Remedial Design
Danville Former MGP Site, Operable Unit 1
Dansville, Livingston County, New York

Component/Element		Method of Inspection	Frequency of Inspection/ Testing	Work Description	CQA Procedure	Response to Failed Inspection/Test
7. Backfilling and Compaction						
7.01	Subgrade Preparation	Visual	Continuously	Engineer to inspect and verify suitability.	Engineer to inspect.	Over excavate or compact as needed.
7.02	Preconstruction Soil Material Tests (Course Aggregate, Gravel, Riprap, Clean Imported Fill, Top Soil)	Certificate or written statement review. Review NYSDOT borrow source approvals. Review Geotechnical test reports and Analytical resolts.	One per borrow source	Contractor to provide a written statement or certificate for each borrow source that states that materials originate from an unimpacted source. Contractor to also provide NYSDOT borrow source approvals for all materials. Add Modified Proctor (ASTM D1557) testing for Crusher Run #2.	Engineer to inspect materials & review certificates or written statements.	Reject unsuitable materials.
7.03	Preconstruction Soil Material Tests (Clean Imported Fill)	Geotechnical and Analytical Laboratory Testing	Minimum of one per material and one per 5000 bcy placed	Classification (ASTM D2487-90) Particle Size (ASTM D422) Modified Proctor (ASTM D1557), Moisture Content (ASTM D2216), Metals, VOCs, and SVOCs (Per Title 6, Part 375 Restricted Use Soil Cleanup Objectives).	Engineer to inspect materials & review laboratory results.	Reject unsuitable soil.
7.04	Preconstruction Soil Material Tests (Topsoil)	Agricultural Laboratory Testing	One per borrow source.	Cornell Cooperative Extension of Livingston County Soil Test	Engineer to inspect materials & review laboratory results. Contractor to amend topsoil as recommended by test results	Reject unsuitable soil.
7.05	Fill Material Placement	Visual	Continuously	No Fill Material placed if free-standing water present. No placement of Fill Materials containing frozen material, or upon frozen materials. Lifts to be relatively level/non undulating, top to be scarified between subsequent lifts.	Engineer to inspect.	Remove and replace improperly placed Fill Material.
7.06	Fill Material Lift Thickness	Field Measurement	1 per 2,500 SF, minimum	Maximum compacted lift thickness is 12 inches.	Engineer to measure.	Modify thickness.
7.07	Compaction	In-place Field Density Test	1 per 2,500 SF, minimum	Minimum of 95% of modified proctor maximum dry density.	Contractor to perform CQC Testing. Engineer to perform CQA Testing.	Moisten, dry, re-work and/or re-compact failed areas.
7.08	Grading	Measurement	Survey as needed	Final elevations within 0.1 feet of proposed elevations.	Contractor to survey, Engineer to verify.	Re-grade and re-compact.

Table 3-1
Summary of CQA Inspection/CQA Testing Requirements
95% Remedial Design
Danville Former MGP Site, Operable Unit 1
Dansville, Livingston County, New York

Component/Element		Method of Inspection	Frequency of Inspection/ Testing	Work Description	CQA Procedure	Response to Failed Inspection/Test
8.	**Geosynthetic Material Installation**					
8.01	Geomembrane Manufacturer QC Information	Review of Certificates	Each prefabricated geomembrane sheet	Liner for WPTS containment and decontamination pad.	Engineer to review certificates.	Reject Material.
8.02	Non-woven Geotextile Manufacturer QC Information	Review	As per Technical Specifications	Place as shown on Drawings.	Engineer to review CQC data versus Technical Specifications.	Reject Material.
8.03	Geosynthetic Subbase Acceptability	Visual	1 per area	Preparation of ground surface for placement of geomembrane/geotextile.	Engineer to inspect.	Rework subbase.
8.04	Geosynthetic Material Roll Storage, Transportation and Handling	Visual	All Rolls	Wrapped or covered to protect against ultraviolet light and water. Location provides adequate protection from puncture, is free of standing water, rolls or pallets secured.	Engineer to inspect.	Repair/Replace Wrapping. Alternate storage practices.
8.05	Surface and welds of Geosynthetic Material	Visual	All Surfaces	Surface free of flaws or damage and seems free of folds or fish mouths.	Engineer to inspect.	Remove reject if severe, repair if minor.
8.06	Geosynthetic Material Placement	Visual	Continuous	The method used to unroll or unfold the geomembrane shall not cause scratching, folds, or crimps in the geomembrane and shall not rut the supporting soil.	Engineer to inspect.	Remove reject if severe, repair if minor.
8.07	Equipment	Visual	Continuous	Any equipment used does not damage the geosynthetic material by handling, trafficking, or other means. No vehicular traffic shall be operated directly on the geosynthetic material.	Engineer to inspect.	Correct Nonconformance, Inspect Work, Reject/repair damage.
8.08	Geotextile Overlap	Measurement	All Rolls	As per Technical Specifications.	Engineer to inspect.	Correct minimum overlap.
8.09	Geomembrane Repairs (if required)	Non-destructive testing	As required.	Repair defective or damaged liner and non-destructively test 100% of the repair.	Engineer observe repair work and testing.	Reject defective repairs. Contractor to repair defective work.
9.	**Restoration**					
9.01	Gravel Soil Cover	Visual and Field Measurement	Continuously	Complete the installation to the lines shown on the Drawings	Engineer to inspect.	Modify thickness.
9.02	Topsoil Soil Cover	Visual and Field Measurement	Continuously	Complete the installation to the lines shown on the Drawings.	Engineer to inspect.	Modify thickness.
9.03	Conditioners and Mulch	Visual	Continuously	Verify adequate quantities area applied	Engineer to inspect.	Modify amount/thickness.
9.04	Vegetation	Visual and Review of Submittals	Prior to and During Installation.	Complete the installation to the lines shown on the Drawings utilizing the materials specified in the Contract Documents. Contractor to ensure specified survivability.	Contractor to perform, Engineer to inspect.	Replace or revegetate as required.
9.05	Permanent Surface Water Drainage Channel	Visual	Continuously	Ensure channel is excavated to the correct dimensions and that material is installed as per the Specifications	Engineer to inpect	Modify channel installation

Table 3-1
Summary of CQA Inspection/CQA Testing Requirements
95% Remedial Design
Danville Former MGP Site, Operable Unit 1
Dansville, Livingston County, New York

Component/Element		Method of Inspection	Frequency of Inspection/ Testing	Work Description	CQA Procedure	Response to Failed Inspection/Test
10. Air Handling System						
10.01	Dust & VOC Emission Control	Visual & Electronic Alarms from monitoring equipment	Continuously during earth disturbance	Control fugitive dust and odors by operating and maintaining air handling system described in Technical Specifications, CAMP and OMP	Per Health and Safety Plan, Odor Control Plan, and/or CAMP.	Utilize tarps and covers, water, biosolve, ect to control fugitive dust. Engineer to Stop Work as needed.
10.02	Carbon Adsorber	Visual	During and After Installation	Install and operate as recommended by the manufacturer and as directed by the Engineer	Engineer to inspect.	Repair
10.03	Fans	Visual	During and After Installation	Install and operate as recommended by the manufacturer and as directed by the Engineer	Engineer to inspect.	Repair Installation
10.04	Air Handling System	Olfactory and via OMP Measurements	Continuously	Operate air handling system when Work is being conducted in structure	Contractor to monitor, Engineer to inspect	Stop excavation work
10.05	Bio-Solve Spray (optional)	Olfactory and via CAMP Measurements	Continuously	If needed, provide Bio-Solve spray/mist as needed during earth disturbance activities to supplement Air Handling system operations.	Engineer to inspect.	Increase Bio-Solve usage or stop excavation work until odor suppressing foam system is activated.
10.06	Odor Suppressing Foam (optional)	Olfactory and via CAMP Measurements	Continuously	If needed, provide odor suppressing foam during earth disturbance activities to supplement air handling system and/or Bio-Solve spray/mist operations.	Engineer to inspect.	Increase odor suppressing foam usage or stop excavation work.
11. Water Pre-Treatment System (WPTS) Installation						
11.01	Pipe Materials, valves, fittings	Visual	When materials delivered to Site	In accordance with approved submittals, Contract Documents and Permits.	Engineer to inspect.	Repair or remove materials from Site and replace.
11.02	Carbon, Organoclay, and Bag Filter Units	Visual	When equipment is delivered to the Site	In accordance with approved submittals, Contract Documents and Permits.	Engineer to inspect.	Repair or remove equipment from Site and replace.
11.03	Pumps/Blowers	Visual	When pumps are delivered to the Site	In accordance with approved submittals, Contract Documents and Permits.	Engineer to inspect.	Repair or remove equipment from Site and replace.
11.04	Tanks	Visual	When tanks are delivered to Site	In accordance with approved submittals, Contract Documents and Permits.	Engineer to inspect.	Repair or remove tanks from Site and replace.
11.05	Installation	Visual	As needed	Installation in accordance with approved submittals, Contract Documents and Permits.	Engineer to inspect.	Replace/repair as required.
11.06	Pressure Testing	Review Contractor's operational log.	At the completion of the WPTS installation	Check for leaks.	Contractor to perform, Engineer to inspect.	Locate the source of leak and repair, or replace.

Table 3-1
Summary of CQA Inspection/CQA Testing Requirements
95% Remedial Design
Danville Former MGP Site, Operable Unit 1
Dansville, Livingston County, New York

Component/Element		Method of Inspection	Frequency of Inspection/ Testing	Work Description	CQA Procedure	Response to Failed Inspection/Test
12. Operation of WPTS						
12.01	WPTS Operator	Review Resume	Prior to WPTS startup	WPTS operator to have adequate experience.	Contractor to provide Resume. Engineer to review resume.	Contractor to provide alternate resume.
12.02	Operational Log	Visual	Continuously	Contractor to keep and maintain an operational log for the WPTS operation. At a minimum, record start and stop times and totalizer reading.	Contractor to perform. Engineer to inspect.	Correct deficiencies.
12.03	Flow Meters	Visual Measurement	Once	Ensure located on correct lines. Measure up/downstream distances. Ensure correct orientation. Volume flow confirmation.	Engineer to visually inspect and measure.	Relocate/reorient flow meters. Recalibrate.
12.04	WPTS Startup	Visual	Startup Period	Operator to perform WPTS test operation and system shakedown.	Contractor to test system for leaks and satisfactory operation of unit operations, tanks, valves, etc. Engineer to inspect startup.	Contractor to replace faulty equipment and other WPTS components.
12.05	Bag Filters	Visual or Measurement	Immediately after startup or restart and hourly	Visually (or with turbidity meter) inspect effluent for turbidity and record results in operational log book. Check influent and effluent pressure.	Contractor to record test results in operational log. Engineer to review.	Shut down and troubleshoot WPTS. Repair or replace bag filters.
12.06	Organoclay and Carbon Units	Visual and Measurement	Immediately after startup or restart and hourly	Visually and with PID meter, inspect influent and effluent for VOCs and/or free NAPL. Record results in operational log book.	Contractor to record test results in operational log. Engineer to review.	Shut down WPTS and troubleshoot. Contractor to replace or repair treatment media and other WPTS components as needed.
12.07	WPTS Operations	Visual	Continuously during WPTS Operation	Approved Operator to operate the system.	Engineer to inspect.	Contractor to replace faulty equipment and other WPTS components.
12.08	POTW Monitoring	Sample collection and analyses.	Based on Permit condition	Engineer to oversee collection of WPTS discharge sample at outlet.	Engineer to compare analytical results to POTW Permit conditions.	Temporary WPTS shutdown. Inform Owner.

Table 3-1
Summary of CQA Inspection/CQA Testing Requirements
95% Remedial Design
Danville Former MGP Site, Operable Unit 1
Dansville, Livingston County, New York

Component/Element		Method of Inspection	Frequency of Inspection/ Testing	Work Description	CQA Procedure	Response to Failed Inspection/Test
13. Monitoring						
13.01	Utility Monitoring Casing	Visual	Installation	Ensure casings are installed at locations shown on Drawings and existing utilities are not damaged.	Contractor to perform. Engineer to inspect.	Troubleshoot and/or start backup pump. Repair or replace primary pump as required.
13.02	Utility Monitoring Equipment	Visual	Installation	Ensure equipment installed	Contractor to check. Engineer to inspect.	Repair or replace as required.
13.03	Monitor Utilities	Data collection and analyses.	Continuously	Ensure utilities stay intact	Contractor to collect. Engineer to review	Modify work procedures
13.04	Survey Point Installation	Visual	Continuously	Ensure survey reference points are installed on top of Steel Sheet Pile Wall and review initial readings	Contractor to perform. Engineer to inspect.	Replace survey reference points
13.05	Lateral Movement Data	Data collection and analyses.	Weekly	Inspect survey reference points, review survey data	Contractor to check. Engineer to inspect.	Repair or replace as required.
13.06	Seismograph Vibration Data	Data collection	Daily	Ensure vibration levels are below the threshold values provided in the Contract Documents	Engineer to collect and review	Modify work procedures
13.07	Noise Monitoring	Data collection	Continuously	Ensure noise levels at perimeter are below the threshold values in the Contract Documents	Engineer to collect and review	Modify work procedures

APPENDIX C
QUALITY ASSURANCE PROJECT PLAN (QAPP)

QUALITY ASSURANCE PROJECT PLAN (QAPP)

FOR OPERABLE UNIT 1 REMEDIAL ACTION AT THE DANSVILLE FORMER MGP SITE

NYSDEC SITE NO. 8-26-012
OSSIAN STREET, LIVINGSTON COUNTY
DANSVILLE, NEW YORK

Prepared for:

New York State Electric & Gas Corporation
Mr. John Ruspantini
Kirkwood Industrial Park
Binghamton, NY 13902

Prepared by:

Ish Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

MARCH 2013

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

DISTRIBUTION LIST

Mr. Anthony Karweil
York State Department of Environmental Conservation
Remediation Action Bureau C
625 Broadway, 11th Floor
Albany, New York 12233-7013

Mr. John Ruspantini
Project Manager
New York State Electric & Gas Corporation
Kirkland Industrial Park
P.O. Box 5224
Binghamton, NY 13902-5224

LIST OF ABBREVIATIONS/ACRONYMS

%R	Percent recovery
ASP	Analytical Services Protocol
C	Completeness
CLP	Contract Laboratory Program
COI	Constituents of Interest
DQO	Data Quality Objective
EDD	Electronic Data Deliverable
ELAP	Environmental Laboratory Accreditation Program
FSP	Field Sampling Plan
HASP	Health and Safety Plan
ISH	Ish, Inc.
LQAP	Laboratory Quality Assurance Plan
LQM	Laboratory Quality Manual
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSEG	New York State Electric & Gas Corporation
PM	Project Manager
QA	Quality Assurance
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QC	Quality Control
RPD	Relative Percent Difference
SOP	Standard Operating Procedure
SSO	Site Safety Officer
SVOC	Semi-Volatile organic compounds
TAL	Target Analyte List
TCL	Target Compound List
VOC	Volatile Organic Compound
USEPA	United States Environmental Protection Agency

1.0 PROJECT MANAGEMENT

This Quality Assurance Project Plan (QAPP) has been prepared to support the remedial action to be conducted at the New York State Electric & Gas Corporation (NYSEG) former manufactured gas plant (MGP) site, Operable Unit 1 (OU1), located at 50 Ossian Street in Dansville, New York (Site).

This QAPP provides an overview of the analytical methods, data analysis processes, and other procedures to be followed to document the validity of the results of the sampling activities described in the associated Field Sampling Plan (FSP). The QAPP satisfies the New York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (USEPA) requirements for a QAPP as outlined in the following guidance:

- NYSDEC, " DER-10 / Technical Guidance for Site Investigation and Remediation", DER, May 3, 2010;
- 6 NYCRR, Part 375, December 14, 2006;
- USEPA, "Guidance for the Data Quality Objectives Process", EPA QA/G-4, August 2000; and,
- USEPA, "EPA Requirements for Quality Assurance Project Plans" (Q/R-5), EPA/240/B-01/003, May 2006.

This QAPP has been prepared to serve as the guidance document for quality assurance/quality control (QA/QC) requirements of remedial activities. The Quality Assurance Officer's (QAO) certification of this plan is provided as Appendix A.

1.1 PROJECT ORGANIZATION

The management, technical, and QA/QC responsibilities of the project personnel for implementation of the future sampling activities are summarized as follows:

- Project Director
  - Develop the objectives of the work
  - Direct the work of others on the project team
  - Evaluate and interpret the results
  - Communicate the basis, objectives, and results of the work to interested parties
- Project Manager (PM)
  - Work with the client, PD, and QAO to develop a work plan that specifies the requirements of the project, the data quality objectives, the methods, the schedule, and the budget
  - Directly formulate the work plan and implement work plan revisions

- Manage all aspects of project implementation
- Generate progress reports and project reports

- Quality Assurance Officer (QAO)
  - Advise the PD, PM, and Laboratory Manager (LM) on methodology and QA/QC practices
  - Discuss methods of QA/QC objectives with the PD and PM for each project
  - Oversee all data validation efforts, and review all project reports prior to issue
  - Prepare QA review reports for all data packages and advise corrective actions of nonconformance
  - Monitor and review all laboratory procedures and activities to assure conformance with the Laboratory Quality Assurance Plan (LQAP), as well as this QAPP
  - Oversee the development, writing, review, and maintenance of Standard Operating Procedures (SOPs)
  - Work with the PM and LM to prepare project-specific QAPPs

- Laboratory Manager
  - Ensure resources are available on an as-required basis
  - Coordinate laboratory analyses and chain of custody
  - Oversee review of data
  - Direct implementation of corrective actions as necessary
  - Oversee preparation of analytical reports
  - Approve final analytical reports prior to submission
  - Verify analytical methods are being followed and Environmental Laboratory Accreditation Program (ELAP) certifications are kept current

- Site Safety Officer (SSO)
  - Develop a Health and Safety Plan (HASP) which conforms to all Federal and State health and safety regulations and is designed to assure a safe working environment for all personnel
  - Implement the HASP and report to the PM any problems with conformance to the plan
  - Make periodic inspections of field and laboratory activities to assure that all personnel are conforming to the requirements of the HASP, and to identify any potentially harmful conditions

1.2 PROJECT DESCRIPTION

The approach for the implementation of sampling activities is presented in the Work Plan and FSP. Chemical and geotechnical sampling programs, described in detail in the Work Plan and FSP, are summarized in the following paragraphs.

1.2.1 Waste Characterization Sampling and Analysis

As outlined in the Work Plan, waste characterization sampling will be conducted on visually impacted soils discovered during investigation activities. Waste characterization samples will be collected in accordance with the procedures found in the FSP, and will used to determine the appropriate disposal method (landfill or thermal treatment) for contaminated soils.

Table 1 provides a summary of the chemical sampling and analysis program, including the field quality control sampling and analysis requirements, preparation and analytical methods, bottle requirements, preservation requirements, and holding times. Sampling locations will be determined in the field based on the observations and judgment of the field crew.

1.2.2 Wastewater Sampling and Analysis

Wastewater sampling will be conducted in accordance with the Public Owned Treatment Works (POTW) discharge permit to be obtained prior to initiation of remedial activities.

Table 1 provides a summary of the chemical sampling and analysis program, including the field quality control sampling and analysis requirements, preparation and analytical methods, bottle requirements, preservation requirements, and holding times.

1.2.3 Imported Fill Material Sampling and Analysis

Chemical imported fill sampling efforts will focus on collection of data to ensure that the soil/solids used for fill are suitable for beneficial use at the Site. It is anticipated that all soils and solid materials to be used as backfill will be imported from virgin mines/pits, therefore; only one round of characterization samples for the initial 100 cubic yards of material will be collected in accordance with NYSDEC DER-10.

Table 1 provides a summary of the chemical sampling and analysis program, including the quantity of samples, field quality control sampling and analysis requirements, preparation and analytical methods, bottle requirements, preservation requirements, and holding times.

1.3 SPECIAL TRAINING/CERTIFICATE REQUIREMENTS

All onsite field personnel must have completed 40-hour health and safety training that meets the requirements specified in 29 CFR Part 1910.120. In addition, all field personnel must have completed 8-hours of refresher training meeting the requirements of 29 CFR Part 1910.120 within the past 12-months. Training will be certified by a record and/or certificate.

1.4 PROJECT QUALITY OBJECTIVES

This QAPP serves as a controlling mechanism for both the chemical sampling and analysis program and the geotechnical testing program to provide procedures which, when followed properly, will assure that all decisions based on laboratory and field data generated during this investigation are technically sound, statistically valid, and properly documented. Specific procedures for sampling, laboratory analyses, data reporting, and data validation, are presented in other sections of this QAPP.

1.4.1 Measurement Performance Criteria

A primary component of data quality is selection of the appropriate analytical level for the intended data use. Appropriate analytical levels, as described in "Data Quality Objectives for Remedial Response Activities" (USEPA, March 1987), are as follows:

- Level I - Field screening or analysis using portable instruments. Results are often not compound-specific and not quantitative, but are available in real-time. Level I data is appropriate for initial field screening and for health and safety monitoring. They are frequently used to determine sample collection locations for laboratory analyses.

- Level II - Field analysis using more sophisticated portable analytical instruments; in some cases, the instruments may be set up in a mobile laboratory on location. There is a wide range in the quality of data that can be generated that is dependent on the use of suitable calibration standards, reference materials and sample preparation equipment. Results are available in real-time or within several hours.

- Level III - All analyses are performed in an off-site analytical laboratory. Level III provides quantitative data. Documented sampling and analysis procedures must be used. Level III analyses may or may not use Contract Laboratory Program (CLP) procedures, but at a minimum, abbreviated CLP-type deliverables are required. Level III may require data validation and QA/QC procedures conducted in accordance with EPA guidelines. The laboratory may or may not be a CLP laboratory.

- Level IV – CLP-equivalent routine analytical services. All analyses are performed in an off-site analytical laboratory following CLP protocols. Level IV is characterized by rigorous QA/QC protocols and documentation with full validation of all data.

- Level V - Analysis by nonstandard methods. All analyses are performed in an off-site laboratory that may or may not be a CLP laboratory. Method development or method modification may be required for specific constituents or detection limits. CLP Special Analytical Services (SAS) are Level V.

It is anticipated that all laboratory analytical services will be Level IV. Data packages will be provided in accordance with the Category B data deliverables guidelines presented in the NYSDEC Analytical Services Protocol (ASP). A data applicability report will be prepared upon request.

Each of these levels is characterized by statistically based criteria expressed in terms of:

- Precision;
- Accuracy;
- Representativeness;
- Completeness;

- Comparability; and,
- Sensitivity.

These parameters are discussed in the following five sections.

1.4.2 Precision

Precision is defined as the degree of agreement between repeated measurements of the same parameter under prescribed, similar conditions. Field and laboratory precision will be monitored using results from duplicate sample analyses. Precision can then be expressed as the relative percent difference (RPD) of one result with another. The RPD is calculated as follows:

$$RPD = \frac{D1 - D2}{\frac{(D1 + D2)}{2}} x\, 100$$

Where: RPD = relative percent difference
D1 = first duplicate value
D2 = second duplicate value.

The overall DQO for precision of analytical measurements is expressed as a percent of the duplicates having RPDs within established control limits.

The precision of Level IV data can be measured through the analysis of field duplicates, laboratory duplicates, and matrix spike duplicates. The frequency of field duplicate collection is specified in Table 1. The frequencies of laboratory duplicate analyses (required for inorganic analyses) and matrix spike/matrix spike duplicate set analyses (required for organic analyses); will be at a minimum of 1 per 20 field samples.

Given anticipated difficulties as a result of matrix interference effects in soils, it is tentatively planned that matrix spike/matrix spike duplicate samples will be spiked at both high and low spike concentrations. The will be conducted to ensure that discernable concentrations of the spiked compounds are measured.

Reproducibility is expressed as a relative percent difference, which is the absolute value of the range between the duplicate results divided by the mean. Acceptable RPDs for each analyte from laboratory and matrix spike duplicates are specified in descriptions of their respective methods. Field duplicate precision criteria for soils are included in data validation guidelines. RPD's can be calculated when both sample sets have detectable concentrations.

1.4.3 Accuracy

Accuracy is the measure of the degree of agreement between an analyzed value and the true or accepted value where it is known. Accuracy will be monitored using known concentrations of analytes and surrogates spiked into blanks and selected samples. Accuracy can then be expressed as a percent recovery (%R), which is calculated as follows:

$$\%R = \frac{Qd}{Qa}\ x\ 100$$

Where: %R = percent recovery
Qd = spiked sample result minus the sample result
Qa = spiked amount.

The overall DQO for accuracy is thus the percent of samples that have %R within prescribed control limits.

Accuracy of Level IV data can be measured by the analysis of equipment blanks, trip blanks, method blanks, matrix spikes, and surrogate standards. Blanks provide a way of detecting biases introduced in the sampling, sample handling, and analysis. Matrix spikes are samples to which known amounts of target constituents are added.

The frequency of equipment blank and trip blank collection and analysis is specified in Table 1. The frequencies of analyses of method blanks, laboratory control spikes, and matrix spikes, and surrogate standards are specified in the respective methods. The methods also present the acceptable percent recovery limits for each analyte.

1.4.4 Representativeness

Representativeness expresses the extent to which the analytical data reflect the actual media at the site and are representative of site conditions and characteristics. Representativeness is a function of the sampling program design and execution and the analytical program. Representativeness from field activities is addressed by collecting an adequate number of samples from optimal locations using standard procedures. Representativeness as a function of analytical-method issues may be compromised by method deviations, the presence of potential laboratory or field artifacts, indications of sample non-homogeneity, and recovery anomalies from surrogates or spikes into field samples.

1.4.5 Completeness

Completeness (C) is a measure of the amount of valid data obtained from an analytical measurement system. It is expressed as a percent of the overall data that were generated and is calculated as follows:

$$\%C = \frac{V}{T}\ x\ 100$$

Where: %C = percent completeness
V = number of measurements judged valid
T = total number of measurements.

An acceptable percentage of data determined to be valid should be established as target goals for each particular objective. Anything below these goals would require re-sampling and re-analysis or a modification to the goal with justification. As a general rule, the sampling programs will be designed so that program needs will be met if 90% completeness is achieved.

1.4.6 Comparability

Comparability is an expression of the confidence with which one data set can be compared against another. Comparability is a qualitative function of the sampling and analysis methods. To assure that one data set can be compared to another, the sampling and analysis methods will follow well-documented standard procedures and typical reporting units will be used.

1.4.7 Sensitivity

Sensitivity is the ability of the method to detect the contaminant of concern at the concentration of interest (regulatory clean up standard). QC measures which aid in evaluating sensitivity are field rinsate blanks, trip blanks, and laboratory method blanks. These QC samples are used to ensure that field or laboratory practices do not introduce contaminants, which may positively bias laboratory results. Method reporting limits are set at a level equal to that of the low level standard of the instrument calibration curve.

Soil analyses will be designed, where possible, to meet the nominal practical quantitation limits for each analyte presented in the NYSDEC Guidance documents, cleanup criteria, and screening criteria. To the degree possible, analyses will be conducted to provide adequate sensitivity to demonstrate Site conditions with respect to the applicable NYSDEC criteria defined in the identified technical guidelines.

1.5 DOCUMENTATION AND RECORD-KEEPING

All records generated during this project will be kept on file by NYSEG and Ish Inc (ISH). These records will include at a minimum: field log books, field sampling forms, chain of custody forms, laboratory data deliverables, and photographs. Electronic and hardcopy records will be archived for a minimum of five (5) years following project completion and closeout, or until directed otherwise by NYSEG.

Revisions and updates to this QAPP will be prepared as NYSEG and/or ISH deem necessary, and/or based upon conditions observed in the field. A full review of the QAPP will be performed if work has not been completed within five years and updates will be incorporated as necessary. This will ensure that laboratory changes or method improvements are addressed, and that changes to program objectives, or scope that may be made as a result of the information gathered in the initial program stages, are incorporated into the overall QA/QC program.

Changes to the QAPP will be fully documented and signed by the NYSEG and ISH technical representatives.

2.0 MEASUREMENT DATA ACQUISITION

2.1 SAMPLING METHODS

Sampling methods, decontamination procedures, and management of materials are discussed in the associated FSP.

2.2 SAMPLING HANDLING AND CUSTODY

Aspects of sample handling and custody are discussed in detail in the associated FSP and Standard Operating Procedures (SOPs) (Appendix B).

2.3 ANALYTICAL METHODS

NYSDEC ASP approved methods and procedures will be used for each chemical analysis selected. The analytical procedures to be used for the data acquisition activities include a combination of EPA and ASTM methods. The specific analytical methods to be used are as follows:

- Waste Characterization Sampling and Analysis (visually impacted material)
  - TCL Volatile Organic Compounds (SW-846 Method 8260B)
  - TCL Semi-Volatile Organic Compounds (SW-846 Method 8270C)
  - TCL Polychlorinated Biphenyls (SW-846 Method 8082)
  - TAL Metals (SW-846 Method 6010B and SW-846 Method 7471A)
  - TCLP Volatiles (SW-846 Method 1311/8260B)
  - Total Cyanide (SW-846 Method 9010)
  - TPH Diesel Range Organics/Gasoline Range Organics (SW-846 Method 8015)
  - Percent Sulfur (ASTM Method D129-64)
  - BTU (ASTM Method D240-87)

- Wastewater Sampling and Analysis
  - Biochemical Oxygen Demand (SM 5210B)
  - Chemical Oxygen Demand (SM 5220C)
  - Total Kjeldahl Nitrogen (EPA Method 351.2)
  - Total Suspended Solids (EPA Method 160.2)
  - Total Phosphorus (EPA Method 365.1)
  - pH (SW-846 Method 9040)
  - Arsenic (EPA Method 206.2)
  - Barium (SW-846 6010B)
  - Cadmium (SW-846 6010B)
  - Total Chromium (SW-846 6010B)
  - Total Cyanide (SW-846 9012)
  - Copper (SW-846 6010B)

- Lead (SW-846 6010B)
- Manganese (SW-846 6010B)
- Nickel (SW-846 6010B)
- Soluble Selenium (EPA Method 270.2)
- Silver (SW-846 6010B)
- Zinc (SW-846 6010B)
- TTO (SW-846 8270C / SW-846 8121)

❖ Imported Fill Material Sampling and Analysis (assumes all soil will be imported from a virgin mine/pit)

- TCL Volatile Organic Compounds (SW-846 Method 8260B)
- TCL Semi-Volatile Organic Compounds (SW-846 Method 8270C)
- TCL Pesticides (SW-846 Method 8081A)
- TCL Polychlorinated Biphenyls (SW-846 Method 8082)
- TAL Metals (SW-846 6010B and SW-846 7471A)
- Hexavalent Chromium (SW-846 7196A)
- Trivalent Chromium (Laboratory Calculation from Total Chromium and Hexavalent Chromium)

The methods listed above, or a more recently approved EPA or ASTM method, will be used as appropriate. Detailed information and quality control requirements will be provided in the subcontract laboratory's Laboratory Quality Manual (LQM). The analytical chemistry and geotechnical testing subcontract laboratories for the project have not been selected at this time, however; New York State Department of Health (NYSDOH) ELAP certified laboratories will be used for all analyses. A copy of each subcontract laboratory's LQM will be provided upon request.

2.4 QUALITY CONTROL

This section discusses field and laboratory quality control requirements. Laboratory quality control requirements are dictated, in large part, by the analytical methods. Additional aspects of laboratory quality control are addressed in the subcontract laboratory's LQM.

2.4.1 Field Quality Control Requirements

Quality control in the field will be maintained through the collection of QC samples.

The data application and sample requirements for each of the types of field QC samples are discussed in the following paragraphs.

2.4.1.1 Field Quality Control Samples

Quality control for field sampling efforts will primarily be measured via the collection of field QC samples, which consist of the following:

- Field duplicates
- Equipment blanks
- Trip blanks

The data application and sample requirements for each are discussed in the following paragraphs.

Field Duplicates

Field duplicates are used to evaluate the sample collection and analyses effects on the reproducibility of data. Field duplicates are collected by splitting a sample evenly between the primary sample and QA/QC sample containers.

Field duplicates of soil samples for all analyses except volatile organics will be taken by homogenizing the soil in a stainless steel bowl and then placing replicate portions into the sample containers. Field duplicates for volatile analyses will be collected as separate samples from the same location.

Preservation will be performed as necessary for the appropriate analysis. One field duplicate for each chemical analysis for each sampling event or one per every 20 samples will be collected, whichever is greater. Duplicates samples will be collected for imported fill material only, and will not be obtained for geotechnical parameters.

Equipment Blanks

Equipment blank data are used to evaluate field decontamination procedures. Equipment blanks will be collected by pouring analyte-free water, supplied by the analytical laboratory, over decontaminated soil sampling utensils into the sample bottles. Preservation and filtration will be performed as necessary for the appropriate analyses. For equipment that is decontaminated and re-used, one equipment blank will be collected per day for each type of equipment used.

If disposable equipment is used, the equipment blank will be taken from a rinse of the equipment prior to sampling use. One equipment blank per sampling event will be sufficient for each type of disposable instrument used. Equipment blanks will be analyzed for TCL VOCs and TCL SVOCs on imported fill material only.

Trip Blanks

Trip blank data will be used to evaluate exposure to volatile organic constituents during sampling, shipping and storage at the laboratory. Trip blanks will be prepared by the analytical laboratory, and will be shipped with the VOC vials. Trip blanks for soil samples will consist of

methanol. Trip blanks for a particular date of sample collection will be transported to the laboratory in the sample shipment container with all other VOC samples for that date. One set of trip blanks will be included in each cooler containing VOC sample vials and will be analyzed for the same list of VOCs as the primary samples.

VOCs detected in the trip blank will be qualified in associated samples (using the 5X blank contamination rule) as non-detect in accordance with the *USEPA National Functional Guidelines for Organic Data Review*.

2.4.2 Laboratory Quality Control Requirements

Quality control data are necessary to determine precision and accuracy of the analyses, and to demonstrate the absence of interferences and contamination of glassware and reagents. Laboratory-generated QC will consist of blanks, replicates, standards, matrix spikes, surrogate spikes and blanks. These will be prepared and analyzed at the method-required frequencies. Method-recommended matrix spiking solutions will be used to determine matrix effects. Surrogates will be added to all samples requiring gas chromatography analyses (or as specified in the method). At a minimum, one method blank will be processed for every batch (up to 20 samples) analyzed. Blank samples will be analyzed in order to assess possible contamination and determine which corrective measures may be taken, if necessary.

Laboratory Duplicates

Replicate samples are aliquots of a single sample that are split upon arrival at the laboratory or prior to analysis. Laboratory duplicates are required by methods for inorganic analyses. Since it is anticipated that the concentrations of most organic parameters will be below the laboratory detection limits, precision data on replicate analyses will largely be derived from matrix spike duplicate data. Significant differences between two replicates that are split in a controlled laboratory environment will result in flagging of the affected analytical results.

Surrogate Analysis

Surrogate spike analysis is used to determine the recovery efficiency of analytes in the sample preparation and analysis. Calculated percentage recovery of the spike is used as a measure of the accuracy of the total analytical method. A surrogate spike is prepared by adding to a sample (before extraction) a known amount of pure compound similar to that for which the sample is being analyzed. Surrogate compounds will be added to all samples that are to be analyzed for VOCs and SVOCs, including method blanks, duplicate samples, and matrix spikes using the compounds recommended in the respective methods. If a recovery does not fall within these limits, the corrective actions described in the method will be implemented.

Matrix Spike/Matrix Spike Duplicate Analysis

This technique is used to determine the effect of matrix interference on analytical results. Aliquots of the same sample are prepared in the laboratory, and each aliquot receives consistent treatment throughout the analytical method. Spikes are added at concentrations specified in the

methods. Spike duplicates are prepared for organic analyses. The percent difference between the values of the spike duplicates is taken as a measure of the precision of the analytical method.

Method Blanks

Method blanks will be run for all appropriate chemical analyses to verify that the procedures used do not introduce contaminants that affect the analytical results. The method blank will be prepared by addition of all reagents to a substance of similar matrix as the sample. This blank will then undergo all of the procedures required for sample preparation. The resultant solution will be analyzed with the field samples prepared under identical conditions.

Laboratory artifacts detected in the method blank (ie, acetone, methylene chloride, etc.) will be qualified as non-detect in accordance with the *USEPA National Functional Guidelines for Organic Data Review and Inorganic Data Review*.

Deviations from the established QC criteria will be noted and reanalysis, or other corrective action, will be instituted as appropriate for the situation.

2.5 EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

Equipment condition and maintenance activities will be noted in the field notebooks and may include:

- Daily inspections of sampling equipment and measurement systems for possible problems (e.g., cracked or clogged lines or tubing or weak batteries).

Spare and replacement parts stored in the field to minimize downtime may include:

- Appropriately sized batteries;
- Decontamination supplies;
- Extra sample containers;
- Stainless steel bowls and spatulas/spoons;
- Health and safety supplies; and,
- Tool kit.

If damaged equipment is identified, it will be replaced by the same or equivalent model as soon as is practicable. Field QA issues will be reported to the Project Director and the QAO. Problems encountered during the program affecting quality will be reported. The Project Director / QAO will be responsible for initiating the corrective actions and for ensuring that the actions are taken in a timely manner and that the desired results are produced.

During the course of the corrective actions, the field personnel will be responsible for seeing that field instruments are functioning properly and that work progresses satisfactorily. Additionally, field personnel are responsible for the performance of routine preventative maintenance and QC procedures, thereby ensuring collection of valid field data.

2.6 LABORATORY INSTRUMENT CALIBRATION AND FREQUENCY

Calibration of laboratory equipment will be accomplished according to published procedures associated with specific methods of analysis, if any, and USEPA guidance. Records of calibration, repairs, or replacement will be filed and maintained by the designated laboratory personnel performing quality control activities. These records will be filed at the location where the work is performed and will be subject to a QA audit. For all instruments, the laboratory will maintain a factory-trained repair staff with in-house spare parts, or maintain service contracts with vendors.

2.7 DATA ACQUISITION

Data will be transferred in both hard copy and electronic form directly from the laboratory to ISH in the NYSDEC Category B data deliverable format. .

2.8 DATA MANAGEMENT

The analytical data (electronic and hardcopy) will be managed and maintained by NYSEG and/or ISH. Any requests for these data by third parties must be first approved by the contractor or NYSEG. Data management for the project has the following objectives:

- Establish a controlled, functional, and efficiently operated data management system and accompanying procedures to manage, analyze, document, and transfer the environmental data that are collected and generated.
- Maintain a usable and accurate database throughout the life of the project.
- Support processing of specific data requests from project personnel.
- Support transfer of specific data components to other parties, as appropriate.
- To allow archiving of the data and related documentation upon closure of the project.

2.8.1 Data Transmittal, Transformation, and Analysis

Upon receipt of data from the analytical laboratory, ISH personnel or the QAO will ensure that all data packages are complete and in accordance with protocols set by the NYSDEC Category B deliverables format. If data packages are determined to be incomplete, the laboratory will be contacted and will be required to promptly provide the missing information. ISH personnel, or subcontractor, will be responsible for transcribing all data, including electronically transferred data (i.e., EDDs), into tables suitable for data review. ISH personnel will review Level IV data to ascertain that the laboratory has provided the following information:

- Results for all samples submitted with the correct reporting units;
- Documentation of acceptable matrix spike/matrix spike duplicate recoveries;
- Documentation of acceptable surrogate recoveries;
- Acceptable standard and preparation blank results;
- Appropriate qualifiers for results below the applicable detection limit; and,
- Appropriate qualifiers for constituents detected in method or preparation blanks.

Any difficulties originating from the EDD format shall be resolved with the laboratory before the data are imported into the database. Upon importing analytical data, a random sampling will be verified against the associated hard copy data, and a copy of the reviewed electronic data printout will be annotated, signed, and retained in the project file. Data will be submitted to the NYSDEC in accordance with the procedures outlined in Section 1.15 of the NYSDEC DER 10.

2.8.2 Data Storage and Retrieval

All electronic data will be maintained on the ISH server and will be accessed and managed by ISH. All records will be maintained by ISH. following project completion and closeout until directed otherwise by NYSEG.

3.0 ASSESSMENT/OVERSIGHT

3.1 ASSESSMENT AND RESPONSE ACTIONS

The oversight of the project activities may include a process of review and evaluation through systems audits, field audits, internal peer review, and laboratory oversight. This process will ensure that the QAPP is adhered to, the quality of the data is adequate, and that corrective actions, when needed, are implemented effectively and in a timely manner.

3.1.1 Systems Audits

Systems audits performed by the QAO or designee may encompass evaluation of QA components to ascertain their appropriate selection and application. In addition, field and laboratory quality control procedures and associated documentation may be system audited.

These audits will be conducted if conditions that may compromise quality are detected, and/or if NYSEG request an unscheduled audit. The Systems Audit will consist of an inspection of the following procedures:

- Sampling
- Sample custody
- Sample storage and preservation
- Sample preparation
- Analytical methodology
- Data management
- Preventive maintenance
- Recordkeeping

3.1.2 Laboratory Audits

NYSDOH ELAP certified laboratories will be used for analysis of all Site-related constituents of interest (COIs). If conditions are noted that indicate potential quality issues with analytical results, an audit may be conducted at the recommendation of the QAO. This audit shall consist of a general audit and a specific procedure audit. A general audit will be an overview of the whole laboratory from sample receipt to sample disposal. A specific technical audit will be a detailed in-depth review of an actual method or procedure.

The findings from any audit conducted will be documented on a laboratory audit record form. Any issues, observations, and findings shall be discussed with the Laboratory Manager. The results of the audit shall be kept on file along with any corrective action taken. If, as a result of the audit, there is uncertainty as to the validity or correctness of a test result, immediate corrective action should be taken and the client notified in writing.

3.2 CORRECTIVE ACTION PROTOCOLS

Project management and staff, including field investigation teams, quality assurance auditors, document, sample control personnel, and laboratory groups, will monitor ongoing work performance in the normal course of daily responsibilities. When a significant condition adverse to quality is noted at the project location or laboratory, the cause of the condition will be determined and corrective action taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned and taken will be documented and reported to the QAO. Implementation of correction action will be verified by documented follow-up action. All project personnel have the responsibility, as part of their normal work duties, to promptly identify and report conditions adverse to quality, and solicit correction. Corrective actions may be initiated under the following (for example):

- When predetermined acceptance standards are not attained (objectives for precision, accuracy, and completeness);
- When procedures or data compiled are determined to be incorrect or incomplete;
- When equipment or instrumentation is found to be malfunctioning;
- When samples and test results cannot be traced with certainty;
- When quality assurance requirements have been violated;
- When designated approvals have been circumvented;
- As a result of system and performance audits; or,
- As a result of a management assessment.

Corrective actions shall be documented using appropriate field and laboratory forms or other means of documentation. Corrective action forms shall be entered into the project files.

3.3 REPORTS TO MANAGEMENT

As needed, reports will be prepared by ISH and submitted to NYSEG. Quality assurance reports to management will consist of reports on audits, reports on correction of deficiencies found in audits, a final QA report on field sampling activities, and a final analytical laboratory QA/QC report.

4.0 DATA VALIDATION AND USABILITY

4.1 DATA REVIEW, VALIDATION, AND VERIFICATION

This section discusses data review, validation, and verification. Field data are discussed in Section 4.1.1. Laboratory data are discussed in Section 4.1.2.

4.1.1 Field Data

Field data will be reviewed using four different procedures:

- Routine checks will be made during the processing of data, e.g., looking for potential transcription errors;
- Internal consistency of a data set will be evaluated. This step will involve plotting the data and testing for outliers;
- Checks for consistency of the data set over time will be performed. This can be accomplished by visually comparing data sets against gross upper limits obtained from historical data sets, or by testing for historical consistency; and,
- Checks will be made for consistency with parallel data sets; i.e., data sets obtained from the same population.

The purpose of these validation checks and tests is to identify outliers; i.e., an observation that does not conform to the pattern established by other observations. Outliers may be the result of transcription errors or instrumentation breakdowns. Outliers may also be manifestations of a greater degree of spatial or temporal variability than expected.

After an outlier has been identified, a decision concerning its factual basis must be made. Obvious mistakes in data will be corrected when possible, and the correct values inserted. If the correct values cannot be obtained, the data may be excluded. An attempt will be made to explain the existence of the outlier. If no plausible explanation can be found for the outlier, it may be excluded, but a note to that effect will be included in the report. Also, an attempt will be made to determine the effect of the outlier with both inclusion and exclusion from the data set.

4.1.2 Laboratory Data

Prior to submitting analytical data to ISH, the laboratory must verify compliance to the method requirements. The laboratory will follow their QA/QC manual, SOPs, NYSDEC guidance, and this QAPP for sample analyses. The laboratory will also be responsible for the oversight of the data quality for all analyses. Any sample integrity issues, discrepancies with the chain-of-custody, or concerns with the analysis will be addressed, and will be resolved through the laboratory QAO.

Analytical data and calculations shall be reviewed by the laboratory and shall include a minimum of three levels of documented review, including analyst review, peer review, and supervisory review. For each level, the review process shall be documented, signed and dated by the reviewer. Each step of this review process shall include the evaluation of data quality based on both the results of the QC data and the professional judgment of those conducting the review. Electronic deliverables must be checked against the hard-copy reports to ensure that the two versions match.

Laboratory data deliverables as specified in NYSDEC DER 10 - Appendix 2B, shall be followed, specifically:

a) Category B data deliverables shall be submitted for all chemical analyses, and will contain, at a minimum:

- A Sample Delivery Group Narrative
- Contract Lab Sample Information sheets
- NYSDEC Data Package Summary Forms
- Chain-of-Custody Forms
- Test analyses results (including tentatively identified compounds for VOC and SVOC analyses)
- QA/QC information and documentation (i.e. calibration standards, surrogate recoveries, blank results, spike recoveries, duplicated results, confirmation (lab check/QC) samples, internal standard area and retention time summary, chromatograms, and raw data files)

4.2 VALIDATION AND VERIFICATION METHODS

Third party data validation is not considered necessary for the purposes of the associated FSP which is not expected to include any crucial risk assessment associated decisions. Nonetheless, in the event that validation is deemed necessary, it will be completed in accordance with the NYSDEC ASP and the USEPA functional guidelines for organic and inorganic data review.

As required, these guidance documents will be used in conjunction with the laboratory SOPs for the respective analytical methods. Professional judgment will be exercised throughout the validation effort, particularly for situations that are not addressed or clearly specified in the SOPs or in the guidance documents.

4.3 RECONCILIATION WITH DATA QUALITY OBJECTIVES

Results from review/validation of field activities and analytical data will be integrated to allow a final reconciliation of achieved data quality with the stated DQOs.

Accuracy, precision, and completeness will be evaluated in accordance with the formulas provided in this document. Representativeness will be evaluated based on the implementation of

the field sampling program and analytical program with attention paid to evidence of non-homogeneity of samples. Reporting limits will be compared to applicable criteria to evaluate whether adequate sensitivity was achieved. Sampling and analysis methods and results will be reviewed against historical data or data from other related locations to determine comparability.

4.3.1 Data Quality Assessment

The QAO will identify any areas of concern where objectives were not met and evaluate the impact of these upon the intended uses of the data. Specific samples or analytes for which the uncertainty exceeds program or project-specific objectives will be identified so that NYSEG may make informed decisions on the potential impact to the overall program.

5.0 REFERENCES

Ish Inc., *Field Sampling Plan*

NYSDEC (New York State Department of Environmental Conservation), *DER-10 / Technical Guidance for Site Investigation and Remediation*, DER, May 2010

6 NYCRR Part 375, *Environmental Remediation Programs,* December 2006.

USEPA, *Guidance for the Data Quality Objectives Process,* EPA QA/G-4, August 2000.

USEPA (United States Environmental Protection Agency), May 2006. *EPA Requirements for Quality Assurance Project Plans (Q/R-5),* EPA/240/B-01/003.

USEPA, *Contract Laboratory Program, National Functional Guidelines for Organic Data Review.*

USEPA, *Contract Laboratory Program, National Functional Guidelines for Inorganic Data Review.*

USEPA (United States Environmental Protection Agency), December 2002. *Guidance for Quality Assurance Project Plans (QA/G-5),* EPA//R-02/009.

USEPA, *Data Quality Objectives for Remedial Response Activities*, OSWER Directive 9355.0-7B, March 1987.

TABLES

TABLE 1
CHEMICAL SAMPLING AND ANALYSIS PROGRAM SUMMARY
OPERABLE UNIT 1 REMEDIAL ACTION
DANSVILLE FORMER MGP SITE
OSSIAN STREET, LIVINGSTON COUNTY
DANSVILLE, NEW YORK

Matrix Sample Summary				QA Sample Frequency				Analytical Requirements Summary				
Analytical Parameter[1]	Sample Matrix	Soil Quantity	Number of Samples	Field Duplicates	Equipment Blanks	MS/MSDs	Trip Blanks	Method Reference[2]	Bottle Type(3)	Required Sample Volume	Preservation	NYSDEC Holding Time[4]
WASTE CHARACTERIZATION ANALYSIS[5]												
TCL VOCs	Visually Impacted Soil	1 per 500 tons (landfill disposal) 1 per 750 tons (thermal treatment)	TBD	--	--	--	1/trip	SW-846 8260B	Glass	Soils: 4 x 40 ml vials or EncoreTM.	1 x 5 ml methanol; 2 x 5 ml sodium bisulfate; 1 x 5 ml water. 4°C	10 days
TCL SVOCs	Visually Impacted Soil	1 per 500 tons (landfill disposal) 1 per 750 tons (thermal treatment)	TBD	--	--	--	--	SW-846 8270C	Glass	100 grams	4°C	5 days to extraction/40 days to analysis
TCL PCBs	Visually Impacted Soil	1 per 500 tons (landfill disposal) 1 per 750 tons (thermal treatment)	TBD	--	--	--	--	SW-846 8082	Glass	4 ounces	4°C	5 days to extraction/40 days to analysis
TAL Metals	Visually Impacted Soil	1 per 500 tons (landfill disposal) 1 per 750 tons (thermal treatment)	TBD	--	--	--	--	SW-846 6010B / SW-846 7471A	Glass	100 grams	4°C	26 days for Hg; 180 days for other metals
TCLP VOCs	Visually Impacted Soil	1 per 500 tons (landfill disposal) 1 per 750 tons (thermal treatment)	TBD	-- --	-- --	-- --	-- --	SW-846 1311 / 8260B	Glass	500 milligrams	4°C	14 days from collection if field preserved. Preservation within 48 hours if lab preserved.
Total Cyanide	Visually Impacted Soil	1 per 500 tons (landfill disposal) 1 per 750 tons (thermal treatment)	TBD	--	--	--	--	SW-846 9010	Glass	100 grams	4°C	12 days
TPH DRO/GRO	Visually Impacted Soil	1 per 500 tons (landfill disposal) 1 per 750 tons (thermal treatment)	TBD	--	--	--	--	SW-846 8015	Glass	100 grams	4°C	5 days to extraction/40 days to analysis
Percent Sulfur	Visually Impacted Soil	1 per 500 tons (landfill disposal) 1 per 750 tons (thermal treatment)	TBD	--	--	--	--	ASTM Method D129-64	Glass	50 grams	4°C	--
BTU	Visually Impacted Soil	1 per 500 tons (landfill disposal) 1 per 750 tons (thermal treatment)	TBD	--	--	--	--	ASTM Method D240-87	Glass	50 grams	4°C	28 days
WASTEWATER ANALYSIS												
BOD	NA	NA	TBD	--	--	--	--	SM 5210B	Plastic or Glass	100 milliliters	4°C	14 days
COD	NA	NA	TBD	--	--	--	--	SM 5220C	Plastic or Glass	100 milliliters	H_2SO_4 to pH<2; 4°C	26 days
TKN	NA	NA	TBD	--	--	--	--	EPA Method 351.2	Plastic or Glass	500 milliliters	H_2SO_4 to pH<2; 4°C	26 days
TSS	NA	NA	TBD	--	--	--	--	EPA Method 160.2	Plastic or Glass	500 milliliters	4°C	7 days
pH	NA	NA	TBD	--	--	--	--	SW-486 Method 9040	Plastic or Glass	100 milliliters	4°C	Immediately
Total Phosphorus	NA	NA	TBD	--	--	--	--	EPA Method 365.1	Plastic or Glass	200 milliliters	H_2SO_4 to pH<2; 4°C	26 days
Total Cyanide	NA	NA	TBD	--	--	--	--	SW-846 Method 9012	Plastic or Glass	1 liter	Ascorbic acid, NaOh pH>12; 4°C	12 days
Metals[6]	NA	NA	TBD	--	--	--	--	SW-846 Method 6010B	Plastic or Glass	500 milliliters	HNO_3 to pH<2; 4°C	6 months
Arsenic	NA	NA	TBD	--	--	--	--	EPA Method 206.2	Plastic or Glass	500 milliliters	HNO_3 to pH<2; 4°C	6 months
Soluble Selenium	NA	NA	TBD	--	--	--	--	EPA Method 270.2	Plastic or Glass	500 milliliters	HNO_3 to pH<2; 4°C	6 months
TTO	NA	NA	TBD	--	--	--	--	SW-846 Method 8270C / SW-846 Method 8121	Amber Glass	2 liters	4°C	5 days to extraction/40 days to analysis

TABLE 1
CHEMICAL SAMPLING AND ANALYSIS PROGRAM SUMMARY
OPERABLE UNIT 1 REMEDIAL ACTION
DANSVILLE FORMER MGP SITE
OSSIAN STREET, LIVINGSTON COUNTY
DANSVILLE, NEW YORK

Matrix Sample Summary				QA Sample Frequency				Analytical Requirements Summary				
Analytical Parameter[1]	Sample Matrix	Soil Quantity	Number of Samples	Field Duplicates	Equipment Blanks	MS/MSDs	Trip Blanks	Method Reference[2]	Bottle Type(3)	Required Sample Volume	Preservation	NYSDEC Holding Time[4]
IMPORTED FILL MATERIAL[7]												
TCL VOCs	Imported Virgin Soil	100 cubic yards	2 grabs / 100 cubic yards	1/20 or 1/event	1/day or 1/event	1/20 or 1/event	1/trip	SW-846 8260B	Glass	Soils: 4 x 40 ml vials or EncoreTM.	1 x 5 ml methanol; 2 x 5 ml sodium bisulfate; 1 x 5 ml water. 4°C	10 days
TCL SVOCs	Imported Virgin Soil	100 cubic yards	1 composite / 100 cubic yards	1/20 or 1/event	1/day or 1/event	1/20 or 1/event	--	SW-846 8270C	Glass	100 grams	4°C	5 days to extraction/40 days to analysis
TCL Pesticides	Imported Virgin Soil	100 cubic yards	1 composite / 100 cubic yards	1/20 or 1/event	1/day or 1/event	1/20 or 1/event	--	SW-846 Method 8081A	Glass	100 grams	4°C	5 days to extraction/40 days to analysis
TCL PCBs	Imported Virgin Soil	100 cubic yards	1 composite / 100 cubic yards	1/20 or 1/event	1/day or 1/event	1/20 or 1/event	--	SW-846 8082	Glass	4 ounces	4°C	5 days to extraction/40 days to analysis
TAL Metals	Imported Virgin Soil	100 cubic yards	1 composite / 100 cubic yards	1/20 or 1/event	1/day or 1/event	1/20 or 1/event	--	SW-846 6010B / SW-846 7471A	Glass	100 grams	4°C	26 days for Hg; 180 days for other metals
Hexavalent Chromium	Imported Virgin Soil	100 cubic yards	1 composite / 100 cubic yards	1/20 or 1/event	1/day or 1/event	1/20 or 1/event	--	SW-846 7196A	Glass	100 grams	4°C	30 days to extraction/4 days to analysis
Trivalent Chromium	Imported Virgin Soil	100 cubic yards	1 composite / 100 cubic yards	--	--	--	--	Laboratory Calculation	--	--	--	--

NOTES:

1. Abbreviations for analytical parameters are as follows:

BOD -	Biochemical Oxygen Demand	TAL -	Target Analyte L .
COD -	Chemical Oxygen Demand	TCL -	Target Compound List
DRO -	Diesel Range Organics	TCLP -	Toxicity Characteristic Leaching Procedure
GRO -	Gasoline Range Organics	TKN -	Total Kjeldahl Nitrogen
PCBs -	Polychlorinated Biphenyls	TPH -	Total Petroleum Hydrocarbons
SPLP	Synthetic Precipitation Leaching Procedure	TSS -	Total Suspended Solids
SVOCs-	Semivolatile Organic Compounds	VOCs -	Volatile Organic Compounds

2. Abbreviations for analytical methods are as follows:
   - SW-846 - Environmental Protection Agency methods per Test Methods for Evaluating Solid Waste - Physical/Chemical Methods - SW-846 (3rd Ed). (as revised and updated)
   - ASTM - American Society for Testing and Materials
3. Precleaned, preserved sample bottles to be provided by the laboratory. Sample volumes to be minimized as possible based on minimum laboratory volume requirements.
4. Days from verified time of sample receipt (VTSR).
5. Sampling locations for Waste Characterization sampling will be determined in the field based on the observations and judgement of the field crew.
6. Metals to be analyzed using method SW-846 6010B include: Barium, Cadmium, Chromium, Copper, Lead, Manganese, Nickel, Silver, Zinc.
7. Number of samples is per each source quantity. Grab samples are to consist of discrete samples taken from each source material. Composite samples are to consist of 5 discrete samples composited from different locations from each source material.
   - NA - Not applicable
   - TBD - To be determined

APPENDIX A

QUALITY ASSURANCE OFFICER CERTIFICATION

CERTIFICATION

Document: **Quality Assurance Project Plan**
Operable Unit 1 Remedial Action
Dansville Former MGP Site
NYSDEC Site No. 8-26-012
Ossian Street, Livingston County
Dansville, New York
April 2013

"I, _____, certify that I am currently a Qualified Environmental Professional as defined in 6NYCRR Part 375 and that this Quality Assurance Project 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)."

_____ _____

Quality Assurance Officer **Date**

APPENDIX B

STANDARD OPERATING PROCEDURES

105 CHAIN OF CUSTODY
106 FIELD LOGBOOK
114 SAMPLE HANDLING, PRESERVATION, PACKAGING AND SHIPPING

#105 - CHAIN OF CUSTODY

1.0 SCOPE AND PURPOSE

This Standard Operating Procedure (SOP) presents procedures for documenting possession/custody of environmental samples from the time of collection through delivery to the receiving analytical laboratory. At this point, internal laboratory records should document sample custody until final disposition. This SOP also discusses sample identification and the use of chain-of-custody (COC) forms.

Possession of the samples must be traceable from the time each is collected until analysis is completed. To document sample possession, chain-of-custody procedures are followed. Chain-of-custody evidence includes all documentation associated with the sample including the chain-of-custody form, sample label, custody seal, courier's receipt (if applicable), and field notebook.

A sample is under custody if one or more of the following criteria are met:

- It is in possession of the custodian or a designated member of the sampling team;
- It is in plain view, after being in possession;
- It was in possession and is secured against tampering; and,
- It is placed in a designated secure area.

2.0 REQUIRED MATERIALS

- Sample container labels;
- Chain-of-custody forms;
- Field notebook;
- Shipping Airbills;
- Locks or Packaging Tape; and,
- Custody seals.

3.0 METHODOLOGIES

The Project Manager (or designee) is responsible for ensuring that sample labeling is completed in accordance with this SOP and that chain-of-custody forms are completed for sample shipments. All individuals relinquishing and receiving samples shall sign, date, and record the time on the chain-of-custody forms.

Sample Identification

Blank sample labels will be supplied by the analytical laboratory and affixed to the sample container. Sample labels will be completed using waterproof permanent markers or ink. The labels will be filled out at the time of sample collection by the field sampling personnel. The following identifying sample information will be included on the label:

- Client/Site;
- Sample identification alpha-numeric code;
- Sample collector's initials;
- Date and time (military) of sample collection;
- Analytical method; and,
- Laboratory analysis to be performed.

Chain-of-Custody Forms

Once the sample containers have been filled with the sampled media and properly labeled, they will be prepared for shipment to the receiving analytical laboratory. Coolers containing samples will be accompanied by a chain-of-custody form (see example COC form in Figure 1).

The field team leader (or designee) shall complete a chain-of-custody form for each lot of packaged samples (*e.g.,* cooler). COC forms shall be completed in ink. Any transcription errors shall be corrected by striking the erroneous information with a single horizontal line. The corrected information shall be added immediately adjacent to the strikeout. The sampler should initial the correction.

The following information will be recorded on the COC form:

- Client/Site;
- Name(s) of sampler(s);
- Sample identification alpha-numeric code;
- Date and time (military) of sample collection;
- Type of sample (*e.g*., soil, groundwater);
- Number of containers per sample location;
- Requested analyses;
- Type of containers and preservatives used;
- Name and address for the completed laboratory reports;
- Name and address for laboratory invoices; and,
- Specific instructions/notes for the laboratory, as necessary.

Any area of the COC, where sample information is not completed, should have a hatched line drawn through to show that this portion of the COC will not be completed.

Each COC will be placed in a waterproof plastic bag and affixed to the underside of the shipping container lid. Samples will be packaged properly for shipment as described in SOP #114, Sample Handling, Preservation, Packaging, and Shipping, and dispatched to the appropriate laboratory for analysis. Shipping containers will be padlocked or otherwise sealed for shipment to the laboratory.

All shipments should be accompanied by the completed Chain-of-Custody Record. The original record will accompany the shipment to the laboratory, and a copy will be retained by the field

team leader for the project file. Shipping bills and receipts must be retained as part of the chain-of-custody documentation.

Upon receipt of the samples by the laboratory, the laboratory person assigned to log-in samples will confirm that the shipping container seals are in good condition and have not been disturbed. The original chain-of-custody form is to be signed and dated by the laboratory person logging in the samples. In addition, the receiving laboratory is to inspect each sample and indicate the condition of the sample on the COC. The receiving laboratory is to retain a copy of each chain-of-custody form along with the shipping bill. Internal laboratory chain-of-custody procedures will be followed once samples are logged in by the receiving laboratory.

4.0 DATA RECORDING/MANAGEMENT

As discussed in Section 3.0, information related to tracking environmental samples will be recorded on the COC forms which will be retained in the project files.

5.0 REFERENCES

U.S. Environmental Protection Agency, 1986. *RCRA Groundwater Monitoring Technical Enforcement*

U.S. Environmental Protection Agency, 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846 3rd Edition (with revisions).

U.S. Environmental Protection Agency, 1987. *A Compendium of Superfund Field Operations Methods, Part 1*. EPA/540/P-87/001. December 1987.

U.S. Environmental Protection Agency, 1991. *Compendium of ERT Groundwater Sampling Procedures.* EPA/540/P-91/007. January 1991.

Figure 1
Example Chain-of-Custody Form

CHAIN OF CUSTODY

Project No.:	Project Name:
Samplers: (signatures)	

Sample I.D.	Date	Time	Comp	Grab	Sample Location Description	Number of Containers											Requested Analyses

Relinquish By: (signature)	Date	Time	Received By: (signature)	Date	Time	Notes:
Relinquish By: (signature)	Date	Time	Received By: (signature)	Date	Time	
Relinquish By: (signature)	Date	Time	Received By: (signature)	Date	Time	

Distribution: Original to Accompany samples; Copy Returned with Report

#106 - FIELD LOGBOOK

1.0 SCOPE AND PURPOSE

This Standard Operating Procedure (SOP) presents procedures for proper documentation of site activities with respect to the daily field logbook. Field logbooks are the primary source of documentation for site activities, and serve as legal record of all occurrences during those activities.

2.0 REQUIRED MATERIALS

The required materials for maintaining a field log book include a water-resistant, permanently bound notebook and a pen with permanent ink.

3.0 METHODOLOGIES

Pertinent information regarding the site and work procedures must be documented. Information recorded in the notebook should be noted with the date and time of entry. The following items are commonly included as logbook entries:

- Name and location of site;
- Date and time of arrival and departure;
- Name of person keeping log;
- Names and affiliations of project personnel;
- Sampling event description; including methodology, sample numbers and volumes, description of samples, date and time of sample collection, and name of collector;
- Prevailing weather conditions;
- Technical measurements and readings;
- Diagrams and sketches;
- Description of equipment used;
- List and descriptions of photographs; and,
- Equipment calibration information.

Information should be recorded in permanent ink for the legal record. The company name, address, and phone number should be entered at the beginning of the log book. The pages of the logbook should be numbered for ease of reference. Blank spaces should be crossed out and initialed. All notes should be written at the time of observation. Changes or deletions should be crossed out with a single line and initialed by the individual making the change. At the end of each field day, the project scientist/engineer or designee should sign and date each page of the notebook on which entries were made to verify the day's activities.

4.0 QA/QC PROCEDURES

At the end of each day of field activities, the individual or individuals maintaining the field log book should review the notes for accuracy and completeness. Corrections, deletions, or additions should be initialed and the time and date should be noted.

5.0 DATA RECORDING AND MANAGEMENT

It is recommended that a running activity log be maintained, indicating the times of activities and observations; recorded data be written in the form of tables with an appropriate title; and that diagrams be included to illustrate pertinent information. Log books should be labeled with the project name, project number, and a consecutive number for cataloging purposes.

6.0 REFERENCES

Environmental Research Center, University of Nevada - Las Vegas, March 1989, Soil Sampling Quality Assurance User's Guide, EPA/600/8-89/046.

Fetter, C. W., 1994, Applied Hydrogeology, Macmillan College Press Publishing Company, New York, New York, 691 p.

U.S. EPA, September 1986, RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, OSWER-9950.1

#114 - SAMPLE HANDLING, PRESERVATION, PACKAGING AND SHIPPING

1.0 SCOPE AND PURPOSE

This Standard Operating Procedure (SOP) describes the procedures associated with the handling, preservation, packaging, and shipment of environmental samples for laboratory analysis or testing. Environmental samples may consist of air, groundwater, surface water, sediments, soil, non-aqueous phase liquid (NAPL), and/or sludges. The objective of sample preparation, handling, packaging, and shipping protocols is to develop standard procedures which will preserve the integrity of the samples and minimize the potential for sample tracking errors, sample spillage or leakage, and/or sample container breakage. The field team leader is responsible for the implementation of the sample handling, preservation, packaging, and shipping requirements outlined in the project-specific sampling and analysis plan (SAP).

2.0 REQUIRED MATERIALS

Required materials may include the following:

- Sample containers (preserved, as necessary);
- Sample bottle labels;
- Chain-of-Custody forms;
- Sample cooler;
- Bubble wrap or other suitable packing material;
- "Blue Ice" (*i.e.*, reusable, freezable ice packs) or sealed bagged ice;
- Shipping bills (Federal Express, Airborne, etc.);
- Packaging tape; and,
- Zip-lock plastic bags.

3.0 METHODOLOGIES

3.1 Sample Handling

Sample Containers

Sample containers and appropriate preservatives (where necessary) will be supplied by the analytical laboratory. After the respective sample containers have been filled with appropriate sample media and preserved as necessary, samples will be properly identified using sample container labels, and the samples will be stored at an appropriate temperature (usually $<4^{o}C$) to preserve the integrity of the samples.

Sample Preservation

Preservatives will be supplied by the laboratory. Where possible, preserved containers should be supplied by the lab. Common preservatives include hydrochloric acid (HCl), sulfuric acid (H_2SO_4), nitric acid (HNO_3), or sodium hydroxide (NaOH). Samples will be preserved in accordance with EPA protocol specified in SW-846 or the project specific protocols outlined in the quality assurance project plan (QAPP). Use of the preservatives will be noted on the COC for each particular sample and analytical parameter.

Sample Labels

Blank sample labels will be supplied by the analytical laboratory and affixed to the sample container. Sample labels will be completed using waterproof permanent markers or ink. The labels will be filled out at the time of sample collection by the field sampling personnel. The following identifying sample information will be included on the label:

- Client/Site;
- Sample identification alpha-numeric code;
- Sample collector's initials;
- Date and time (military) of sample collection;
- Analytical method; and,
- Laboratory analysis to be performed.

Chain-of-Custody Forms

A chain-of-custody (COC) record will be established and maintained to document sample possession from the time of collection until receipt by the laboratory. Once samples are received by the laboratory, they will be handled under the laboratory internal COC procedures. Field sampling personnel will initiate a COC record by recording the following minimum data as the samples are collected:

- Client/Site;
- Name(s) of sampler(s);
- Sample identification alpha-numeric code;
- Date and time (military) of sample collection;
- Type of sample (e.g., soil, groundwater);
- Number of containers per sample location;
- Requested analyses;
- Type of containers and preservatives used;
- Name and address for the competed laboratory reports;
- Name and address for the laboratory invoices; and,
- Specific instructions/notes for the laboratory, as necessary.

Sample COC forms will be placed in waterproof plastic bags and taped to the underside of the cooler lids. Sample COC forms will generally be supplied by the subcontracting analytical laboratory.

Subsequently, at each change of possession, the COC record will be signed by the person relinquishing the samples and by the person receiving the samples. The date and time of the transfer of possession of the sample will be recorded on the COC form; this occurs when the samples are transferred from the sampling personnel to the courier and when the samples are received at the analytical laboratory. Sample COC forms shall be completed in ink. Any transcription errors shall be corrected by striking the erroneous information with a single horizontal line. The correct information will be added immediately adjacent to the strikeout. The sampler should initial the correction. (Refer to SOP #105 for additional information).

3.2 Sample Packaging and Shipping

All samples will be transported to the analytical laboratory in durable, waterproof, secured metal or plastic coolers. Sample coolers will generally be supplied by the laboratory. All samples will be packaged very carefully to prevent sample breakage. Samples will be shipped *via* overnight carrier (*e.g.*, Federal Express, Airborne, United Parcel Service) or hand delivered to the analytical laboratory, generally within 48 hours of collection. However, project specific protocols will be checked to assure that specified sample holding times are not exceeded in the event that samples are not shipped on the same day that they were collected. Additionally, the sample security and preservation must be maintained if samples are not to be transported immediately to the laboratory. The following procedure should be followed for packaging samples for shipment to the laboratory for testing and/or analysis.

1. Place plastic bubble wrap matting or suitable material over the base and bottom corners of each cooler or shipping container.

2. Obtain a chain-of-custody record (similar to the example shown in Figure 1) and enter all the appropriate information as discussed above. Chain-of-custody records will include complete information for each sample. One or more chain-of-custody records shall be completed for each cooler or shipping container as needed to manifest each sample.

3. Place bubble wrapping or other suitable material around glass bottles and place standing upright on the base of the cooler, taking care to leave room for packing material and ice or equivalent. Rubber bands or tape may be used to secure wrapping completely around each sample bottle.

4. Place additional bubble wrap and/or Styrofoam pellet packing or equivalent material throughout the voids between sample containers within each cooler.

5. Place cold packs or ice in heavy duty “zip-lock” type plastic bags, completely close the bags, and distribute such packages over the top of the samples. Add additional bubble wrap and/or Styrofoam pellets or other packing materials to fill the balance of the cooler or container.

6. If shipping the samples by express, courier, or delivery service, sign the chain-of-custody record thereby relinquishing custody of the samples. The date and time of custody transfer should be recorded on the chain-of-custody form. The custody transfer should be documented when directly transferring custody to a receiving party or when transmitting to a shipping service for subsequent receipt by the analytical laboratory. The shipping service should not be asked to sign chain-of-custody records.

7. Remove the last copy from the chain-of-custody record and retain with the field records. Place the original and remaining copies in a "zip-lock" type plastic bag and tape the bag to the underside of the lid of the cooler or shipping container.

8. Close the top or lid of the cooler or shipping container and with another person gently rotate the container to verify that the contents are packed so that they do not move. Improve the packaging if needed and reclose.

9. Packaging tape should be wrapped entirely around the sample shipping containers. A minimum of two full wraps of packaging tape will be placed in at least two places on the cooler or shipping container. Some project-specific QAPP may require custody seals be placed on the sample shipping containers. Sign and date the chain-of-custody tape.

10a. When transporting samples by automobile to the laboratory, and where periodic changes of ice are required, the cooler should only be temporarily closed so that reopening of the cooler can be easily performed. In these cases, chain-of-custody will be maintained by the person transporting the samples and chain-of-custody tape need not be used. If the cooler is to be left unattended, then chain-of-custody procedures should be implemented.

10b. If shipment is required, transport the cooler to an overnight express package terminal or arrange for pickup. Obtain copies of all shipment records as provided by the shipping service.

11. Upon receipt of the samples, the analytical laboratory will open the cooler or shipping container and will sign "received by laboratory" on each chain-of-custody form. The laboratory will verify that the chain-of-custody tape has not been broken previously and that the chain-of-custody tape number corresponds with the number on the chain-of-custody record. The analytical laboratory will then forward the back copy of the chain-of-custody record to the sample collector to indicate that sample transmittal is complete.

4.0 QUALITY CONTROL

Quality control samples such as rinsate blanks and duplicates will be specified by the project QAPP. A sample jar containing water should be sent as a temperature blank with each sample shipment requiring temperature preservation to ensure proper temperature is maintained. Also, a trip blank, provided by the laboratory will accompany shipments with samples intended for volatile organic chemical (VOC) analysis.

5.0 DATA RECORDING/MANAGEMENT

The documentation for supporting the sample handling, preservation, packaging and shipping will consist of chain-of-custody records, shipping records laboratory reports. In addition, a description of sample packaging procedures will be written in the Field Log Book. All documentation will be retained in the project files.

6.0 REFERENCES

U.S. Environmental Protection Agency, 1986. *RCRA Groundwater Monitoring Technical Enforcement Guidance Document.* OSWER-9950.1. September 1986.

U.S. Environmental Protection Agency, 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* SW-846 3rd Edition (with revisions).

U.S. Environmental Protection Agency, 1987. *A Compendium of Superfund Field Operations Methods, Part 1*. EPA/540/P-87/001. December 1987.

U.S. Environmental Protection Agency, 1991. *Compendium of ERT Groundwater Sampling Procedures.* EPA/540/P-91/007. January 1991.

APPENDIX D
CONSTRUCTION CONTINGENCY PLAN (CCP)

Construction Contingency Plan

FOR

New York State Electric and Gas

Dansville Former Manufactured Gas Plant Site

Remedial Action

Operable Unit 1

NYSDEC Site No. 8-26-012

Ossian Street

Livingston County

Dansville, New York

MARCH 2013

TABLE OF CONTENTS

ATTACHMENTS

1.0 Introduction

This Construction Contingency Plan (CCP) has been prepared for on-Site personnel and adjacent residents (if needed) in association with the construction activities for the Operable Unit 1 (OU1) selected remedy at the Dansville former manufactured gas plant (MGP) site (Site) located in Dansville, New York (Site No. 8-26-012). The New York State Department of Environmental Conservation (NYSDEC) selected remedy is presented in the Dansville OU1 Record of Decision (OU1 ROD) dated March 2008 (NYSDEC, 2008). The focus of the remediation project is to remove coal tar impacted soils from the Site and to subsequently restore the Site to original conditions using clean materials.

This CCP outlines the procedures to be implemented in the event of a fire, explosion, severe weather conditions, or other emergency. The guidelines set forth by this CCP incorporate information necessary to prevent or minimize hazards to human health and the environment.

This CCP is a supplement to the Site Health and Safety Plan (HASP) for the field activities listed in Section 3.0 of this document. Appropriate precautions will be implemented by all on-Site personnel to prevent an emergency situation from occurring. However, if an emergency situation should arise, this CCP will serve as the governing document concerning procedures to be followed. A copy of this CCP will be provided to all on-Site personnel, who will be required to adhere to the guidelines set forth herein.

2.0 Contaminants of Concern

Based on previous Site investigation activities and the history of the Site, it has been determined that the contaminants of concern are MGP related chemicals, including coal tar non-aqueous phase liquid (NAPL), volatile organic compounds (benzene, toluene, ethylbenzene, and xylenes), and semi-volatile organic compounds (polycyclic aromatic hydrocarbons).

3.0 Planned Field Activities

This remediation project will include the following on-Site field activities:

- Mobilization;
- Site preparation (installation of support facilities);
- Demolition of existing structures and foundations;
- Construction of decontamination pad;
- Construction of stabilized construction entrances;
- Utility relocation and removal;
- Temporary sheet piling installation;
- Construction of a temporary fabric structure;

- Temporary water pre-treatment system installation and operation;
- Construction of temporary surface drainage channel;
- Construction of staging areas;
- Excavation of soils;
- Material handling and dewatering activities;
- Water disposal;
- Loading of soils;
- Restoration of the Site to original conditions with clean materials;
- Equipment decontamination; and,
- Demobilization.

4.0 Emergency Coordinator

The Emergency Coordinator (EC) is responsible for the implementation of this CCP should an emergency occur. The EC will also act as the Site Health and Safety Officer (HSO) in the event of an emergency. An alternate EC/HSO will be responsible for implementing this CCP should an emergency occur while the primary EC/HSO is unavailable. Furthermore, all Site personnel must be familiar with the procedures outlined in this CCP and are responsible for implementing this CCP should both the EC/HSO and the alternate EC/HSO be unavailable.

Prior to the commencement of any Site activities, the EC/HSO will designate one or more project team members along with any subcontractor to serve as a rescue team. The rescue team is to be comprised of two people at a minimum and will respond to emergencies under the direction of the EC/HSO. All members of the rescue team must be certified in cardiopulmonary resuscitation (CPR), emergency first aid, and other training identified in Section 10.0 of this document.

The EC/HSO will notify off-Site emergency personnel (see Section 12.0 of this document) or designate someone else to do so in the event of an emergency. First responders, including police, fire, and ambulance, will be alerted as to the hazards on-Site and the type of emergencies that may arise.

5.0 Communication

When possible, communication will be by voice. In the event that communication by voice is not possible, the following hand signals will be used:

Hand on top of head:	I need assistance.
Thumbs up:	OK. I'm all right.
Thumbs down:	No. Negative.

Hand gripping throat:	I can't breathe.
Place hands around waist:	Leave work area immediately.

Hand-held radios may be used if available. In an emergency, a compressed air horn will be used to signify to workers that an emergency situation exists. The air horn signals are as follows:

One long blast:	Evacuate the area by nearest exit.
Two short blasts:	Evacuate by normal exit procedures.

In the event of an emergency, the EC/HSO will notify off-site emergency personnel or designate someone to do so. A portable telephone will be on-site for this purpose, if necessary, and will be kept in an easily accessible location. Additionally, telephones will be available in the office trailer. Refer to Section 12.0 of this document for emergency contacts and telephone numbers.

6.0 Evacuation

If the air horn is sounded, all Site personnel will evacuate the work area accordingly. Emergency evacuation routes will be specified prior to the commencement of field activities. Evacuation routes must be clear of obstructions and will include an excavation route from the work area to a designated meeting place in the project support area. Evacuation routes will be outlined on Site layout maps and will be discussed with Site personnel and as well as posted on-Site in a readily accessible location. The Site Evacuation Routes are provided in this CCP as Attachment 1.

In case of an emergency, minimum evacuation safe distances have been established and are provided below. The distances are subject to increase depending on the nature of the emergency. The decision to increase the distances will be made in conjunction with the fire and police departments as well as the New York State Department of Environmental Conservation (NYSDEC). The evacuation safe distances are as follows:

Minor Fire:	Evacuate non-essential personnel to project support area.
Major Fire:	Evacuate all on-Site personnel and adjacent residents as needed.
Explosion:	Evacuate all on-Site personnel and adjacent residents as needed.

7.0 Fire

A fire extinguished will be kept in an easily accessible location on-Site and will be used on minor fires. If the fire cannot be immediately extinguished, the area must be evacuated accordingly and the fire department notified. Additional extinguishing methods may include CO_2 or a dry chemical, water spray, foam, and/or fog.

8.0 Explosion

If an explosion should occur, the area shall be evacuated accordingly and the fire department notified. The cause of the explosion will be assessed and removed/corrected prior to personnel returning to the Site.

9.0 Medical

The HASP addresses medical emergencies in more detail, but for the purposes of this CCP the following will suffice. In the event of a medical emergency, appropriate first aid will be administered, and the injured individual will be sent to the specified medical facility (see section 12.0 Emergency Contacts) if necessary. Furthermore, an ambulance will be procured if required. The cause of the injury will be determined and removed/corrected prior to continuing on-Site work. A first aid kit will be maintained in the office trailer at all times.

Injured personnel will be fully or partially decontaminated in accordance with the HASP when possible. However, personnel decontamination procedures may be eliminated in a life-threatening situation, and emergency medical personnel will be notified as to the lack of decontamination. After handling the victim, emergency medical personnel will wash with soap and potable water. Appropriate documentation will be completed as specified in the HASP.

The Hospital Route Map is provided in Attachment 2.

10.0 Spills

In the event potentially impacted material is spilled outside the work area the material will be recovered and returned back to the work area, placed onto plastic, into drums or directly into trucks for off-site disposal. Solid or semi-solid material such as soils can be scooped up with shovels or a bucket from heavy equipment. Care will be taken to collect all of the spilled material. Material placed onto plastic or in drums will be covered until it can be placed into trucks for disposal.

Spill kits will be located at or adjacent to the work areas to facilitate the containment and cleanup of spills and leaks.

Liquid materials waste, oil, hydraulic fluid, or other fluids will be contained by booms, soil berms or other appropriate means. Liquid will be absorbed using absorbent pads, booms or granules. Any obviously wet soils beneath the spill area will be removed with the absorbent material. Spilled material and absorbents will be placed in drums and covered until it can be properly disposed.

If necessary, recovered spill material will be placed into a lined, bermed area until the material can be properly disposed. If a container holding waste is not in good condition, or if it begins to leak, the waste will be transferred from the faulty container to a container that is in good condition. Containers holding waste will be kept closed during storage.

11.0 Confined Space Emergencies

The local fire department will be contacted before work begins at the Site to ensure that they can respond effectively to confined space emergencies. The fire department and other emergency personnel will be offered the opportunity to visit the Site to familiarize themselves with the Site and planned activities before excavation and other potential confined space work begins. If the local emergency response team cannot perform confined space rescue or if their response time is more than 5 minutes then Site personnel will be trained and practice confined space rescue before excavation or other confined space work begins. If a Site emergency response team must be assembled they will be provided with appropriate equipment and supplies. Personnel other than trained rescuers are not permitted to attempt a rescue.

There must be a minimum of at least two personnel present before entering a confined space; these personnel must be trained and keep in constant communication with each other during an entry. Personnel must leave a confined space immediately if told to by the attendant. The attendant must focus on the confined space and entrant and keep aware of any changing entry conditions and any entrant behavioral changes that could indicate an emergency situation.

12.0 Training

All on-Site personnel will be required to have attended an initial 40-hour health and safety training course, an annual 8-hour refresher training course, and 8-hour training for managers for conducting work at hazardous waste sites (if applicable). Said courses satisfy the initial and follow-up training requirements of 29 CFR 1910.120 (OSHA regulation of hazardous waste site activities).

In addition, Site personnel will attend a training session given by the EC/HSO prior to the commencement of field activities. The session will include, but is not limited to, the following topics:

- Site history;
- Specific hazards;
- Hazard recognition;
- Standard operating procedures;
- Decontamination (personnel and equipment); and,
- Emergency procedures.

13.0 Severe Weather Conditions

All Site personnel will be notified immediately upon detection of any severe weather-related threat, such as a hurricane, flood, or blizzard. Each Severe Weather Alert will require last-minute preventative measures to minimize potential damage to facilities and equipment. For example, steps such as checking drains, protecting soil piles and excavations, and managing sheet flow of water will have to be evaluated depending on the specific weather conditions.

If heavy winds are expected, steps will be taken to seal the temporary fabric structure to the extent possible. These steps include sealing the doors, ensuring that the fabric is secured around the edges, and any other measures that will assist in eliminating holes or cracks whereby wind could enter the structure. Also, any and all snow that may pile up along the sides of the temporary fabric structure will be removed in order to avoid subjecting the sealing fabric to unnecessary lateral pressure.

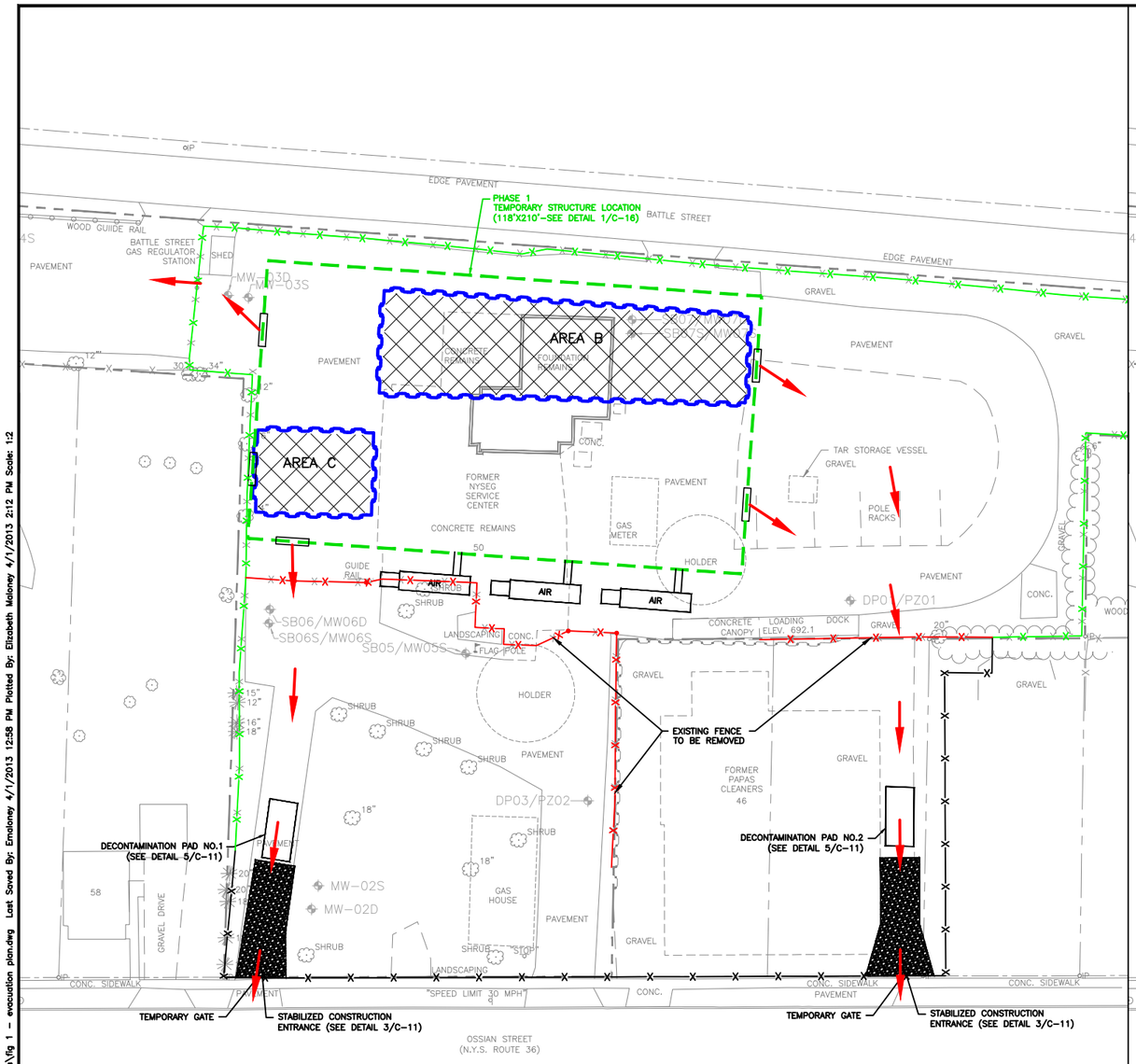
14.0 Emergency Contacts

Emergency contact information is provided below and will be kept on-Site next to all telephones.

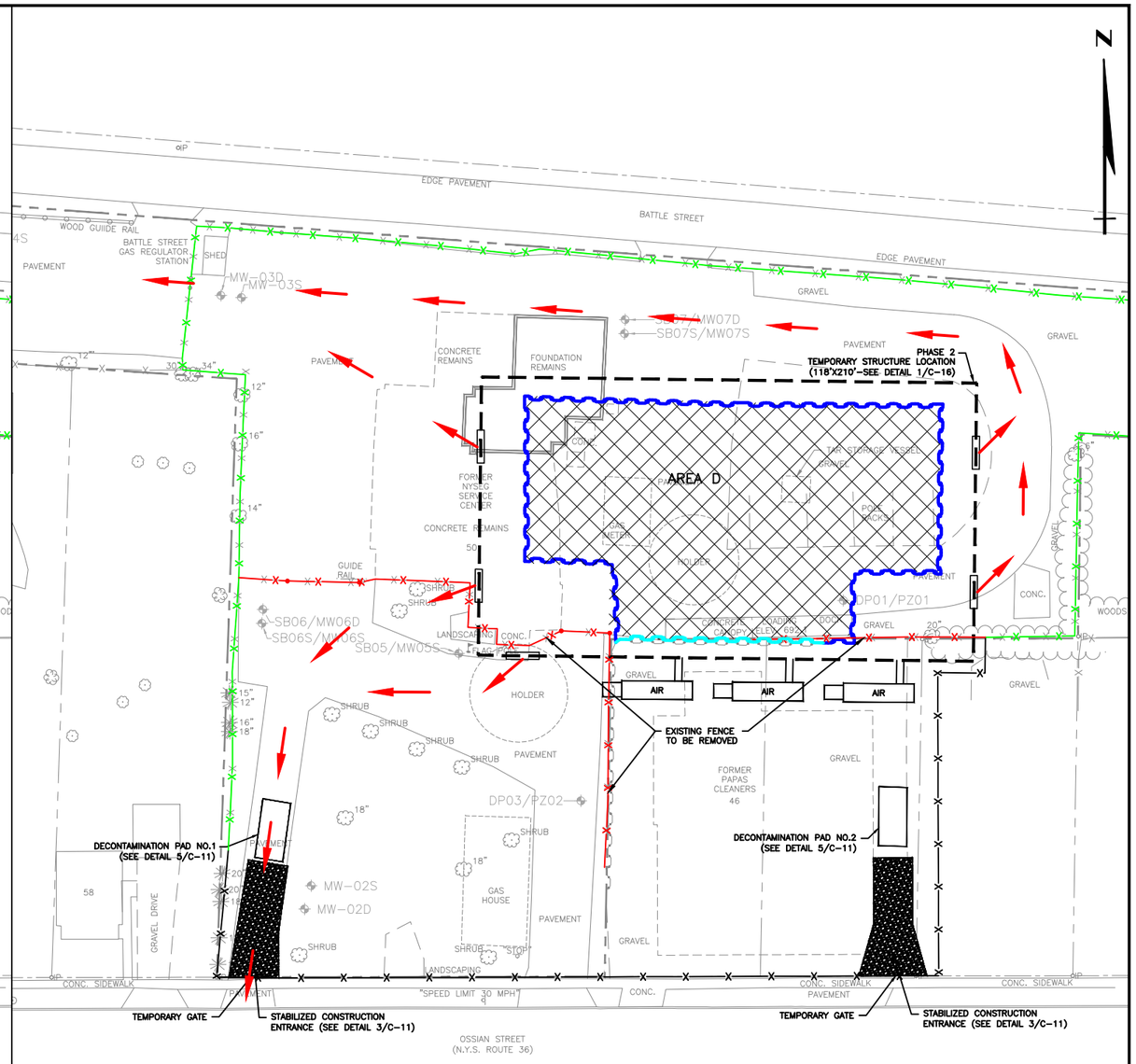
Contact	Telephone
NYSEG Site	TBD
Dansville Fire Department	911
Ambulance	911
Police Departments	911 or (585) 335-3385
Livingston County Sheriff's Department	911 or (585) 243-7100
Tri-County Family Medicine 60 Red Jacket Street Dansville, NY 14437	(585) 335-6041
National Response Center	(800) 424-8802
New York Department of Environmental Conservation	(800) 457-7362
Disposal Transportation Company (Transportation Incidents)	TBD

ATTACHMENT 1

SITE EVACUATION ROUTES



PHASE 1 BUILDING PLAN VIEW



PHASE 2 BUILDING PLAN VIEW

LEGEND

- EXISTING STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- EXISTING FENCE LINE
- TEMPORARY FENCE WITH VISUAL BARRIER (SEE DETAIL 4/C-11)
- EXISTING FENCE WITH VISUAL BARRIER
- MONITORING WELL
- 14'x14' OVERHEAD DOOR
- EXISTING SHEETPILE WALL
- PROPOSED SHEETPILE WALL (APPOX. 1,525 LF)
- PROPOSED EXCAVATION FOOTPRINT (SEE NOTE 1)
- PHASE 1 TEMPORARY STRUCTURE (118'x210')
- PHASE 2 TEMPORARY STRUCTURE (118'x210')
- EVACUATION DIRECTIONAL ARROWS
- AIR HANDLING SYSTEM (SEE DETAIL 2/C-16)

NOTES:
1. DEWATERING SUMP PITS (SEE DETAIL 1/C-14) TO BE CONSTRUCTED IN EACH AREA.

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

PRELIMINARY

ISSUE DATE:

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

0 30 60 FEET

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

SIGNATURE DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 04/01/13
CHKD: CAZ	DATE: 04/01/13
APPD: BTS	DATE: 04/01/13
SCALE:	AS SHOWN

ISH, INC.
8404 SIX FORKS ROAD,
SUITE 203,
RALEIGH, NC 27615

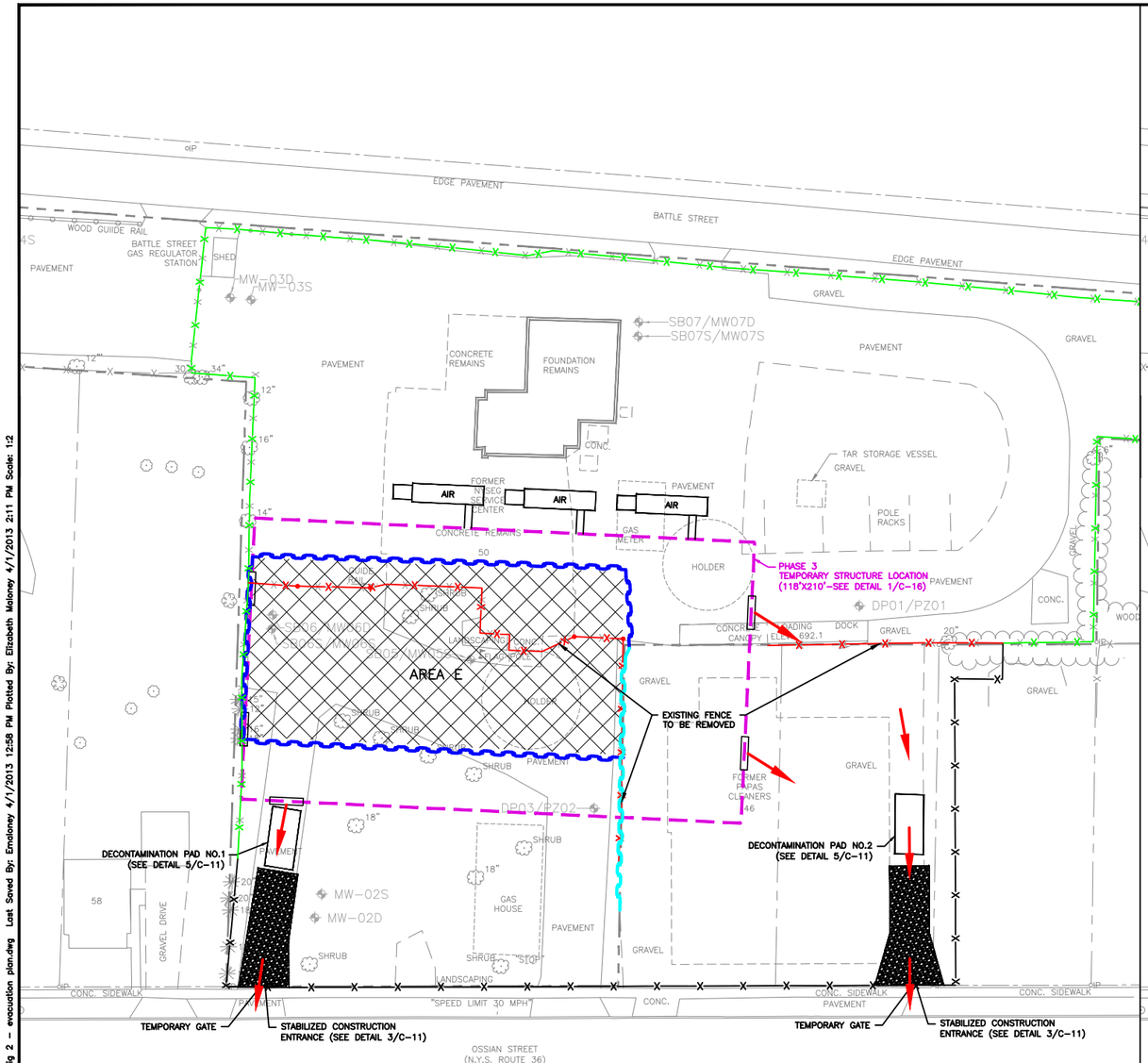
CONSTRUCTION CONTINGENCY PLAN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

PHASES 1 AND 2
SITE EVACUATION ROUTES

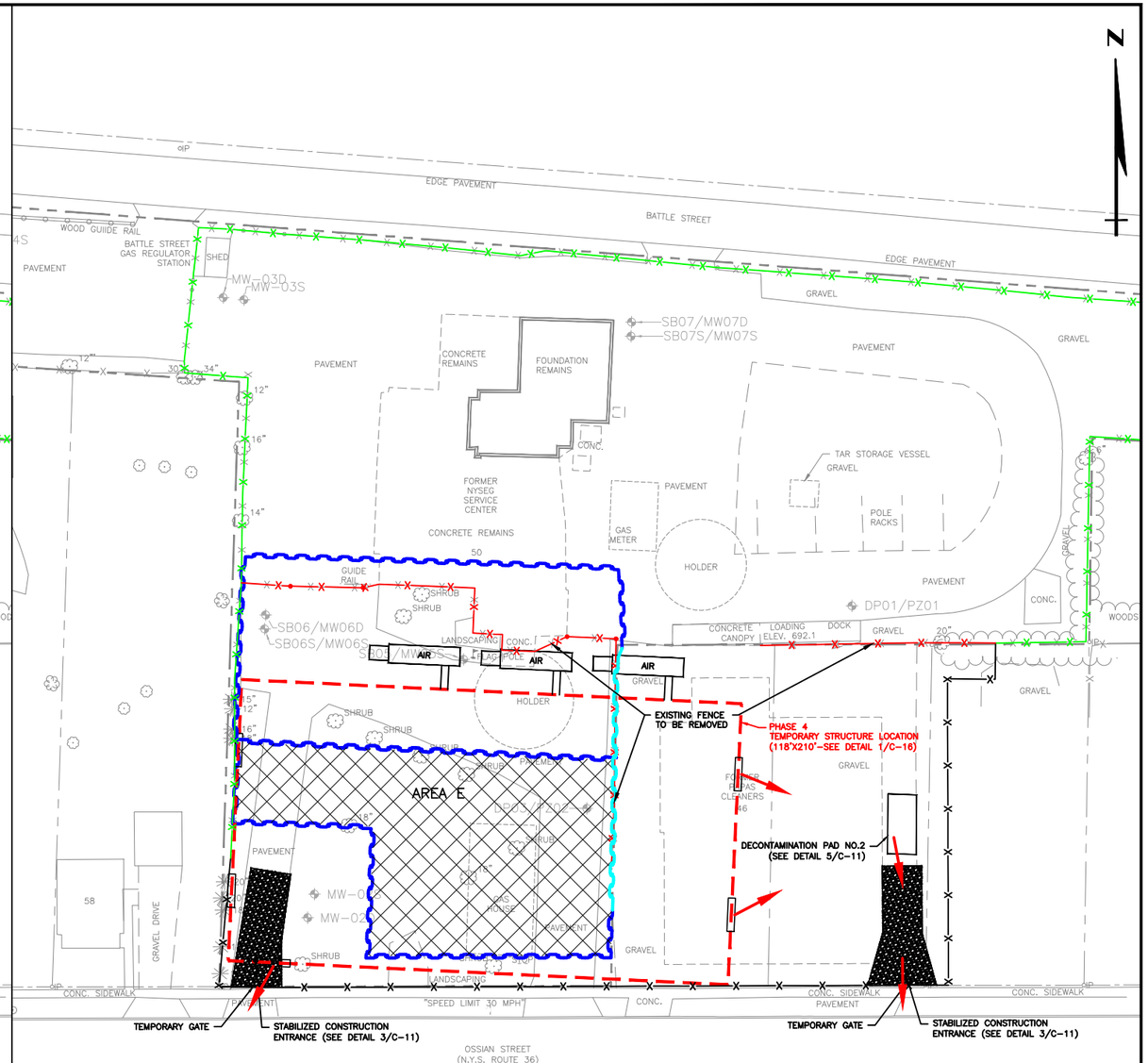
PROJECT NO: 08-717

FIGURE 1

y:\00ish\dansville\2013 dansville remedial design\production drawings\10_working drawings\Fig 1 - evacuation plan.dwg Last Saved By: Emaloney 4/1/2013 12:58 PM Plotted By: Elizabeth Maloney 4/1/2013 2:12 PM Scale: 1:2



PHASE 3 BUILDING PLAN VIEW



PHASE 4 BUILDING PLAN VIEW

LEGEND

- EXISTING STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- EXISTING FENCE LINE
- TEMPORARY FENCE WITH VISUAL BARRIER (SEE DETAIL 4/C-11)
- EXISTING FENCE WITH VISUAL BARRIER
- MONITORING WELL
- 14'x14' OVERHEAD DOOR
- EXISTING SHEETPILE WALL
- PROPOSED SHEETPILE WALL (APPOX. 1,525 LF)
- PROPOSED EXCAVATION FOOTPRINT (SEE NOTE 1)
- PHASE 3 TEMPORARY STRUCTURE (118'x210')
- PHASE 4 TEMPORARY STRUCTURE (118'x210')
- EVACUATION DIRECTIONAL ARROWS
- AIR HANDLING SYSTEM (SEE DETAIL 2/C-16)

NOTES:
1. DEWATERING SUMP PITS (SEE DETAIL 1/C-14) TO BE CONSTRUCTED IN EACH AREA.

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:

PRELIMINARY

ISSUE DATE:

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

0 30 60 FEET

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

SIGNATURE DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 04/01/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: CAZ	DATE: 04/01/13	
APPD: BTS	DATE: 04/01/13	
SCALE: AS SHOWN		

95% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

PHASES 3 AND 4
SITE EVACUATION ROUTES

PROJECT NO: 08-717

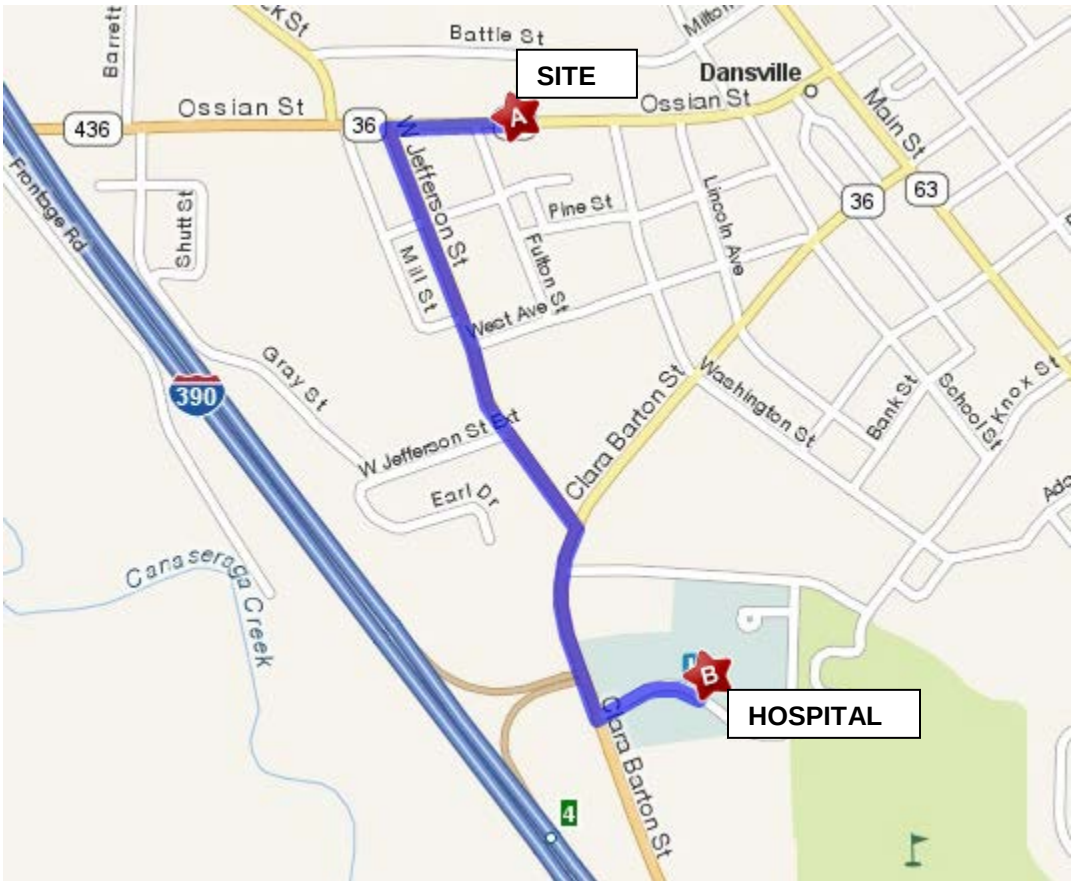
FIGURE 2

y:\00civil\dansville\2013 dansville remedial design\production drawings\10_working drawings\Fig 2 - evacuation plan.dwg Last Saved By: Emaloney 4/1/2013 12:58 PM Plotted By: Elizabeth Maloney 4/1/2013 2:11 PM Scale: 1:2

ATTACHMENT 2

HOSPITAL ROUTE MAP

HOSPITAL ROUTE MAP



Nicholas H. Noyes Memorial Hospital – (585) 335-6001
111 Clara Barton Street, Dansville, NY 14437

Start out going **west** on **Ossian St/RT-36** toward **Fulton St**. 0.1 mile
Turn **left** onto **W Jefferson St**. 0.4 mile
Turn **right** onto **Clara Barton St/RT-36**. 0.2 mile
Turn **left**. 0.1 mile
Turn left into hospital.

Driving distance is approximately 0.9 miles. Driving time is approximately 3 minutes.

APPENDIX E
COMMUNITY AIR MONITORING PLAN (CAMP) AND NOISE MONITORING

COMMUNITY AIR MONITORING PLAN (CAMP) AND NOISE MONITORING

FOR REMEDIAL ACTION AT THE DANSVILLE FORMER MGP SITE DANSVILLE, NEW YORK

Prepared for:

New York State Electric & Gas Corporation
Mr. John Ruspantini
Kirkwood Industrial Park
Binghamton, NY 13902

Prepared by:

Ish Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

MARCH 2013

TABLE OF CONTENTS

1.0 INTRODUCTION

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the perimeter of each designated work area when remedial 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 do not spread contamination off-site through the air. The proper implementation of the community air monitoring program is essential to the protection of public health.

This document also includes a noise monitoring plan as Section 5. The noise monitoring plan is intended to provide information to assess noise to potential off-site receptors.

2.0 PURPOSE

The purpose of this CAMP is to provide real-time monitoring for airborne volatile organic compounds (VOCs) and particulates at the perimeter of the work area during remedial activities to be carried out at the Dansville Former MGP site (Site), located at 50 Ossian Street, Dansville, New York. It should be noted that excavation and loading activities will be performed within a temporary fabric structure (TFS) equipped with air filtration, which along with the other suppression techniques discussed in the Odor Management Plan, will mitigate the potential for release of fugitive dust and organic vapors. Noise monitoring will also be performed along with air monitoring to provide information for noise mitigation measures if needed.

3.0 SCOPE

The chemicals of potential concern at the Site are VOCs (primarily benzene, toluene, ethylbenzene, and xylenes (BTEX)) and polycyclic aromatic hydrocarbon (PAH) compounds. VOCs will be monitored using a photoionization detector with a 10.6 eV electrodeless ultraviolet discharge lamp. PAHs are non-volatile and any airborne emissions would be associated with particulates. Particulates will be monitored using a particulate air monitor equipped with a micro-processor to measure and record real-time recordings of airborne particulate concentration in micrograms per cubic meter (mcg/m^3).

During the course of remedial activities, air monitoring will be conducted continuously at the perimeter of the work area as described herein.

The CAMP air monitoring program will be conducted with the following equipment (or equivalent):

- 4 - MiniRAE 2000 PGM-7600 photoionization detector (PID)/data logger
- 4 - DataRam DR-4000 portable particle sizing aerosol monitor/data logger

One additional set of backup equipment should also be available at the site to allow for maintenance and swap-out of in-use instruments.

The noise monitoring plan covers community ambient noise monitoring. Personnel noise monitoring is covered in the separate site-specific Health and Safety Plan.

4.0 AIR QUALITY MONITORING

Air quality monitoring will be performed for organic vapors and airborne particulates as outlined below.

4.1 VOC MONITORING RESPONSE LEVELS AND ACTIONS

Volatile organic compounds (VOCs) must be monitored at the perimeter of the work area (i.e., the exclusion zone) on a continuous basis. The field personnel will be prepared to monitor three locations at the edge of the exclusion zone (the northern potion of the Site close to Battelle Street, the eastern edge of the Site, and along the south edge of the site near residences along Ossian Street) in the event that there is little wind or the wind direction changes frequently. In addition, a separate upwind location will be monitored each day to establish local background concentrations for comparison with the two locations at the edge of the exclusion zone. The air monitoring technician will check each of these stations every 15-minutes during all intrusive fieldwork activities (See Figure 1). Monitoring instrumentation at each location will include a PID and a particulate air monitor as described in Section 3.0. The monitoring instruments will be calibrated at least daily. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area exceeds 5 parts per million (ppm) above background for a 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will 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 work area or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less-but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

15-minute readings will be recorded and be available for State (NYSDEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes also should be recorded.

4.2 PARTICULATE MONITORING, RESPONSE LEVELS, AND ACTIONS

Particulate concentrations will be monitored continuously at the perimeter of the work area during intrusive ground activities (test pits, excavations, etc).

The particulate monitoring will 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 will be visually assessed during all work activities.

- 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 level does not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind 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.

Readings will be recorded and be available for State (NYSDEC and NYSDOH) personnel to review.

4.3 REPORTING

A daily summary report of the CAMP monitoring data will be emailed to the following personnel for review:

New York State Electric & Gas (NYSEG)
John Ruspantini, Project Manager
18 Link Dr, PO Box 5224
Binghamton, NY 13902
607.762.8787
jjruspantini@nyseg.com

New York State Department Environmental Conservation (NYSDEC)
Mr. Anthony Karwiel
Central Office, 625 Broadway 11th Fl
Albany, NY 12333-7014
518.402.9662
alkarwie@gw.dec.state.ny.us

New York State Department of Health (NYSDOH)
Mr. Albert DeMarco
Bureau of Environmental Exposure Investigation
ESP, Corning Tower, Room 1787
Albany, NY 12237
518.402.7860
BEEI@health.state.ny.us

5.0 NOISE MONITORING PLAN

Noise will be monitored during construction activities at the perimeter of the construction site, periodically at specific work locations on-site and in the surrounding neighborhood if necessary. Perimeter noise monitors will be co-located with the perimeter air monitors as described above.

5.1 MONITORING

Noise measurements will be performed using the A-weighting network and the "slow" response of the sound level meter. Noise monitors will be Casella CEL-360 Noise dosimeters or equivalent placed in an environmental enclosure. The measurement microphone will be fitted with a windscreen. Noise monitors will be located approximately 5 feet above the ground. Noise

monitoring will not be performed during inclement weather i.e., downpours or when wind speeds are greater than 15 mph.

Noise levels will be continuously measured and recorded at each monitoring station during ongoing construction activities. Noise history measurements, such as Leq and Lmax noise measurements, will be recorded. Noise measurements data will be summarized i.e., tables, plotted graphically, etc. Construction activities observed during noise monitoring will also be noted. Noise measurements will be taken for 3 days before construction begins to establish a background.

A handheld sound level meter will be used to confirm noise monitor readings at the perimeter monitoring locations, to check worker noise levels, and also to check nearby residence street level noise. In addition, noise monitoring will be conducted on an as needed basis in response to community and/or client concerns with respect to noise levels. Sound level meter readings will be recorded in site logbooks and/or on daily noise log sheets.

5.2 ACTION LEVELS

The following three "action" noise threshold values will be used to assess the effectiveness of mitigation during construction activities at the Site:

- 75 dBA - "warning" noise threshold value. If this action level is exceeded during active work, then the cause will be investigated. Work itself would not necessarily be stopped.
- 80 dBA - "temporary halt" noise threshold value. If this action level is exceeded then work will be temporarily halted, if necessary, while the apparent cause is investigated and corrections made.
- 85 dBA - "stop work" noise level. If this action level is exceeded, then a review into the cause will immediately be investigated. Work would stop and the effectiveness of the implemented mitigation measures would be reviewed and additional mitigation measures implemented.

5.3 REPORTING

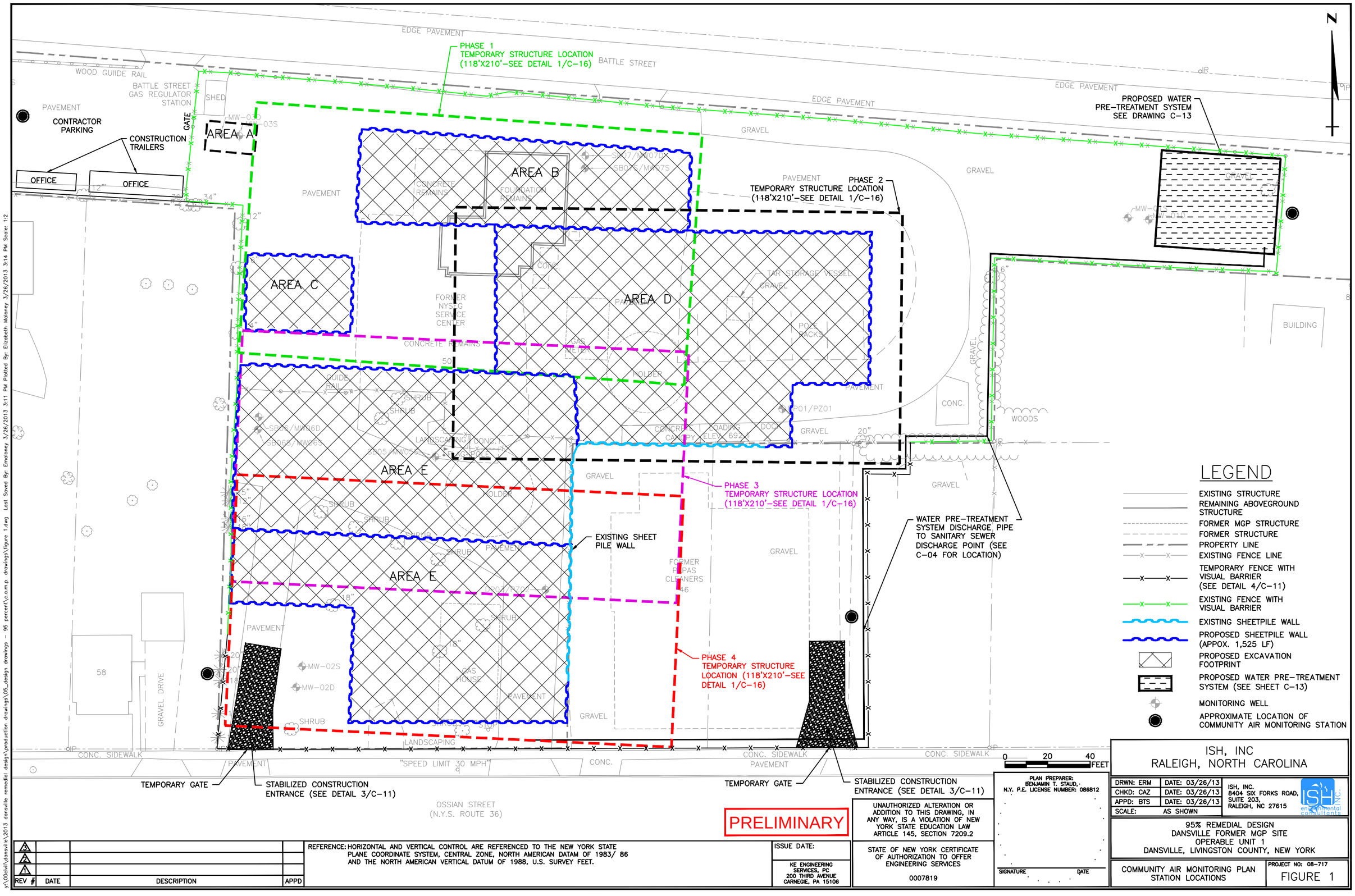
A daily summary report of the noise monitoring data will be emailed to the following personnel for review:

New York State Electric & Gas (NYSEG)
John Ruspantini, Project Manager
18 Link Dr, PO Box 5224
Binghamton, NY 13902
607.762.8787
jjruspantini@nyseg.com

New York State Department Environmental Conservation (NYSDEC)
Mr. Anthony Karwiel
Central Office, 625 Broadway 11th Fl
Albany, NY 12333-7014
518.402.9662
alkarwie@gw.dec.state.ny.us

New York State Department of Health (NYSDOH)
Mr. Albert DeMarco
Bureau of Environmental Exposure Investigation
ESP, Corning Tower, Room 1787
Albany, NY 12237
518.402.7860
BEEI@health.state.ny.us

FIGURE 1



LEGEND

- EXISTING STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- EXISTING FENCE LINE
- TEMPORARY FENCE WITH VISUAL BARRIER (SEE DETAIL 4/C–11)
- EXISTING FENCE WITH VISUAL BARRIER
- EXISTING SHEETPILE WALL
- PROPOSED SHEETPILE WALL (APPOX. 1,525 LF)
- PROPOSED EXCAVATION FOOTPRINT
- PROPOSED WATER PRE–TREATMENT SYSTEM (SEE SHEET C–13)
- MONITORING WELL
- APPROXIMATE LOCATION OF COMMUNITY AIR MONITORING STATION

PRELIMINARY

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE: HORIZONTAL AND VERTICAL CONTROL ARE REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATAM OF 1983/ 86 AND THE NORTH AMERICAN VERTICAL DATUM OF 1988, U.S. SURVEY FEET.

ISSUE DATE:

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

SIGNATURE DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 03/26/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: CAZ	DATE: 03/26/13	
APPD: BTS	DATE: 03/26/13	
SCALE:	AS SHOWN	

95% REMEDIAL DESIGN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

COMMUNITY AIR MONITORING PLAN
STATION LOCATIONS

PROJECT NO: 08–717

FIGURE 1

APPENDIX F
ODOR MANAGEMENT PLAN (OMP)

ODOR MANAGEMENT PLAN (OMP)

FOR REMEDIAL ACTION AT THE DANSVILLE FORMER MGP SITE DANSVILLE, NEW YORK

Prepared for:

New York State Electric & Gas Corporation
Mr. John Ruspantini
Kirkwood Industrial Park
Binghamton, NY 13902

Prepared by:

Ish Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

MARCH 2013

Table of Contents

1.0 INTRODUCTION

The purpose of this Odor Management Plan (OMP) is to provide actions to control odors during intrusive remediation activities at the Dansville Former Manufactured Gas Plant (MGP), Operable Unit 1 (Site) located at 50 Ossian Street, Dansville, New York. The remedial program will involve sheet pile installation, soil excavation and dewatering activities that may generate nuisance odors. NYSEG considers the control of odors to be a priority during activities to be implemented at the Site. As such, the excavation and loading of soils will be performed within a temporary fabric structure (TFS) equipped with an air handling system and carbon adsorbers to remove possible odors generated during Work activities. In addition, the temporary storage tank and weir tank used in the water pre-treatment system will utilize a vapor extraction and carbon adsorbers system to remove possible odors during processing groundwater generated during dewatering activities.

This plan is part of the remedial construction activities for the Site, and a companion document to the Community Air Monitoring Plan (CAMP) and the site-specific Health and Safety Plan (HASP). The CAMP requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of the designated remedial work area. The HASP specifies procedures that are to be used to protect site workers and the public during the remedial activities.

The OMP is intended to provide the representatives of NYDEC and NYSDOH, the Contractor, the Engineer, and the public with information summarizing typical odor control options, and to provide guidance for their implementation. A description of potential sources of odors and methods to be used for odor control is presented in the following sections.

1.1 POTENTIAL SOURCES OF ODORS

Generally, the materials encountered at former MGP sites are well-defined. They principally contain VOCs, polycyclic aromatic hydrocarbons (PAHs), and a number of inorganic constituents, including metal-complexed cyanide compounds, and metals. Constituents of MGP tar or petroleum products can produce distinctive odors when they are unearthed during intrusive subsurface activities. MGP materials can produce odors that are similar to mothballs, roofing tar, or asphalt driveway sealer.

2.0 ODOR MONITORING

The CAMP specifies continual monitoring of VOCs and particulates during intrusive subsurface field work. This OMP specifies the procedures and actions to be employed should VOCs and/or particulates be detected above the action levels specified in the CAMP, and to minimize nuisance odors during the field work.

The field remediation oversight personnel (Engineer) will record observations of odors generated during the implementation of the project. Odors will be recorded as weak, moderate, or strong, based on olfactory responses. When odors attributable to MGP material are noted in the work area, observations also will be made at the downwind limit of the NYSEG property, in order to assess the potential for off-site migration of odors. The downwind odor monitoring will be performed in conjunction with the VOC and particulate monitoring program described in the CAMP.

Upon detection of moderate or strong odors at the site perimeter site controls will be implemented, starting in the work area. The site controls described in the following sections will be used to assist with odor mitigation. The goal of the OMP is to minimize, and to prevent where practicable, the off-site migration of odors. Due to the relatively short distances between work areas at the site and potential receptors, a TFS will be utilized to control odors from disseminating off-Site. In addition, additional site controls will be implemented pro-actively when odors are detected in the breathing zone at the work area.

3.0 ODOR MITIGATION

If odor mitigation becomes necessary due to activities on-Site, site controls will be implemented, as described in this section. Based on the scope of the remedial activities planned, some form of odor mitigation will most likely be required for this effort.

3.1 SITE CONTROLS

Site controls are intended to limit the production of odors from on-Site activities and to minimize the off-Site migration of nuisance odors.

3.1.1 Primary Controls

Several primary odor controls will be implemented such as:

- The excavation and loading of soils will be performed primarily within a TFS. The TFS will be equipped with a carbon-based air filtration system (air handling system) and will

serve to mitigate the release of odors to the ambient air from impacted soils during excavation and loading.

- When odors are observed during excavation and soil loading activities, the overhead doors on the TFS will remain closed, except to allow for vehicles to enter and exit the TFS.
- Every effort will be made to minimize the amount of time that ambient air is exposed to odiferous material at the site. During excavation activities within the TFS, if required due to odor concerns, layers of cleaner soil or polyethylene sheeting/tarps may be used to cover these soils to prevent or minimize fugitive odors.
- Odiferous soil stockpiles will be kept within the TFS and, if required due to odor concerns, will be covered when they are not being manipulated, using temporary polyethylene sheeting/tarps or similar materials.
- Loaded trucks will be covered with non-porous covers prior to leaving the TFS.
- Meteorological conditions are also a factor in the generation and migration of odors. Some Site activities may be limited to times when specific meteorological conditions prevail, such as when winds are blowing away from a specific receptor.

3.1.2 Secondary Site Controls

If moderate or strong odors remain at the downwind boundary of the work zone after primary odor controls have been implemented, secondary controls will be used to control those odors. The Engineer will work through the applicable list of secondary controls until the perimeter odor issues are resolved. Final selection of controls will be dependent on field conditions encountered and the effectiveness and availability of the control technology.

Secondary controls may include the following:

- Agents that can be sprayed over impacted soil have been determined to be effective in controlling emissions. For this work, they will include BioSolve® and odor suppressant foam (e.g. Rusmar AC-600). These agents may be used where tarps cannot be effectively deployed over the source material such as during active excavation and stockpiling, or where tarps are ineffective in controlling odors:
  - **BioSolve®** is a biodegradable, water-based product that has the unique ability to encapsulate hydrocarbon VOC vapor. The product is mixed with water at a 3-5% concentration and can be applied with a wide variety of water application spray methods. BioSolve® emulsifies and encapsulates the hydrocarbon almost instantly,

and is not subject to breaches or drawdown (like some foam applications) that allow for re-volatilization.

  - **Odor Suppressant Foam** - Odor suppressant foam can provide immediate, localized control of odor emissions. The foam is made by the injection of air into a foam concentrate/water mixture using a Pneumatic Foam Unit (PFU). The foam is applied via a hose to cover source areas to a depth of 3 to 6 inches. Short-term foam (such as Rusmar AC-645) is recommended to control VOC and odor emissions from active excavations and stockpiles. It is shipped as a concentrate and diluted with water at the site. Under normal conditions and not exposed to direct sunlight this foam can last for between 12-17 hours. For longer-term odor suppression needs, such as over weekends, long-term foam (such as Rusmar AC-904, which lasts between 15-30 days) should be used.

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

3.2 RECORD KEEPING AND COMMUNICATION

Similar to readings recorded during the monitoring specified in the CAMP, odor monitoring results will be recorded in the field log book or other air monitoring forms. These records will be provided to the Engineer daily and will be available on-Site for State (NYSDEC and NYSDOH) personnel to review.

In the event that odors persist after these efforts, work will be temporarily discontinued until a mutually agreeable solution with NYSEG, NYSDEC, and NYSDOH staff can be determined and which will allow the work to be completed while minimizing the off-Site transport of nuisance odors.

APPENDIX G
VIBRATION MONITORING PLAN

VIBRATION MONITORING PLAN

FOR THE NYSEG DANSVILLE FORMER MGP SITE DURING REMEDIATION ACTIVITIES INCLUDING SHEET PILING AND EXCAVATION/BACKFILLING WORK

Prepared for:

New York State Electric & Gas Corporation
Mr. John Ruspantini
Kirkwood Industrial Park
Binghamton, NY 13902

Prepared by:

Ish Inc.
8404 Six Forks Road, Suite 203
Raleigh, NC 27615-3072

MARCH 2013

Background

A source (such as pile driving or blasting) can excite the adjacent ground, creating vibration waves that propagate (or move) through the various soil and rock strata potentially reaching the foundations of nearby buildings and then throughout the parts of the building structure. The effects of ground-borne vibration can include perceptible movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, such vibration can cause damage to buildings and other structures. Differences in these vibration outcomes is related to the magnitude of the vibration that propagates to nearby structures, as well as the strength of the construction of those structures. Vibrations of greater magnitude may cause building damage but vibrations at much lower levels may be felt by humans but be too low to cause building damage.

Evaluation criteria for determining vibration impacts due to construction activities include thresholds for (1) human perception, annoyance, and interference and (2) damage to fragile and historical buildings. Although no standardized vibration criteria for construction activities have been established, exceedences of certain vibration levels may typically cause community reactions.

The Peak Particle Velocity (PPV) is appropriate for evaluating impulsive vibration associated with such vibration sources as blasting or steel sheet pile driving, and the resulting stresses that potentially are damaging to buildings. PPV represents the maximum instantaneous positive or negative peak motion of a vibrating surface. The US Bureau of Mines (USBM) criteria and methodology is applicable to this measurement of vibration.

Excessive vibration levels from construction activities, although temporary in duration, may create a nuisance condition at nearby sensitive receptors. Ground vibrations from construction activities very rarely reach the levels that can damage structures, but can achieve the audible and perceptible ranges in buildings that are very close to the active work area (DOT-T-95-16; April, 1995). The types of construction activities that typically generate the greatest vibrations are blasting and impact pile driving.

Sheet Pile Installation & removal at Dansville site

The sheet pile driving at the Dansville site will be done with a vibratory hammer or a pile driving using an impact hammer. Annoyance from vibration often occurs when vibration levels exceed the thresholds of human perception. These criteria are an order of magnitude below the damage threshold for normal buildings and are well below vibration levels (0.50 PPV) at which damage might be expected to occur. In other words a person may be able to feel vibrations at levels that are much lower than levels that could cause damage. Vibration levels as low as in the range of 0.017 to 0.035 PPV (at the receptor location) may often be felt by humans and can be unsettling or annoying, but are well below levels that would result in physical damage.

It is important to note that the term "damage" when used in the context of acceptable levels of ground vibrations refers to threshold damage as defined by the US Bureau of Mines as "the occurrence of cosmetic damage; that is, the most superficial interior cracking of the type that develops in all homes independent of blasting." It also should be noted that the occurrence of PPV values greater than the USBM values (0.50 PPV) does not imply that cosmetic cracking will occur. Unless the initial monitoring indicates that cosmetic/hairline cracking occurs at PPV values lower than the USBM criteria, these criteria can be considered applicable to typical residential structures. For "fragile buildings" and "extremely fragile historic buildings," PPV values of 0.20 in/sec and 0.12 in/sec (at the building), respectively, have been suggested by the USBM.

Threshold for actions dues to vibration

The following two vibration "action level" threshold values have been used to assess the effectiveness of employed mitigation during pile driving at the Clifton Site of National Grid and the South Main Street site of RG&E with NYSDEC approval:

"Warning" when vibration threshold value of 0.2 inches per second PPV is exceeded. If this level is exceeded then the situation will be reviewed to identify the potential cause and any corrections that should be made.

"Stop work" if vibration threshold value of 0.5 inches per second PPV is exceeded. This threshold level is the U.S. Bureau of Mines vibration criteria to avoid possible cosmetic damage to structures with concrete foundations, timber framing. The potential causes of such vibration will be reviewed and possible mitigation methods investigated. Once the mitigation measures have been defined and implemented then the work will resume.

NYSEG Objectives for Vibration Monitoring at Dansville

- Collect data to evaluate and appropriately consider claims of significant structural property damage, if made. This will be accomplished by providing an objective seismologic data set obtained from continuous monitoring equipment.
- Reduce the potential for significant structural property damage by maintaining acceleration below set points developed based on site conditions and observations or in use by recognized authorities,
- Reduce minor property damage potential in real time by maintaining acceleration at a level below that which causes undesirable effects (e.g., alarms, rattling storefront inventory) as reported by the local residents.

The following two "action levels" be utilized for the Dansville Remediation project. These action levels also correspond to NYSDEC approved action levels for two other MGP site project in the New York state (i.e. Clifton site for National Grid and Dansville Site of NYSEG).

Action Levels for the Dansville Site

The objectives and other technical considerations have identified that the following two "action levels" based on vibration monitoring equipment response be used for the Site. The situation will also be reviewed if and when local residents register complaints that exceed some threshold (e.g., equipment failures such as computer hard drives; materials falling off shelves/cabinets; etc.) with NYSEG to develop measures to address those complaints to the extent possible.

"Warning" when vibration threshold value of 0.2 inches per second PPV is exceeded. If this level is exceeded then the situation will be reviewed to identify the potential cause and any corrections that should be made..

"**Stop work"** if vibration threshold value of 0.5 inches per second PPV is exceeded. This threshold level is the U.S. Bureau of Mines vibration criteria to avoid possible cosmetic damage to structures with concrete foundations, timber framing. The potential causes of such vibration will be reviewed and possible mitigation methods investigated. Once the mitigation measures have been defined and implemented then the work will resume.

Vibration Monitoring Plans for the Dansville Site

The vibration monitoring program for the Dansville site is therefore centered on the NYSEG objectives and the "action levels" by selecting and installing equipment for real time and continuous monitoring of PPV close to the potentially affected structures near the remediation work activities. Ish Inc. proposes to accomplish vibration monitoring and provide to NYSEG monitoring data that could be used, if needed, by NYSEG for making decisions and to address potential property damage claims to the nearby structures.

Install, and collect PPV monitoring data utilizing Blastmate equipment with remote monitoring.

Ish Inc. proposes to install at one location the Blastmate equipment and continuously monitor the PPV values on a 24/7 basis via remote sensing and processing. The equipment will be installed on the southwest area of the NYSEG property where the closest home is located. Please also see the attached pdf file containing information on the Blastmate equipment. Ish Inc. proposes to rent the equipment from a New York or New Jersey supplier who will also install it and provide us with the technical support as well as give us internet access so that the monitoring data can be viewed by NYSEG, construction contractor and its oversight engineer on real time basis. Monthly rental charges of the equipment cover the installation and collecting the seismic data on a wireless system. The equipment supplier provides the database to the user on a real time basis. By having access in real time allows NYSEG to achieve the third NYSEG vibration monitoring objective. The oversight engineer's constant on-site presence will allow the most rapid possible intervention in the event that thresholds are exceeded or complaints of equipment or inventory damage or other negative effects are reported which need to be addressed immediately.

To the extent time allows, the Blastmate equipment is to be installed two weeks prior to initiation of site mobilization work for obtaining background seismic measurements for the one location so that NYSEG can establish the ambient (background) conditions of vibration occurring at the site.

Analyze the collected data, advice NYSEG to take actions if needed; prepare and submit the summary reports to NYSEG

A geotechnical/structural engineer (From oversight consultant) will review and summarize on a one hour a day basis the collected seismic data and develop recommendations for continuing vibration related remediation activities. Once the entire monitoring program has been completed, the oversight consultant will prepare a brief report containing daily data summaries and evaluation of the seismic conditions that were experienced before the construction project and during the construction work performed at the site. This report, with all of the monitoring data and photographs will be submitted in electronic format to NYSEG within two months after the project has been completed.

ATTACHMENT

Blastmate III™

Full-Featured, Advanced Vibration and Overpressure Monitor

Range of Applications:

- Blast-monitoring for compliance
- Near-field blast analysis
- Pile driving
- Construction activity
- Demolition activity
- Heavy transportation
- Bridge monitoring
- Structural analysis
- Underwater blast monitoring
- 4 or 8 channel data aquisition
- Remote monitoring - Auto Call Home™

Consultants, engineers and contractors the world over recognize the **Instantel® Blastmate III™** vibration and overpressure monitor as the most versatile and most reliable full featured monitor available. It provides all of the industry-leading features of the **Instantel Minimate Plus™** monitor, conveniently packaged with a full keyboard and a high-resolution printer. This allows you to setup, add notes and print complete event reports in the field, without a computer.

Versatile

With standard features like the **Instantel Histogram Combo™** monitoring mode, zero dead-time between events, and flexible sample rates up to 65,536 S/s, the **Blastmate III** system provides you with control and confidence to monitor reliably in any situation. For added versatility, you have the option to add 4 more channels and extra memory, providing two complete standard monitors in a single package.

For more demanding monitoring applications, the **Instantel Blastware® Advanced Module** software provides the capability to monitor a broad selection of vibration and overpressure sensors, as well as sensors for related structural and environmental measurements. Monitor vibration, ambient environmental conditions, and the movement of structural cracks, all at the same time, all using the same **Blastmate III** monitor.

Easy to use

The features and versatility of the **Blastmate III** monitor set it apart, but the fact that it is also easy to use makes it truly revolutionary. The dedicated single use function keys, backlit LCD and simple menu-driven operation make setup and operation quick and easy, even for inexperienced personnel.

Tough

The **Blastmate III** monitor has been built to survive, with a fully sealed top panel, non-corrosive industrial grade connectors and sealed electronics, all packed in a rugged, water-resistant case.

Blastmate III - Reliability and versatility for any monitoring application.

Key Features

- Fast high-resolution thermal printer for event reports in the field without the need for a computer.
- Full keyboard simplifies entry of job-specific notes and information.
- Dedicated function keys and intuitive menu-driven operation enable quick and easy setup.
- **Histogram Combo** mode allows capture of full waveform records while recording in histogram mode.
- Sample rates from 1,024 to 16,384 S/s per channel - up to 65,536 S/s available on a single channel.
- Available 8-channel option allows for 2 standard triaxial geophones and 2 microphones to be used on a single **Blastmate III** monitor.
- Continuous monitoring means zero dead time, even while the unit is processing.
- Any channel can be matched to a wide variety of sensors - geophones, accelerometers, or hydrophones.

714B0053 Rev 07 – Prodcuct Specifications are Subject to Change

Instantel

Blastmate III™

General Specifications	Blastmate III
Channels	Microphone and Triaxial Geophone or 4 independent user-configurable channels (two Microphones and two Triaxial Geophones or 8 independent channels with optional 8-channel upgrade)
Vibration Monitoring (with Standard Triaxial Geophone)	
Range	Up to 254 mm/s (10 in/s)
Resolution	0.127 mm/s (0.005 in/s) or 0.0159 mm/s (0.000625 in/s) with built-in preamp
Accuracy (ISEE / DIN)	+/- 5% or 0.5 mm/s (0.02 in/s), whichever is larger, between 4 and 125 Hz / DIN 45669-1 standard
Transducer Density	2.13 g/cc (133 lbs/ft^3)
Frequency Range (ISEE / DIN)	2 to 250 Hz, within zero to -3 dB of an ideal flat response / 1 to 315 Hz
Maximum Cable Length (ISEE / DIN)	75 m (250 ft) / 1,000 m (3,280 ft)
Air Overpressure Monitoring	
Weighting Scales	Linear or A-weight
Linear Range	88 to 148 dB (500 Pa (0.072 PSI) Peak)
Linear Resolution	0.25 Pa (0.0000363 PSI)
Linear Accuracy	+/- 10% or +/- 1 dB, whichever is larger, between 4 and 125 Hz
Linear Frequency Response	2 to 250 Hz between -3 dB roll off points
A-weight Range	50 to 110 dBA
A-weight Resolution	0.1 dBA

Waveform Recording

Record Modes	Manual, Single-shot, Continuous
Seismic Trigger	0.125 to 254 mm/s (0.005 to 10 in/s)
Acoustic Triggers	
Linear	100 to 148 dB
A-weight	55 to 110 dBA
Sample Rate	1,024 to 16,384 S/s per channel (independent of record time), up to 65,536 S/s in single-channel mode with advanced software (maximum 8,192 S/s per channel for 8 channels)
Record Stop Mode	Fixed record time, **Instantel® AutoRecord™** record stop mode
Record Time	1 to 100 seconds (programmable in one-second steps) or 500 seconds plus 0.25 seconds pre-trigger
AutoRecord Time	Auto window programmable from 1 to 9 seconds, plus a 0.25 second pre-trigger. Event is recorded until activity remains below trigger level for duration of auto window, or until available memory is filled.
Cycle Time	Recording uninterrupted by event processing - No dead time
Storage Capacity	
Full Waveform Events	300 one-second events at 1,024 S/s sample rate (1,500 event capacity with optional memory upgrade)
Event Summaries	1,750 (8,750 event capacity with optional memory upgrade)

Histogram Recording

Record Modes	Histogram and **Instantel Histogram Combo™** (monitor captures triggered waveforms while recording in Histogram mode)
Recording Interval	2, 5 or 15 seconds; 1, 5 or 15 minutes
Storage Capacity	46,656 intervals - 3 days at 5-second intervals or 102 days at 15 minute intervals (with memory upgrade - 15 days at 5-second intervals or 540 days at 15 minute intervals)

Physical Specifications

Dimensions	269 x 355 x 165 mm (10.6 x 14.0 x 6.5 in)
Weight	6.4 kg (14 lbs)
Battery	Rechargeable 6 V sealed gel cell - capacity for 30 days of continuous monitoring
User Interface	63 domed tactile keys including full keyboard and dedicated keys for common functions
Display	4-line x 20 character, high contrast, backlit LCD with online help
Printer	High resolution thermal plotter
PC Interface	RS-232
Auxillary Inputs and Outputs	External Trigger, Remote Alarm, coordinate download from GPS
Environmental	
Printer/LCD Operating Temperature	-10 to 50^{0}C (14 to 122^{0}F)
Electronics Operating Temperature	-20 to 60^{0}C (-4 to 140^{0}F)
Remote Communications	Compatible with Telephone, GSM, Cellular, RF, Satellite, Short-haul modems, and Ethernet® device servers. Automatically transfers events when they occur through **Instantel Auto Call Home™** feature.
Additional Features	Monitor start/stop timer

Corporate Office:
309 Legget Drive,
Ottawa, Ontario K2K 3A3
Canada

US Office:
808 Commerce Park Drive,
Ogdensburg, New York 13669
USA

Toll Free: (800) 267 9111
Telephone: (613) 592 4642
Facsimile: (613) 592 4296
Email: sales@instantel.com

714B0053 Rev 07 – Prodcuct Specifications are Subject to Change

Instantel

The World's Most Trusted Vibration Monitors

APPENDIX H
HEALTH & SAFETY PLAN (HASP)

SITE SPECIFIC HEALTH AND SAFETY PLAN

REMEDIAL ACTION
FORMER MGP SITE
DANSVILLE, NEW YORK

Prepared for:

New York State Electric & Gas Corporation
Mr. John Ruspantini
Kirkwood Industrial Park
Binghamton, NY 13902

Prepared by:

Ish Inc. and Key Environmental, Inc.

March 27, 2013

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

REVISIONS/ADDENDA TO HEALTH AND SAFETY PLAN

Revision	Date	Issued By	Revisions Made

1.0 INTRODUCTION

This Health and Safety Plan (HASP) describes Site specific procedures to be implemented by the Ish Inc. Team personnel for activities associated with the remedial action to be conducted at New York State Electric & Gas Corporation, Dansville former manufactured gas plant (MGP) site (Site) located at 50 Ossian Road in Dansville, New York. All work must be performed in accordance with applicable federal, state, and local regulations, including, but not limited to:

- U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) - 29 Code of Federal Regulations (CFR) 1910.120, "Hazardous Waste Operations and Emergency Response"; and,

- OSHA - 29 CFR 1926, "Safety and Health Regulations for Construction."

This HASP should not be used for activities other than those outlined in the scope of work unless a task-specific hazard and exposure assessment is performed and any additional protective measures incorporated into the HASP. This HASP is intended for use by the Ish Inc. Team and may not include all contractor activities. Contractors or subcontractors performing activities not included in this HASP must prepare their own HASP in accordance with OSHA 29 CFR 1910.120.

The health and safety practices, procedures, and personal protective equipment (PPE) requirements established within this HASP are based on hazards known to be present at this Site. All protective measures employed must be commensurate with known hazards associated with specific work activities and job tasks and must be modified if other hazards are identified during the course of the work.

2.0 PROGRAM ORGANIZATION AND RESPONSIBILITIES

For the Owner's Representative personnel providing construction oversight, the representative on-Site is responsible for his/her own safety, ensuring that they have the proper PPE and other safety equipment, and that they have up-to-date training and medical surveillance. The Owner's Representative must coordinate his/her activities with the Contractor performing the Work and abide by any applicable site rules set forth by the Contractor.

- Owner's Representative - The Owner's Representative is responsible for ensuring that their activities are conducted in accordance with this HASP. The Owner's Representative has the authority to suspend field activities if employees are in danger of injury or exposure to harmful agents. The Owner's Representative responsibilities include:

    - Coordinating the development of a Site-specific HASP for their phases of the project;

    - Ensuring that the appropriate health and safety equipment and PPE are available for Owner's Representative personnel;

    - Ensuring that personnel have received the appropriate training before they engage in activities that are potentially hazardous;

- On-Site Owner's Representative - The On-Site Owner's Representative is responsible for ensuring that Site activities are conducted in accordance with the HASP. The On-Site Owner's Representative responsibilities include:

    - Ensuring that personnel and visitors comply with the requirements of this HASP; and,

    - Notifying the Owner or his designee of any changes in work conditions or tasks which may require changes to the HASP.

- The On-Site Owner's Representative also acts as the Site Health and Safety Officer (SHSO) for his/her work and for the Owner and Owner Visitors - The SHSO's duties include:

    - Coordinating safety meetings and daily safety briefings, as necessary;

- Managing health and safety equipment for Owner and Owner's Representatives, including instruments, respirators, gloves, suits, and other PPE, used in field activities;

- Monitoring conditions during field activities to assure compliance with the HASP;

- Monitoring conditions during field activities to determine if more stringent procedures or a higher level of PPE should be implemented;

- Maintaining a log to record site conditions and activities and other pertinent health and safety data;

- Overseeing the arrangement and execution of personnel and equipment decontamination;

- Suspending field activities if necessary, and resume activities when appropriate;

- Controlling Owner visitor access to hazardous areas

- Becoming familiar with the HASP;

- Attending training sessions to review the HASP and other safety/health information;

- Being alert to previously identified and new hazards;

- Reporting unidentified hazards to the SHSO;

- Offering suggestions, ideas, or recommendations that may improve Site safety;

- Complying with the contents of the HASP; and,

- Conducting themselves in a manner that is orderly and appropriate for the Site.

3.0 SITE CHARACTERIZATION AND HAZARD ASSESSMENT

3.1 SITE DESCRIPTION AND BACKGROUND

The Site is located at 50 Ossian Road in Dansville, New York. A Site location map is presented as **Figure 1** and a Site layout is presented as **Figure 2**. The Dansville former MGP site is located at Ossian Road on a T-shaped piece of land bordered by Battle Street to the north and Ossian Road (N.Y.S. Route 36) to the south. The site can be accessed from both Ossian Road and Battle Street. The topography of the site is generally flat, and much of the site is paved or covered with crushed gravel. The Dansville former MGP Site is situated in a mostly residential, densely-populated area, which also has a few small businesses.

The site operated as a gas manufacturing plant between 1861 and 1930. The gas manufacturing process and the feed fuels were changed several times during the operational life of the plant. Oil, coal and coke were used at various times during the plant's operation as feed fuels. Blue gas and later, carbureted water gas were manufactured at the plant. Gas production generally increased during the operating life of the plant. The site is currently vacant. All of the above ground former MGP structures have been removed. Portions of the former service center structure were demolished in 2012 and only a small section of the raised foundation remains. All utilities connected to the center were disconnected; however, gas lines, electrical power lines, telephone lines, and water and sewer pipes are still located at the site.

Detailed site information is presented in the SRI Final Report completed by Ish Inc. in January 2006, Pre-Design Investigation Report for Operable Unit 1 completed by Ish Inc. in January June 2009, and Results from Supplemental Pre-Design Soil Boring Investigation completed by Ish Inc. in January 2013.

3.2 SCOPE OF WORK

The scope of work for remedial activities includes:

- Mobilization of all materials, equipment, labor and completion of preconstruction activities;
- Demolition and landfill disposal of existing features and Site preparation;
- Installation and removal of temporary sheet pile walls for excavation support;
- Installation of a pre-engineered fabric structure and associated air handling system;
- Excavation and transportation of soils;
- Backfill operations;
- Installation, operation, and maintenance of a water pre-treatment system;
- Site Restoration; and,
- Demobilization of all materials, equipment, and labor

Additional detail is found in the Remedial Construction Summary of Work prepared for the Site.

3.3 CHEMICAL HAZARDS

The most likely potential health and physical hazards due to chemicals while performing work activities at the Site include the potential exposure to volatile organic compounds (VOCs) such as benzene, ethyl benzene, toluene and xylene (BTEX) and semi-volatile organic compounds (SVOCs), mainly coal tar constituents from former manufactured gas plant (MGP) materials.

3.3.1 VOCs

Benzene, ethyl benzene, toluene, and xylene (BTEX) are the main VOCs that may be found at former MGP sites. Work activities may expose soils containing BTEX and release these volatile compounds into the air.

VOCs may pose an inhalation hazard as well as a skin and eye hazard. BTEX have similar health effects which are briefly summarized here. More information concerning health effects of specific chemicals can be found in the Material Safety Data Sheets (MSDSs) in **Attachment A**. Acute or immediate effects of overexposure to BTEX (and other VOCs) include eye, nose, and

respiratory tract irritation, headache, dizziness, drowsiness, shortness of breath, intoxication, nausea, vomiting, abdominal pain, and dermatitis. Severe overexposure may lead to unconsciousness and convulsions, coma, and death. Other signs of overexposure may include heartbeat irregularities, bronchitis, pulmonary edema, muscle spasms, incoordination, and confusion.

Effects of frequent or long-term overexposure include headache, nervousness, lack of hunger, pale skin, rash, and sleeplessness. Chronic inhalation of many BTEX may result in lung, liver, and kidney damage. Long-term overexposure to benzene can cause blood disorders, such as leukemia and aplastic anemia.

3.3.2 SVOCs

MGP sites may contain SVOCs as a component of coal tars and other materials used or produced at these sites. Coal Tar is a complex mixture of compounds including polycyclic aromatic hydrocarbons (PAHs), naphthalene, and other SVOCs. The main route of exposure for coal tar compounds and other SVOCs is skin/eye contact and absorption; a secondary route of exposure is inhalation of dust and vapors. SVOCs and coal tar compounds pose only a slight inhalation hazard because they are not very volatile, that is, they are unlikely to vaporize. However, PAHs can be a potential constituent of airborne dust and pose an inhalation hazard. Because the soils and sediments are likely to be wet or moist there is little potential for overexposure to airborne coal tar constituents. The more likely potential for exposure would be skin contact with impacted soils or sediments.

Inhalation of coal tar constituents and PAHS may irritate the respiratory tract. Eye contact may cause eye irritation, burning and inflammation. Immediate or acute effects from short-term skin exposure to coal tar compounds include irritation; burning, itching, redness, skin color changes, and rashes from skin contact with coal tar compounds. Some PAHs can cause cancer after prolonged exposure. However, prolonged overexposure to PAHs is not expected for this project due to the short duration of anticipated project work. OSHA has not established exposure limits for coal tar or for most individual PAHs. Coal tar pitch volatiles is a category that contains several compounds, most of which are PAHs, so coal tar pitch volatiles is used as a surrogate

measure for coal tar/PAHs.

Immediate or acute effects from short-term exposure to coal tar compounds include irritation; burning, itching, redness, skin color changes, and rashes from skin contact with coal tar compounds. Photosensitization, a tendency to sunburn more easily or a worsening of rash with exposure to sunlight may occur with skin contact to coal tar compounds. Inhalation of coal tar compounds, or dust which contains these materials, may irritate the respiratory tract.

Eye contact may cause eye irritation, burning and inflammation. Ingestion may result in nausea, vomiting, abdominal pain, rapid pulse, respiratory distress and shock. Absorption into the body systems by any route may cause trouble breathing, dizziness, headache, continuous or drawn out pulse, nausea, vomiting, salivation, and convulsions. Chronic or long-term effects of overexposure to coal tar compounds may cause dermatitis, and cancer of the skin, kidneys, and respiratory tract.

Coal tar is a photosensitizer. If dust from site activities contacts the skin minor burning and irritation may result, especially with exposure to sunlight. Wash any exposed skin, apply sunscreen (at least SPF 30), and cover the area with clothing, if possible. Skin contact and exposure to coal tar during Site activities can be eliminated by the use of gloves and skin protection.

3.3.3 Products Used On-Site

The Contractor and subcontractors must obtain, and keep on file; MSDSs for all products used on-site that are considered hazardous chemicals according to OSHA. All Site personnel must have access to these MSDSs.

3.3.4 Work Task Hazard Assessment

Table 1 presents exposure limits and other properties of chemicals that may be present at this Site. More information concerning the health effects of Site chemicals can be found in the MSDSs in **Attachment A**. The overall chemical health hazard assessment for this Site is low to medium depending on the activity. Potential exposure to Site constituents will be reduced or eliminated by following the work practices and using the personal protective equipment (PPE) designated in this HASP.

3.4 PHYSICAL HAZARDS

The primary physical hazards on the Site besides those associated with operation of heavy equipment, construction traffic; physical overexertion during manual labor activities; and slip, trip, fall hazards. Safe work practices for potential hazards are outlined in Section 3.6 and Section 5.0.

3.5 CONFINED SPACES

Ish Inc. Team personnel are not permitted to enter confined spaces. If contractors must enter a confined space then OSHA confined space entry procedures must be followed, including atmospheric testing of the space, employee training, and completion of a confined space entry permit before entry. A minimum of two trained employees must be present for any entry; one entrant and one stand-by person. Entering an excavation more than 4 feet deep is considered confined space entry.

3.6 HEAT STRESS

A general physical hazard associated with outdoor work during warm weather is heat stress. Heat stress can also occur while performing strenuous tasks when wearing heavy winter clothing or while wearing full cover personal protective equipment. There are three heat disorders that are of particular concern - heat cramps, heat exhaustion, and heat stroke.

Heat cramps occur due to the depletion of body salts from sweating. *Heat exhaustion* results from significant loss of body salts and fluid. Its symptoms may include weakness or fatigue, nausea, headaches, and in more serious cases, clammy, moist skin with pale or flushed complexion. *Heat stroke* is the most serious and occurs when the body's system to regulate internal temperature fails.

Symptoms are hot, dry skin; mental confusion or delirium; convulsions or unconsciousness; and body temperature of 105 degrees Fahrenheit (EF) or higher. In this situation, medical attention is needed immediately; heat stroke may be fatal.

To prevent heat disorders, attention must be paid to such variables as temperature, humidity, air movement, and the physical condition of employees. In addition, breaks must be taken as needed to let the body cool. Liquids designed to replace lost body salts must be provided regularly.

3.6.1 Heat Stress Prevention

Heat stress can occur even when temperatures are considered moderate, such as in spring or fall. The following recommendations should be followed to help reduce heat stress:

- Personnel must drink plenty of liquids to replace body fluids lost to sweating. To prevent dehydration, personnel should be encouraged to drink generous amounts of water even if not thirsty. Heat-related problems can happen before the sensation of thirst occurs.
- Cool drinking water, 50°F to 60°F, should be made available to all personnel.
- Only water, or occasionally, electrolyte-balanced drinks, such as Gatorade®, should be used to replace lost fluids due to sweating.
- Beverages containing caffeine, such as colas, coffee, or tea, should be limited or not used because of their diuretic (water depleting) effects.
- Salt tablets should not be used unless prescribed by a physician.
- Self-monitoring of physical condition and buddy monitoring will be essential in order to prevent any heat stress illness. All personnel should be aware of heat stress symptoms and the proper precautions to take if heat stress is observed.

- Rest periods in shaded areas must be provided for all personnel. This means at least 15 minutes in the morning and in the afternoon and at least 30 minutes for lunch. A more frequent rest schedule may be implemented by the SHSO depending on weather conditions and the type of work performed.

3.7 COLD STRESS

Cold weather conditions may result in cold stress ranging from mild frostbite to severe hypothermia. Cold injury and impaired ability to work are dangers at low temperatures and when the wind chill factor is low. Cold stress normally occurs in temperatures at or below freezing, or under certain circumstances, at temperatures of 40 °F. Extreme cold for a short period of time may cause severe injury to exposed body surfaces or result in profound generalized cooling, causing death. Areas of the body that have high surface area to volume ratio, such as fingers, toes and ears, are the most susceptible. Two factors influence the development of a cold weather injury: ambient temperature and wind speed. For instance, 10 °F with a wind of 15 miles per hour is equivalent in chilling effect to still air at –7 °F. A wind chill chart is presented on the following page.

It does not have to be extremely cold for systemic hypothermia to occur. *Hypothermia* may occur at outdoor temperatures approaching 50 °F. Systemic hypothermia occurs when the body core temperature decreases. Symptoms begin with shivering, apathy, loss of coordination, followed by lethargy and coma; if allowed to continue, hypothermia may result in death. Get the victim out of the cold and into dry clothing. Warm up his or her body slowly. Give nothing to eat or drink until the victim is fully conscious. Warm fluids, but no stimulants such as tea, coffee, alcohol or tobacco should be given. Get medical attention immediately.

Frostnip, or incipient frostbite, usually involves the ears, nose, chin, cheeks, and fingertips and toe tips. It occurs during high wind, low temperature, or both. The skin suddenly blanches (becomes white). Frostnip is painless and can be reversed without tissue damage by warming the affected area by using warm water. The area should not be rubbed.

Superficial frostbite is a more severe local cold injury. This involves the skin and superficial tissue just beneath it. The skin becomes white, waxy, and firm; the tissue beneath it remains

soft. Affected personnel should be taken out of the cold and the affected area slowly and carefully rewarmed. Again, the area should not be rubbed. Stinging and burning may follow warming and superficial blisters may occur.

Deep frostbite involves freezing not only of skin and subcutaneous tissue but even muscle and bone. The emergency treatment for deep frostbite is immediate warming. Affected persons should be kept dry, provided with external warming, and the frostbitten part covered by a dressing while being transported promptly to the nearest emergency department. Warm fluids, but no stimulants such as tea, coffee, alcohol or tobacco should be given to frostbite or hypothermia victims.

3.7.1 Cold Stress Prevention

To prevent or minimize the effects of cold stress, the following work practices should be followed:

- Use dry, insulated and/or layered work clothing, warm gloves, hard hat liners, and boots. Combine winter gear with chemical resistant personal protective equipment and waterproof gear to provide the best protection for the given site task and weather conditions.
- Provide rest breaks in warm areas as necessary.
- Use the following wind chill chart to estimate the effects of wind and temperature on the body. Be especially careful to note when frostbite is a potential hazard.

WIND CHILL CHART

Wind (mph) \ Temperature (ºF)	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Calm																		
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98
Frostbite Times							30 min.		10 min.		5 min.							

Wind Chill (ºF) = $35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$

Where T = Air Temperature (ºF), V = Wind Speed (mph)

From National Oceanographic and Aeronautics Administration and the National Weather Service, 2002

3.8 BIOLOGICAL HAZARDS

Biological hazards present at the Site may include poisonous plants, insects, and animals. Poison ivy and poison oak may be present. Contact with the leaves, vine, roots, or sap causes a skin rash on many people. All workers must be familiar with the appearance of poison ivy (three leaves) and wear impervious protective clothing as necessary to prevent contact with poison ivy.

Ticks may be present throughout the Site on brush, grass, and weeds. Some ticks carry disease, such as Lyme disease or Rocky Mountain spotted fever. Wear protective clothing or secure pant legs to lower leg or boot and apply bug repellent to this area. Frequently assist each other in inspecting for ticks. If a tick is found attached to the skin, do not attempt to pick the tick off the skin with fingernails or scrape with a credit card, etc. Carefully remove the tick with tweezers taking care that all parts are removed. Thoroughly scrub the area with soap and water. Save the tick in a small jar or plastic bag and take it to a doctor or health department for identification. If a red circle or rash forms in the area of the tick bite or if flu-like symptoms appear in a few days or weeks consult a doctor for treatment.

Avoid unnecessary contact with animals. Some animals may carry disease or poison or may cause injury by biting. Snakes may also be present on the Site. If bitten, get medical help immediately.

4.0 MEDICAL SURVEILLANCE

4.1 PRE-ASSIGNMENT SCREENING

Employees who perform the work tasks outlined in this HASP must have a current medical screening and approval for work at hazardous waste sites in accordance with 29 CFR 1910.120(f) and the company medical screening policies and procedures. This screening includes:

- Medical history and occupational history;
- Physical examination;
- Determination of fitness to work wearing protective equipment;
- Baseline laboratory studies; and,
- Medical evaluation to determine employee's ability to wear a respirator (for those employees who may wear a respirator).

No additional chemical-specific or regulation-specific medical surveillance is required for activities covered by this HASP.

Employees engaged in work with potential exposure to hazardous materials undergo a periodic update of medical and occupational history and a periodic physical examination equivalent to the pre-employment exam.

4.2 SUBCONTRACTORS

Subcontractors who will perform work at this Site where there is a potential for contact with Site constituents are required to follow the medical surveillance requirements of 29 CFR 1910.120 and a medical surveillance program. Subcontractors who perform work where there is no potential for exposure to Site constituents, are not required to follow the medical surveillance requirements of 29 CFR 1910.120.

4.3 ON-SITE

If a member of the field team believes they have been exposed to a hazardous chemical and/or shows symptoms of overexposure, he/she must inform the SHSO. Medical examinations are

also available to any employee that has developed, or believes he has developed, signs or symptoms indicating possible overexposure to hazardous substances or health hazards, or if the employee has been injured or exposed above the PEL or published exposure levels in an emergency situation.

At least one person on the Site should be trained in first aid and cardio-pulmonary resuscitation (CPR).

5.0 WORK PRACTICES AND SITE CONTROL

5.1 SAFE WORK PRACTICES

5.1.1 Routine Safe Work Practices

Proper personal hygiene and the buddy system are integral parts of safe work practices:

- All Site activities that involve hazards and/or the potential for contact with hazardous materials should be performed by a work team of no fewer than two people.
- Hygienic practices consistent with work hazards are necessary. Eating and food preparation will be prohibited in any area other than those designated and properly protected. No food or tobacco products will be permitted in work areas. Employees who handle potentially contaminated materials or articles will wash with soap or mild detergent and water before eating or using the rest room.

5.1.2 Work Restrictions

All outdoor work at the Site must be conducted during daylight hours unless adequate lighting is provided. Outdoor work must cease immediately upon the signs of impending thunderstorms and lightning or other severe weather, as determined by the SHSO.

5.1.3 Underground and Overhead Utilities

Existing water, gas, electric, and sanitary sewer services must be located and properly terminated before pile driving, excavation or other underground work.

Underground utilities and pipelines can present special hazards such as electrocution, sudden release of pressure (gas or liquid), and explosion and fire. Underground installations such as sewer, fuel, natural gas, electrical, water, and other lines as well as underground tanks must be identified and marked before and digging, drilling or excavation. Obtain facility information such as drawings, etc. as to the location of underground utilities, tanks, etc. Contact Dig Safely New York at (800) 962-7962 or 811 at least three full working days (72 hours), but not more than ten days, before the planned start of underground work.

Be prepared to give the one-call agency the name and address of the site; the nearest cross street; and the date of the intended excavation or drilling. The one-call agency will provide a reference number for the site - mark this down for future referral. There should also be an associated expiration date for the work, make sure this is recorded also and keep it available during field work. Inquire as to which utilities and/or companies will be contacted by the agency. It is the responsibility of the company/person doing the underground work to notify any utilities and/or companies that the one-call agency does not.

Utility location agencies generally do not contact water and sewer departments that are often part of the local public works department. These must be contacted directly by the company/person performing the underground work. Ask the utility location service and/or public works department to mark-out private hook-ups from the main line to the property. These may not be marked unless you specifically ask them to do so. If additional excavation or drilling is needed at the site and these fall outside the original area described to the one-call agency contact the agency again. Also, if the work is scheduled to take place outside the one-call expiration date then the agency must be contacted again (refer to the original site number).

Never take the exact location of even marked utilities for granted. Begin each excavation or borehole slowly and cautiously. Take care to check for the presence of structures or lines for at least the first three feet of depth. In some cases hand augering and probing with a non-conductive probe may be necessary.

Check for any overhead wires before work. Keep equipment at least 20 feet away from overhead lines.

5.1.4 Working near Construction Equipment - General

Personnel who are most at risk of being injured are individuals unfamiliar with the site and/or construction equipment. The initial site orientation should include a review of the equipment to be used on-site, operating hazards and precautions.

- Never stand directly in front of a backhoe or front end loader or other heavy equipment; the operator cannot see you.
- Never stand or walk under a backhoe shovel or crane boom.
- Stay out of the swing radius of all equipment.
- Never walk or stand under loading or unloading equipment. Also beware that equipment such as cranes and trucks with hydraulic lift beds can tip. Avoid standing next to them when in use.
- Wear light or brightly colored clothing. This may include safety vests.
- Maintain visual contact with machine operators. Coordinate with the operators a safe place to stand when you are not directly involved with site activities such as sampling or air monitoring.
- Prearrange a hand signal communication system with machine operators. The use of whistles, hand radios, and horns to communicate is also appropriate.

5.1.5 Noise

Employees working on or near noisy equipment must wear hearing protection if the 8-hour time-weighted average noise level exceeds 85 decibels. Hearing protection devices inserted into the ear must be fitted or determined individually by the SHSO. A general field rule is that hearing protection must be used if normal speech cannot be understood within an arms length of the person talking.

5.1.6 Clearing and Grubbing

Brush clearing operations may involve the use of a chain saw and weed cutter. Employees must follow the manufacturer's operation and safety recommendations for all equipment used. Wear eye protection, hearing protection, gloves, safety boots and adequate clothing to prevent lacerations. Do not wear loose clothing or jewelry that could get caught in the chain or cutting edges. Avoid poison ivy when possible and wear protective clothing and boots and wash thoroughly after clearing to reduce the potential for contracting a rash from poison ivy. Be alert for snakes, bees, and other hazards while clearing. Store gasoline in approved safety cans and be

careful when refueling gasoline powered tools. Gasoline is extremely flammable; the engine should be stopped and cooled before refueling. Do not spill fuel when refueling.

5.1.7 Slip, Trip, Fall

Site physical hazards include existing site conditions such as uneven terrain, holes, ditches, unstable slopes, slippery surfaces, unguarded openings, and unmarked projections. Ground debris can cause employees to trip and fall. Take care to notice and avoid unsafe site conditions. Be careful when stepping into and out of the distribution box to avoid tripping and falling.

There are steep slopes at the work area. Use care when positioning personnel and equipment to avoid falling or tipping over. Make sure vehicles and equipment are positioned safely and have brakes set so they do not roll down the hill.

5.1.8 Hand and Power Tool Safety

The following are general guidelines to prevent accidents while using hand and power tools:

- Inspect each tool for damage before use;
- Use the right tool for the job;
- Operate tools according to manufacturer's instructions;
- Keep tools in good working condition with proper maintenance;
- Use the proper protective equipment; and,
- Do not use "cheater bars" to exceed the design capacity of the tool.

Power tools include electric, pneumatic, liquid fuel, and hydraulic tools. General safety precautions for these tools include:

- Never carry a power tool by the cord or hose;
- Never yank the tool's cord or hose to disconnect from a receptacle;
- Keep cords and hoses away from heat, oil, and sharp edges;
- Disconnect tools when not in use, before servicing, and when changing accessories (i.e., blades, bits, cutters);
- Secure work items with clamps or vises to keep both hands free to operate the tool;
- Maintain good footing and balance during operation of tools;
- Never leave tools, electrical cords, or hoses where they might create a tripping hazard;
- Keep tool guards in place at all times;
- Use double insulated, three wire grounded plugs, or low voltage electric tools to prevent shock;

- Use ground fault circuit interrupters (GFCIs) for portable electric tools and when running any electric extension cords outside the building; and,
- Perform maintenance routinely.

5.1.9 Construction Traffic Control

Traffic flow patterns must be established on the Site and into/out of the fabric structure to ensure a smooth flow of traffic at the Site and minimize the potential for accidents between vehicles and between vehicles and pedestrians. A Site speed limit should be established that is adequate for activities but safe for all at the Site. Traffic speeds should also be controlled as part of dust control measures. Blind spots should be avoided and horns, lights or other pre-arranged signals should be given when vehicles pass or approach each other. All heavy equipment must be equipped with back-up alarms of sufficient loudness to ensure everyone's safety.

5.1.10 Excavation and Trenching

Excavation and trenching are major hazards of construction; a number of precautions must be taken to prevent cave-ins or other accidents. An excavation is defined as any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal. A trench is a narrow excavation. In general, the depth of a trench is greater than the width, but the width of a trench (at the bottom) is not greater than 15 feet.

The following site conditions must be taken into account when planning excavation work:

- Traffic
- Nearness to structures and their condition
- Soil type
- Surface and groundwater
- Depth to water table
- Overhead and underground utilities
- Weather

All excavations must be performed in accordance with OSHA 29 CFR 1926, Subpart P, "Excavation, Trenching, and Shoring." The following is a summary of excavation requirements:

- Determine the exact location of underground utilities before excavation. While the excavation is open protect, support, or remove the underground installation as necessary to safeguard personnel.

- All surface encumbrances (e.g., trees, boulders, etc.) must be removed or supported if they present a hazard to employees. Surface encumbrances can collapse on employees when undermined by excavation activities and can also interfere with traffic.

- Use support systems to ensure the stability of adjacent structures if necessary.

- Employees exposed to vehicular traffic must wear warning vests made of reflective or high visibility material.

- Water must not be allowed to accumulate in excavations. Water can lead to cave-ins.

- Employees must not work on faces of sloped or benched excavations at levels above other employees unless the employees at the lower level are protected from the hazard of falling, rolling, or sliding material or equipment.

- Personnel are not permitted on the downgradient side of heavy equipment when operating on a grade. A safe pathway must be determined before moving equipment from one location to another.

- Employees are not permitted under loads handled by lifting or excavation equipment. To avoid being struck by debris employees must also stand clear of trucks being loaded or unloaded.

- If a machine operator does not have a clear view of an excavations edge a warning system such as barricades or hand signals must be used to ensure that equipment does not fall into the excavation.

- Walkways must be provided where employees or equipment are required to cross excavations. Standard guardrails must be provided where walkways are 6 feet or more above the lower level.

IF PERSONNEL ARE TO ENTER AN EXCAVATION OR TRENCH:

- The sides of trenches greater than 5 feet deep must be shored, unless they are sloped to the angle of repose, or unless the trench is in solid rock. Check the OSHA standard 29

CFR 1926.650-652 and Appendices for appropriate requirements depending on soil type. Soil classification must be performed when designing a sloping or benching system. Shoring must be adequate to prevent wall collapse in whatever soil condition encountered.

- Trenches or excavations 4 feet deep or deeper must be provided with a means of entering and exiting (i.e., ramps or ladders). A worker must not be more than 25 feet away from a means of exit. Ladders must extend from the bottom of the trench to at least 3 feet above the surface of the ground.

- The atmosphere of any excavation 4 feet or deeper must be tested for oxygen content, flammable gas, and other potential hazardous substances before employees may enter if a hazardous atmosphere or lack of oxygen can reasonably be expected.

- Emergency equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, must be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in the excavation. This equipment must be attended while in use.

- Employees must be protected from loose rock or soil that could pose a hazard by falling or rolling from an excavation face.

- Employees must be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Materials and equipment must be kept at least two feet from the edge of the excavation, or by the use of retaining devices that are sufficient to prevent materials or equipment form falling or rolling into excavations.

- Water must not be allowed to accumulate in excavations; water can lead to cave-ins.

- Daily inspections of the excavation, adjacent areas, and protective systems must be made by a competent person for evidence of a situation that could result in possible cave-ins, failures of protective systems and equipment, hazardous atmospheres, or other hazardous conditions. Inspections are required before the start of work and as needed throughout the shift and after every rainstorm or other hazard-increasing occurrence. Inspections are only required when employee exposure to hazards is reasonable anticipated.

- If the competent person finds evidence of a dangerous situation, employees must be removed from the hazardous area until precautions are taken to protect employees.

- Additional information on soil classification, slope configuration, timber shoring, aluminum hydraulic shoring, and other alternatives are found in Appendix A through E at the end of the OSHA excavation standard 29 CFR 1926.650-652.

5.2 SITE ACCESS/SITE CONTROL

The site is secured by a chain link fence. Entrance into and out of the Site will be controlled through one main gate to be determined during mobilization activities. Visitors must sign in at the Site construction trailer. The Field Team Leader will be responsible for controlling access to the work areas and zones on the site. Work zone boundaries will be clearly defined for the different areas before work begins and unauthorized personnel will not be permitted entry. Work zones will be moved around the site as needed during the field activities associated with the project.

To reduce the spread of hazardous materials by workers from the areas of concern to cleaner areas, work zones will be delineated at the site. The flow of personnel between the zones will be controlled. The establishment of the work zones will help ensure that: personnel are properly protected against the hazards present where they are working, work activities and contamination are confined to the appropriate areas, and personnel can be located and evacuated in an emergency.

Exclusion Zone

The exclusion zone will be established at the site for remedial activities; unprotected onlookers should be located 50 feet upwind of remedial activities whenever possible. Personnel within the exclusion zone will be required to use the specified level of protection. No eating, drinking or smoking will be allowed in the exclusion or decontamination zones.

Decontamination Zone

If appropriate, a decontamination zone will be established between the exclusion zone and the support zone, and will include the personnel and equipment necessary for decontamination. Personnel and equipment in the exclusion zone must pass through the decontamination zone before entering the support zone. This zone should be located upwind of the exclusion zone if possible.

Support Zone

The support zone will include the remaining areas of the job site. Break areas, operational direction and support facilities (to include supplies, equipment storage and maintenance areas) will be located in this area. No equipment or personnel will be permitted to enter the support zone from the exclusion zone without passing through the personnel or equipment decontamination zone, as necessary. Eating, smoking, and drinking will be allowed only in this area. Smoking will only be allowed in designated smoking areas. Access to the immediate work area will be controlled by the contractor performing the work, subject to the approval of the Owner's Representative. Verbal warnings should be adequate and appropriate to maintain work area access and control.

5.3 SITE HOUSEKEEPING

The Site will be kept in a neat, organized, and orderly fashion. Tools, equipment, hoses and other items will be kept picked up to minimize tripping and falling hazards. Used disposable clothing and equipment will be placed in drums or plastic bags immediately upon removal and the drum lids replaced or bags closed.

5.4 SANITATION/CHANGING FACILITIES

Appropriate sanitation will be used on-Site, including, but not limited to, the following:

- Maintaining an adequate supply of potable water.

- All individuals will be required to follow decontamination procedures as outlined in Section 8.0 of this HASP.
- Access to nearby sanitary facilities, including adequate toilets and wash facilities.

5.5 SITE COMMUNICATIONS

- Verbal and Hand Signals, walkie-talkies, and cell phones may be used for on-Site communication.
- Site office trailer landline telephones or cell phones will be used for off-Site communication.

6.0 PERSONAL PROTECTIVE EQUIPMENT

The objective of the protective equipment (PPE) program is to protect employees from safety and health hazards present at the Site and to prevent injury to workers from incorrect use and/or malfunction of PPE. No single combination of protective equipment and clothing is capable of protection against all hazards. PPE must be used in conjunction with safe work practices, decontamination, and good personal hygiene.

6.1 SITE-SPECIFIC LEVELS OF PROTECTION

The level of protection for most Site activities is expected to be Level D. Level D will consist of:

- Long pants and appropriate work shirts (no sleeveless or cut outs).
- Appropriate gloves for material handling activities, as needed. Use nitrile gloves when handling soil, waste, or water that may contain Site constituents.
- Steel-toe safety boots.
- Hard hat.
- Safety glasses with side shields.
- Hearing protection if noise level is at or above 85 decibels.

Personnel who may have direct contact with impacted material must wear modified Level D as appropriate for the work task. Modified Level D consists of Level D as above plus:

- Tyvek or equivalent (if splash or body contact);
- Nitrile gloves; and
- Rubber or nitrile overboots.

6.2 UPGRADE CONDITIONS

If conditions should change where there is a possibility of overexposure to organic vapors or if personnel report eye, skin, or nose irritation or other symptoms of potential exposure then employees should employees should back off until the exposure situation passes or work upwind to reduce potential exposures. If there is still an exposure potential then upgrade to Level C until the source of vapors/dust can be controlled. When using Level C the respirator cartridges must be changed at least every 8 hours (every shift). If these measures do not reduce vapor concentrations below the acceptable limits set forth in Section 7.0, then work must stop and the Owner's Representative contacted before work continues.

Level C protection consists of:

- NIOSH-approved, full-face, air-purifying respirator equipped with compatible combination organic vapor/ P100 cartridges;
- Tyvek or equivalent chemical resistant clothing over work clothes if body contact;
- Nitrile inner gloves, chemically resistant outer gloves;
- Steel-toe safety boots with rubber or nitrile overboots;
- Hard hat; and,
- Hearing protection as needed.

Level B will not be used on this project.

Level D or modified Level D is anticipated for all Site work but the SHSO has the responsibility for monitoring Site and work conditions and deciding the appropriate level of protection based on indications of potential exposure.

7.0 MONITORING

A qualified designee of the Owner will be responsible for perimeter air monitoring at the Site according to the Community Air Monitoring Plan. The Contractor and Owner's Representative will conduct their own area and personal worker air monitoring in accordance with their respective HASPs. Dust, vapor and odor control will be performed in accordance with the Odor Control Plan and the Technical Specifications.

7.1 WORKER MONITORING FOR VOCS AND DUST

Monitoring for volatile organic compounds (VOCs) and fugitive dust will be conducted by the Owner's Representative in their own work area(s) prior to and during dust and vapor generating activities. These activities include, but are not limited to: sheet pile installation, excavation of soils.

A photoionization detector (PID) with a 10.2 or 10.6 electron volt (eV) bulb will be used to conduct air monitoring for VOCs (Rae Systems or equivalent). An aerosol monitor will be used for dust monitoring (personal DataRam, Casella MicrodustPro or equivalent). Before monitoring the instruments will be checked for Zero and Span according to manufacturer's instructions and adjusted as necessary.

The Owner's Representative will check each instrument and record the readings prior to the beginning of work each day and at least hourly during the day. These readings will be recorded in a field log or on the health and safety form - Real-Time Monitoring Log. Refer to the Air Monitoring Action Level table for actions that must be taken if certain airborne concentrations of VOCs or dust are exceeded.

For any work activity, a sustained (greater than 5 minutes) PID reading in the breathing zone above the levels in the Air Monitoring Action Level table will require vapor suppression or avoidance techniques. If these methods are not feasible or do not reduce the potential exposure below acceptable levels, then employees must upgrade to Level C protection, as necessary.

Results from the monitoring must be used to upgrade/downgrade respiratory protection as needed.

7.2 INSTRUMENT CALIBRATION

The PID will be calibrated at the beginning of the work week then calibration checked daily and the instruments checked for proper operation daily before the start-up of any activities requiring monitoring. The dust monitor is factory calibrated but will be zeroed at the beginning of each day requiring monitoring. PID calibrations, dust monitor zero checks, and background levels will be documented on daily air monitoring logs or in a field log.

7.3 AIR MONITORING ACTION LEVELS – WORK AREA MONITORING

Constituent	Concentration	Location	Response
Total VOCs (PID)	Background to 1 ppm	Work Area Breathing Zone	Level D.
Total VOCs (PID)	1 to 5 ppm	Work Area Breathing Zone	Upgrade to Level C. Institute vapor suppression measures
Total VOCs (PID)	Above 5 ppm	Work Area Breathing Zone	If vapors cannot be controlled, stop work and evacuate the area until vapors dissipate. Monitor from a distance.
O2	<19.5%>22.5%	Work area	Stop work, evacuate until level returns to normal. Improve ventilation.
LEL	>10%	Work area	Stop work, evacuate until level returns to normal. Improve ventilation.
Carbon Monoxide	35 ppm	Work area	Improve ventilation
Carbon Monoxide	>100 ppm	Work area	Stop work immediately and evacuate. Improve ventilation, limit fuel burning equipment in structure, or pipe exhaust from equipment outside.
Total Dust	Background to 3.0 mg/m^3	Work Area Breathing Zone	Level D.
Total Dust	3.0 mg/m^3 to 30.0 mg/m^3	Work Area Breathing Zone	Upgrade to Level C. Institute dust suppression – foam, cover area, water mist.
Total Dust	Above 30.0 mg/m^3	Work Area Breathing Zone	If dust cannot be controlled, stop work and evacuate the area until dust dissipates. Monitor from a distance.

8.0 MATERIAL HANDLING AND DECONTAMINATION

All waste material, decontamination liquids, and decontamination equipment will be handled in a safe and healthful manner. Decontamination and material handling activities will be carried out within the appropriate work zone.

8.1 DECONTAMINATION

A decontamination pad for vehicle and equipment decontamination will be constructed per the Technical Specifications. This pad can also be used for personnel, small equipment and tools decontamination. All decontamination solids and liquids will be captured and containerized. All containerized waste will be temporarily staged on-site in an area where releases can be contained if they occur.

8.1.1 Personnel Decontamination

The general decontamination procedure is as follows.

Level D Decontamination:

- Equipment drop onto plastic drop cloth or decontamination pad.
- Wash and rinse boot covers and gloves if to be reused.
- Remove and dispose of Tyvek® suit in a plastic-lined container or plastic bag.
- Remove boot covers and gloves, dispose in plastic bag or lined containers if not to be reused. Place in "decontaminated PPE" container if to be used again.
- Field-wash hands and face.

Level C Decontamination

- Equipment drop onto plastic drop cloth or decontamination pad.
- Outer boot and glove wash and rinse, tape removal, and drop (wash with detergent, rinse with water, and use other decontamination fluids as necessary).

- Respirator wash, rinse, and drop (use same wash and rinse sequence as in Step 2 with a soft-bristle brush and a sponge)
- Hard hat and goggle removal (use same wash as in Step 2)
- Tyvek™ (or appropriate personal protective clothing) suit removal
- Remove inner gloves
- Wash potentially exposed skin (use water and soap at indoor sink)

Items that cannot be decontaminated will be disposed of properly in a solid waste drum.

8.1.2 Equipment Decontamination

Equipment and tools decontamination will be performed in accordance with the Technical Specifications. All potentially contaminated equipment used in an exclusion zone must be decontaminated before it leaves the Site or is taken into a clean area. Small tools and equipment that become contaminated may be taken to the decontamination area taking care to isolate the tools/equipment from clean materials and equipment. Equipment may be decontaminated by steam cleaning, washing with detergent and water then rinsing, or other appropriate decontamination methods as detailed in the Technical Specifications. Vehicles that contact potentially contaminated soil or water will be decontaminated before leaving the Site by brushing clean, steam cleaning and washing as necessary. Special attention must be paid to the undercarriage, tracks, sprockets, tires and axles of equipment.

Tools and items for which decontamination is difficult or impossible will remain on-site until the completion of work then will be packed for subsequent disposal at an approved facility.

Verification that equipment/vehicles leaving the Site have been adequately decontaminated is the responsibility of the Contractor.

9.0 EMERGENCY PROCEDURES

The HASP for this project has been established to allow project activities to be conducted without adverse impacts on worker health and safety. In addition, supplementary emergency response procedures have been developed to cover extraordinary conditions that might possibly occur at the Site. Emergency telephone numbers, directions to the nearest hospital, and a route map to the hospital are presented in **Attachment C.**

9.1 PRE-EMERGENCY PLANNING

Pre-emergency planning consists of the preparation of this emergency response plan, posting of the emergency contact list and hospital route map, assigning emergency functions to on-Site personnel, training of personnel as necessary, and ensuring that emergency procedures and equipment are in place.

The Ish Inc. Team Supervisor/SHSO is designated as the Site Emergency Coordinator for the Ish Inc. Team's activities and is responsible for field implementation this emergency response plan and has full authority for the Ish Inc. Team personnel and Ish Inc. Team subcontractors in the event of an emergency. If facility or outside agencies respond to an emergency the Ish Inc. Team Emergency Coordinator will pass the responsibility and authority for emergency response to the Incident Commander for the outside agency as appropriate. The Ish Inc. Team Emergency Coordinator will assist facility or outside emergency response agencies as much as possible to control and resolve the emergency. In general, on-site personnel would immediately evacuate the area to the designated safe place of refuge. Communications consist of verbal and hand signals on-site and use of a portable telephone for off-site communication.

The Ish Inc. Team Emergency Coordinator, or if the Site Emergency Coordinator is unavailable, the designated alternate on Site, will contact emergency personnel. In the event of severe injury to Ish Inc. Team personnel or subcontractors, the Ish Inc. Team may start first aid then contact outside personnel for assistance.

PPE and emergency equipment will be available on-Site for response to minor emergencies. PPE includes nitrile gloves, protective clothing, and safety glasses.

Safe distances and places of refuge will be upwind of the site activities and will be determined at the time of the emergency based on a combination of site-specific and incident-specific factors. Evacuation routes and places of refuge will be determined before the start of work at the Site and the locations made known to all personnel who enter the Site. The SHSO will maintain security around the immediate Site work zones. Because of the limited number of personnel expected to be working on the Site, the SHSO will know who is on Site and can control entry of personnel into hazardous areas in an emergency. The jobsite trailer will be the initial meeting location unless changed by the SHSO.

9.2 EMERGENCY MEDICAL TREATMENT AND FIRST AID

9.2.1 Temporary First Aid Facilities

A clean area in the office trailer will be designated the first aid facility. First aid supplies will be immediately available in the trailer. First aid kits will consist of appropriate items for the work being performed and anticipated emergencies. Type III first aid kits (ANSI Z308.1-2003) will be available and stored in weatherproof containers with individual sealed packages of required items. First aid items in the kits must contain at a minimum:

- 1 - Absorbent Compress, 4 x 8 in. minimum
- 16 - Adhesive Bandages 1 x 3 in.
- 1 roll - Adhesive Tape, 3/8” x 5 yards
- 10 - Antiseptic applications, 0.5g each
- 6 - Burn Treatment applications, 0.9g each
- 2 pair - Medical Exam Gloves
- 4 - Sterile Pads, 3 x 3 in. minimum
- 1 - Triangular Bandage, 40 x 40 x 56 in. min.

A designated employee at the Site is responsible for checking the contents of the first aid kit upon arrival at the Site and weekly to ensure that all required items are present and that expended

items are replaced. This employee is also responsible for ensuring that the kit is readily accessible at the site.

Additional recommended items may include:

- Oral analgesics
- Antibiotic treatments
- Compress bandages
- CPR barriers
- Burn dressings
- Cold packs
- Eye covers
- Eyewash
- Roller bandages

9.2.2 Handling Medical Emergencies

In the event of a safety or health emergency at the Site, appropriate emergency measures will immediately be taken to assist those who have been injured or exposed and to protect others from hazards. The Contractor should have standing agreements with the local ambulance service and hospital of the removal, transport and treatment of workers that become ill or injured at the Site. For minor injuries the project field personnel may take the injured party and transport to the nearest hospital for treatment, after determining whether personnel decontamination can be performed on the injured party. If there has been a chemical exposure take the MSDS(s) to the hospital also.

If the injury to a worker is chemical in nature (e.g., overexposure), the following first-aid procedures will be instituted:

- Eye Exposure - If a solid or liquid gets into the eyes, wash the eyes immediately at the emergency eyewash station using large amounts of water and lifting the lower and upper lids occasionally to help flush the eye. Do not let the victim rub eyes or keep eyes tightly closed. Flush for at least 15 minutes. Obtain medical attention immediately.

- Skin Exposure - Promptly wash the area using mild soap and flooding amounts of water for at least 15 minutes while removing contaminated clothing and shoes. Consult a physician for reddened or blistered skin.

- Swallowing - Do not induce vomiting! Never give anything by mouth to an unconscious person. Call poison control center: 1-800-222-1222.

- Breathing - If a person has difficulty breathing, move the exposed person to fresh air at once. Do not use mouth-to-mouth respiration. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and mask. Keep the affected person warm and at rest. Obtain medical attention as soon as possible.

9.3 EMERGENCY EVALUATION, INVESTIGATION AND DOCUMENTATION

The Site Emergency Coordinator will evaluate the available information about the incident and Ish Inc. Team's emergency response capabilities including what happened, any injuries or casualties, further accident potential, and what can be done to remedy the emergency. The type of response action will be based on the available information about the emergency incident.

The emergency incident will be investigated and all findings put in writing as soon as conditions return to normal. Ensure that documentation is as complete as possible by including a chronological history of the incident, facts about the incident and when they became available, titles and names of personnel and composition of teams, actions made, orders given, actions taken, samples and results, possible exposures, and a history of all injuries or illness during or as a result of the emergency. After the situation has returned to normal, all aspects of the emergency incident and the response will be reviewed to assess procedures used, how to improve response, and how to prevent further emergencies.

The HASP for this project has been established to allow Site operations to be conducted without adverse impacts on worker health and safety. In addition, supplementary emergency response procedures have been developed to cover extraordinary conditions that might possibly occur at the Site. Emergency telephone numbers, directions to the nearest hospital, and a route map to the hospital are presented in **Attachment C**.

10.0 TRAINING

10.1 GENERAL

All employees or subcontractors entering the work area where there may be exposure to coal tar constituents will receive training in compliance with OSHA 29 CFR 1910.120. The training requirements are intended to provide employees with the knowledge and skills necessary to perform hazardous waste Site operations while minimizing the potential for injury. Initial training consists of a minimum of 40 hours of off-Site classroom and practical exercise training and 3 days of actual field experience. Training must be updated annually with 8 hours of off-Site training. Supervising personnel will complete an 8-hour training session for supervisors. Training will be certified by record and/or certificate.

Visitors who do not enter areas where there may be exposure to coal tar constituents do not require the above training.

10.2 SITE-SPECIFIC TRAINING

Site-specific training will consist of an initial health and safety briefing on the following information:

- Names of individuals responsible for Site health and safety and methods of communicating safety and health concerns;
- Site-specific health and safety hazards;
- Use of PPE;
- Work practices by which employees can minimize risk;
- Safe use of equipment on-Site;
- Recognition of symptoms and signs of exposure to hazardous materials;
- Site control measures;
- Decontamination procedures; and,
- Emergency response procedures.

The Contractor SHSO or Site supervisor will give the health and safety briefing prior to initiation of field activities. This briefing will be of sufficient duration to address all of the material covered in this HASP. All personnel that will be participating in field activities will have had the

opportunity to read this HASP prior to this initial meeting so that any questions they have can be addressed at the initial meeting.

10.3 SAFETY MEETINGS

Prior to commencing field activities each day, a short briefing will be conducted by the Contractor Site Supervisor, or his designee, to address the day's activities. The daily briefing will provide the opportunity for the supervisor to address any special health and safety issues and to notify individuals of any deficient areas that need to be corrected or operational changes made that affect field work. The briefing will emphasize the specific concerns associated with the day's planned field activities. Daily weather reports will be reviewed to determine work/rest regimens.

TABLES

TABLE 1
EXPOSURE LIMITS AND OTHER PROPERTIES OF SITE CHEMICALS

Remedial Action
Former MGP Site
Dansville, New York

Constituent	Exposure Limit[a]	STEL[b]	IDLH[c]	Vapor Pressure[d]	Ionization Potential[e]
Benzene	1 ppm	2.5 ppm	500 ppm	75 mm Hg	9.24 eV
Ethyl benzene	100 ppm	125 ppm	800 ppm	7 mm Hg	8.76 eV
Toluene	200 ppm	NE	500 ppm	21 mm Hg	8.82 eV
Xylene	100 ppm	150 ppm	900 ppm	9 mm Hg	8.56 eV
Coal Tar Pitch Volatiles	0.2 mg/m^3	NE	80 mg/m^3	Varies	NE
Naphthalene	10 ppm	15 ppm	250 ppm	0.08 mm	8.12 eV

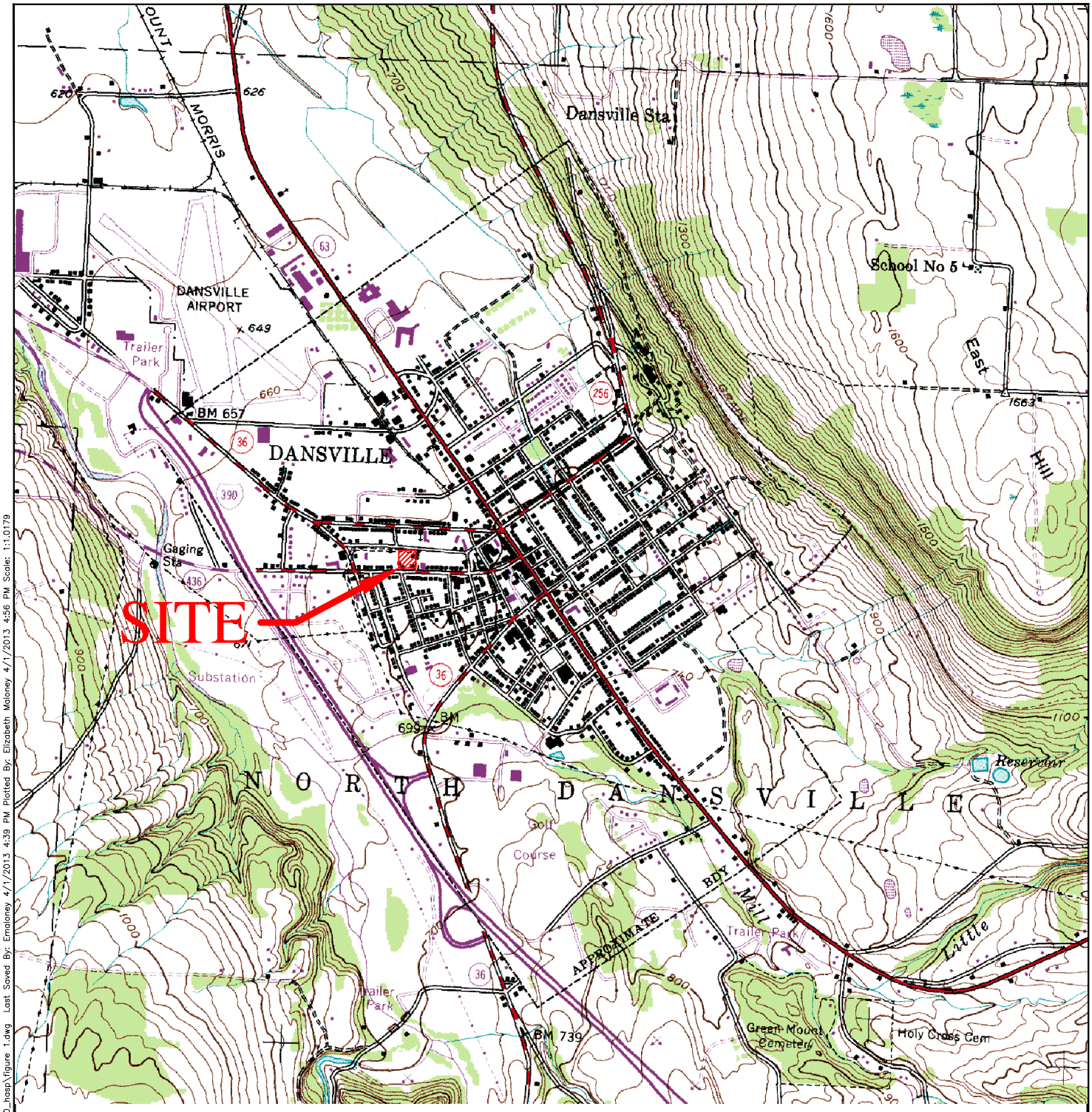
Constituent	Carcinogen [f]	LEL/UEL[g]	Odor Threshold[h]	3M/NIOSH Respirator Selection[i]
Benzene	YES	1.2-7.8	8.65 ppm	OV – See 29 CFR 1910.1028
Ethyl benzene	NO	0.8-6.7	2.3 ppm	OV
Toluene	NO	1.1-7.1	0.16 ppm	OV
Xylene	NO	1.1-7.0	0.324 ppm	OV
Coal Tar Pitch Volatiles	YES	Varies	NE	P95
Naphthalene	NO	0.9-5.9%	0.015 ppm	OV

Notes:

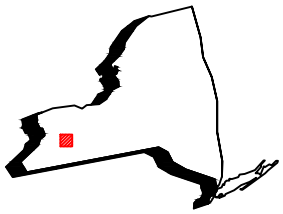
NE = Not Established.
NA = Not Applicable

[a] Exposure limit – 8-hour Time Weighted Average (TWA) OSHA Permissible Exposure Limit (PEL).
[b] STEL – Short Term Exposure Limit. Usually a 15-minute average that must not be exceeded.
[c] IDLH – Immediately Dangerous to Life and Health. Maximum concentration from which one could escape within 30 minutes without a respirator and without experiencing any adverse health effects.
[d] Vapor Pressure – From NIOSH Pocket Guide to Chemical Hazards. Water = 0 mm; above 1 mm is considered volatile; above 100m is considered highly volatile.
[e] Ionization Potential – Expressed in electron volts (eV); from NIOSH Pocket Guide to Chemical Hazards.
[f] Carcinogen – "Yes" indicates compound is a confirmed or suspected human carcinogen by NIOSH, OSHA, or ACGIH.
[g] LEL/UEL – Lower and upper explosive limits. Percent of material needed in air for ignition when exposed to an ignition source.
[h] Odor Threshold – Air concentration at which most people can smell the chemical.
[i] 3M/NIOSH Respirator Selection – Type of respirator recommended by the 3M 2011 Respirator Selection Guide or NIOSH Pocket Guide to Chemical Hazards. SA = Supplied Air (Level B); OV = Organic Vapor respirator Level C); N, R, or P with 95, 97 or 100 designation = dust and mist respirator of indicated efficiency (Level C).

FIGURES



NEW YORK



QUADRANGLE LOCATION

0 2000 4000 FEET

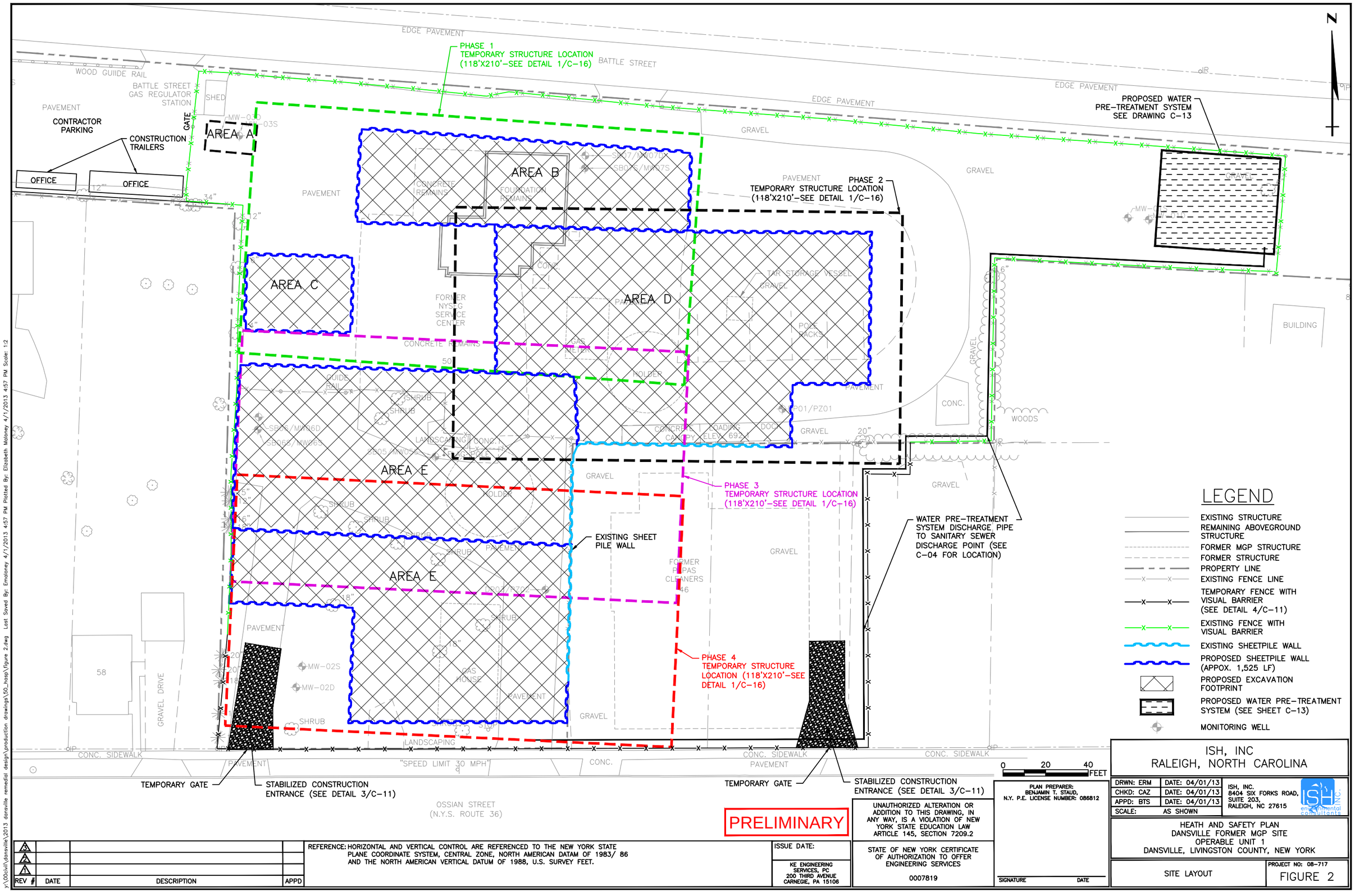
ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 04/01/13	ISH, INC. 8404 SIX FORKS ROAD, SUITE 203, RALEIGH, NC 27615
CHKD: BTS	DATE: 04/01/13	
APPD: BTS	DATE: 04/01/13	
SCALE:	AS SHOWN	

HEATH AND SAFETY PLAN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

REFERENCE:	ISSUE DATE:	
KEY ENVIRONMENTAL, INC. 200 THIRD AVENUE CARNEGIE, PA 15106	SITE LOCATION MAP	PROJECT NO: 08-717 FIGURE 1

y:\00civil\dansville\2013 dansville remedial design\production drawings\50_hasp\figure 1.dwg Last Saved By: Emaloney 4/1/2013 4:39 PM Plotted By: Elizabeth Maloney 4/1/2013 4:56 PM Scale: 1:1.0179



LEGEND

- EXISTING STRUCTURE
- REMAINING ABOVEGROUND STRUCTURE
- FORMER MGP STRUCTURE
- FORMER STRUCTURE
- PROPERTY LINE
- EXISTING FENCE LINE
- TEMPORARY FENCE WITH VISUAL BARRIER (SEE DETAIL 4/C–11)
- EXISTING FENCE WITH VISUAL BARRIER
- EXISTING SHEETPILE WALL
- PROPOSED SHEETPILE WALL (APPOX. 1,525 LF)
- PROPOSED EXCAVATION FOOTPRINT
- PROPOSED WATER PRE–TREATMENT SYSTEM (SEE SHEET C–13)
- MONITORING WELL

PRELIMINARY

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE: HORIZONTAL AND VERTICAL CONTROL ARE REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATAM OF 1983/ 86 AND THE NORTH AMERICAN VERTICAL DATUM OF 1988, U.S. SURVEY FEET.

ISSUE DATE:

KE ENGINEERING SERVICES, PC
200 THIRD AVENUE
CARNEGIE, PA 15106

STATE OF NEW YORK CERTIFICATE OF AUTHORIZATION TO OFFER ENGINEERING SERVICES

0007819

PLAN PREPARER:
BENJAMIN T. STAUD,
N.Y. P.E. LICENSE NUMBER: 086812

SIGNATURE DATE

ISH, INC
RALEIGH, NORTH CAROLINA

DRWN: ERM	DATE: 04/01/13
CHKD: CAZ	DATE: 04/01/13
APPD: BTS	DATE: 04/01/13
SCALE:	AS SHOWN

ISH, INC.
8404 SIX FORKS ROAD,
SUITE 203,
RALEIGH, NC 27615

HEATH AND SAFETY PLAN
DANSVILLE FORMER MGP SITE
OPERABLE UNIT 1
DANSVILLE, LIVINGSTON COUNTY, NEW YORK

SITE LAYOUT

PROJECT NO: 08–717

FIGURE 2

ATTACHMENT A

MATERIAL SAFETY DATA SHEETS

These Material Safety Data Sheets (MSDSs) are provided for general information on the chemical and physical properties and potential health hazards of constituents that may be present at the Site. The use of manufacturer names does not imply that these products were in fact used at the Site; nor imply or infer any liability on the part of the manufacturer of any product represented, or the preparer of the MSDS.

International Chemical Safety Cards

COAL-TAR PITCH

ICSC: 1415

Pitch

ICSC # 1415
CAS # 65996-93-2
RTECS # GF8655000
EC # 648-055-00-5
July 03, 2002 Validated
Pi, Study (1st batch of chemical part)

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Foam, dry powder, carbon dioxide.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT! PREVENT DISPERSION OF DUST!	
• **INHALATION**	Sneezing. Cough. See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	Closed system and ventilation.	Fresh air, rest.
• **SKIN**	MAY BE ABSORBED! Redness. Burning sensation.	Protective gloves. Protective clothing.	Rinse and then wash skin with water and soap.
• **EYES**	Redness. Pain.	Safety goggles, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• **INGESTION**	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	Do not eat, drink, or smoke during work. Wash hands before eating.	Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: A/P2 filter respirator for organic vapour and harmful dust.)	Separated from strong oxidants. Separated from food and feedstuffs .	Do not transport with food and feedstuffs. Note: H T symbol R: 45 S: 53-45

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1415

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

COAL-TAR PITCH

ICSC: 1415

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
BLACK TO BROWN PASTE

PHYSICAL DANGERS:

CHEMICAL DANGERS:
The substance decomposes on heating above 400°C producing toxic fumes . Reacts with strong oxidants .

OCCUPATIONAL EXPOSURE LIMITS:
TLV: (as benzene soluble aerosol for coal tar pitch volatiles) 0.2 mg/m³ as TWA A1 (ACGIH 2001).

OSHA PEL: TWA 0.2 mg/m^3 (benzene-soluble fraction) 1910.1002 See Appendix C

NIOSH REL: Ca TWA 0.1 mg/m^3 (cyclohexane-extractable fraction) See Appendix A See Appendix C

NIOSH IDLH: Ca 80 mg/m^3 See: 65996932

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed and when heated.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes , the skin and the respiratory tract .Exposure to sun may enhance the irritating effect of coal tar pitch on skin and eyes and lead to burns.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis and hyperpigmentation of skin. This substance is carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: >250°C
Melting point: 30-180°C
Density: >1
g/cm³
Solubility in water:
at 20°C
none

Vapour pressure, kPa at 20°C: <0.01
Flash point: >200°C o.c.
Auto-ignition temperature: >500°C
Octanol/water partition coefficient as log Pow: 6.04
conductivity: 1.7 10 exp-9 S/m at 30C (IUCLID)

ENVIRONMENTAL DATA

This substance may be hazardous to the environment; special attention should be given to soil contamination and aquatic organisms. The substance may cause long-term effects in the aquatic environment.

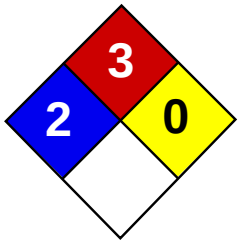
NOTES

Depending on the degree of exposure, periodic medical examination is suggested.

NFPA Code: H0; F1; R0;

ADDITIONAL INFORMATION

IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.



Material Safety Data Sheet
Benzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Benzene

Catalog Codes: SLB1564, SLB3055, SLB2881

CAS#: 71-43-2

RTECS: CY1400000

TSCA: TSCA 8(b) inventory: Benzene

CI#: Not available.

Synonym: Benzol; Benzine

Chemical Name: Benzene

Chemical Formula: C6-H6

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Benzene	71-43-2	100

Toxicological Data on Ingredients: Benzene: ORAL (LD50): Acute: 930 mg/kg [Rat]. 4700 mg/kg [Mouse]. DERMAL (LD50): Acute: >9400 mg/kg [Rabbit]. VAPOR (LC50): Acute: 10000 ppm 7 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of eye contact (irritant), of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. The substance is toxic to blood, bone marrow, central nervous system (CNS). The substance may be toxic to liver, Urinary System. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 497.78°C (928°F)

Flash Points: CLOSED CUP: -11.1°C (12°F). (Setaflash)

Flammable Limits: LOWER: 1.2% UPPER: 7.8%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of oxidizing materials. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Explosive in presence of oxidizing materials, of acids.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Extremely flammable liquid and vapor. Vapor may cause flash fire. Reacts on contact with iodine heptafluoride gas. Dioxygenyl tetrafluoroborate is as very powferful oxidant. The addition of a small particle to small samples of benzene, at ambient temperature, causes ignition. Contact with sodium peroxide with benzene causes ignition. Benzene ignites in contact with powdered chromic anhydride. Virgorous or incandescent reaction with hydrogen + Raney nickel (above 210 C) and bromine trifluoride.

Special Remarks on Explosion Hazards:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction

of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.5 STEL: 2.5 (ppm) from ACGIH (TLV) [United States] TWA: 1.6 STEL: 8 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.1 STEL: 1 from NIOSH TWA: 1 STEL: 5 (ppm) from OSHA (PEL) [United States] TWA: 10 (ppm) from OSHA (PEL) [United States] TWA: 3 (ppm) [United Kingdom (UK)] TWA: 1.6 (mg/m3) [United Kingdom (UK)] TWA: 1 (ppm) [Canada] TWA: 3.2 (mg/m3) [Canada] TWA: 0.5 (ppm) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor:
Aromatic. Gasoline-like, rather pleasant. (Strong.)

Taste: Not available.

Molecular Weight: 78.11 g/mole

Color: Clear Colorless. Colorless to light yellow.

pH (1% soln/water): Not available.

Boiling Point: 80.1 (176.2°F)

Melting Point: 5.5°C (41.9°F)

Critical Temperature: 288.9°C (552°F)

Specific Gravity: 0.8787 @ 15 C (Water = 1)

Vapor Pressure: 10 kPa (@ 20°C)

Vapor Density: 2.8 (Air = 1)

Volatility: Not available.

Odor Threshold: 4.68 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Miscible in alcohol, chloroform, carbon disulfide oils, carbon tetrachloride, glacial acetic acid, diethyl ether, acetone. Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles.

Incompatibility with various substances: Highly reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 930 mg/kg [Rat]. Acute dermal toxicity (LD50): >9400 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 10000 7 hours [Rat].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. Causes damage to the following organs: blood, bone marrow, central nervous system (CNS). May cause damage to the following organs: liver, Urinary System.

Other Toxic Effects on Humans:
Very hazardous in case of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (female fertility, Embryotoxic and/or foetotoxic in animal) and birth defects. May affect genetic material (mutagenic). May cause cancer (tumorigenic, leukemia)) Human: passes the placental barrier, detected in maternal milk.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. It can be absorbed through intact skin and affect the liver, blood, metabolism,and urinary system. Eyes: Causes eye irritation. Inhalation: Causes respiratory tract and mucous membrane irritation. Can be absorbed through the lungs. May affect behavior/Central and Peripheral nervous systems (somnolence, muscle weakness, general anesthetic, and other symptoms similar to ingestion), gastrointestinal tract (nausea), blood metabolism, urinary system. Ingestion: May be harmful if swallowed. May cause gastrointestinal tract irritation including vomiting. May affect behavior/Central and Peripheral nervous systems (convulsions, seizures, tremor, irritability, initial CNS stimulation followed by depression, loss of coordination, dizziness, headache, weakness, pallor, flushing), respiration (breathlessness and chest constriction), cardiovascular system, (shallow/rapid pulse), and blood.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Benzene UNNA: 1114 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Benzene California prop. 65 (no significant risk level): Benzene: 0.007 mg/day (value) California prop. 65: This product contains the following ingredients

for which the State of California has found to cause cancer which would require a warning under the statute: Benzene Connecticut carcinogen reporting list.: Benzene Connecticut hazardous material survey.: Benzene Illinois toxic substances disclosure to employee act: Benzene Illinois chemical safety act: Benzene New York release reporting list: Benzene Rhode Island RTK hazardous substances: Benzene Pennsylvania RTK: Benzene Minnesota: Benzene Michigan critical material: Benzene Massachusetts RTK: Benzene Massachusetts spill list: Benzene New Jersey: Benzene New Jersey spill list: Benzene Louisiana spill reporting: Benzene California Director's list of Hazardous Substances: Benzene TSCA 8(b) inventory: Benzene SARA 313 toxic chemical notification and release reporting: Benzene CERCLA: Hazardous substances.: Benzene: 10 lbs. (4.536 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R22- Harmful if swallowed. R38- Irritating to skin. R41- Risk of serious damage to eyes. R45- May cause cancer. R62- Possible risk of impaired fertility. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S46- If swallowed, seek medical advice immediately and show this container or label. S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

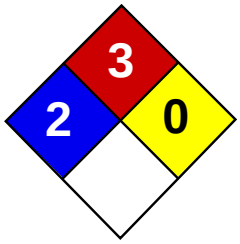
References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:35 PM

Last Updated: 06/09/2012 12:00 PM

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.



Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Toluene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Toluene

Catalog Codes: SLT2857, SLT3277

CAS#: 108-88-3

RTECS: XS5250000

TSCA: TSCA 8(b) inventory: Toluene

CI#: Not available.

Synonym: Toluol, Tolu-Sol; Methylbenzene; Methacide; Phenylmethane; Methylbenzol

Chemical Name: Toluene

Chemical Formula: C6-H5-CH3 or C7-H8

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Toluene	108-88-3	100

Toxicological Data on Ingredients: Toluene: ORAL (LD50): Acute: 636 mg/kg [Rat]. DERMAL (LD50): Acute: 14100 mg/kg [Rabbit]. VAPOR (LC50): Acute: 49000 mg/m 4 hours [Rat]. 440 ppm 24 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, the nervous system, liver, brain, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 480°C (896°F)

Flash Points: CLOSED CUP: 4.4444°C (40°F). (Setaflash) OPEN CUP: 16°C (60.8°F).

Flammable Limits: LOWER: 1.1% UPPER: 7.1%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards:
Toluene forms explosive reaction with 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione; dinitrogen tetraoxide; concentrated nitric acid, sulfuric acid + nitric acid; N2O4; AgClO4; BrF3; Uranium hexafluoride; sulfur dichloride. Also forms an explosive mixture with tetranitromethane.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Toxic flammable liquid, insoluble or very slightly soluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 200 STEL: 500 CEIL: 300 (ppm) from OSHA (PEL) [United States] TWA: 50 (ppm) from ACGIH (TLV) [United States] SKIN TWA: 100 STEL: 150 from NIOSH [United States] TWA: 375 STEL: 560 (mg/m3) from NIOSH [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweet, pungent, Benzene-like.

Taste: Not available.

Molecular Weight: 92.14 g/mole

Color: Colorless.

pH (1% soln/water): Not applicable.

Boiling Point: 110.6°C (231.1°F)

Melting Point: -95°C (-139°F)

Critical Temperature: 318.6°C (605.5°F)

Specific Gravity: 0.8636 (Water = 1)

Vapor Pressure: 3.8 kPa (@ 25°C)

Vapor Density: 3.1 (Air = 1)

Volatility: Not available.

Odor Threshold: 1.6 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.7

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Soluble in diethyl ether, acetone. Practically insoluble in cold water. Soluble in ethanol, benzene, chloroform, glacial acetic acid, carbon disulfide. Solubility in water: 0.561 g/l @ 25 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources (flames, sparks, static), incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with strong oxidizers, silver perchlorate, sodium difluoride, Tetranitromethane, Uranium Hexafluoride. Frozen Bromine Trifluoride reacts violently with Toluene at -80 deg. C. Reacts chemically with nitrogen oxides, or halogens to form nitrotoluene, nitrobenzene, and nitrophenol and halogenated products, respectively.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 636 mg/kg [Rat]. Acute dermal toxicity (LD50): 14100 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 440 24 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, the nervous system, liver, brain, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals:
Lowest Published Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Rabbit] - Route: Inhalation; Dose: 55000 ppm/40min

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in human. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects and birth defects (teratogenic). May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes mild to moderate skin irritation. It can be absorbed to some extent through the skin. Eyes: Cauess mild to moderate eye irritation with a burning sensation. Splash contact with eyes also causes conjunctivitis, blepharospasm, corneal edema, corneal abraisons. This usually resolves in 2 days. Inhalation: Inhalation of vapor may cause respiratory tract irritation causing coughing and wheezing, and nasal discharge. Inhalation of high concentrations may affect behavior and cause central nervous system effects characterized by nausea, headache, dizziness, tremors, restlessness, lightheadedness, exhilaration, memory loss, insomnia, impaired reaction time, drowsiness, ataxia, hallucinations, somnolence, muscle contraction or spasticity, unconsciousness and coma. Inhalation of high concentration of vapor may also affect the cardiovascular system (rapid heart beat, heart palpitations, increased or decreased blood pressure, dysrhythmia,), respiration (acute pulmonary edema, respiratory depression, apnea, asphyxia), cause vision disturbances and dilated pupils, and cause loss of appetite. Ingestion: Aspiration hazard. Aspiration of Toluene into the lungs may cause chemical pneumonitis. May cause irritation of the digestive tract with nausea, vomiting, pain. May have effects similar to that of acute inhalation. Chronic Potential Health Effects: Inhalation and Ingestion: Prolonged or repeated exposure via inhalation may cause central nervous system and cardiovascular symptoms similar to that of acute inhalation and ingestion as well liver damage/failure, kidney damage/failure (with hematuria, proteinuria, oliguria, renal tubular acidosis), brain damage, weight loss, blood (pigmented or nucleated red blood cells, changes in white blood cell count), bone marrow changes, electrolyte imbalances (Hypokalemia, Hypophostatemia), severe, muscle weakness and Rhabdomyolysis. Skin: Repeated or prolonged skin contact may cause defatting dermatitis.

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 313 mg/l 48 hours [Daphnia (daphnia)]. 17 mg/l 24 hours [Fish (Blue Gill)]. 13 mg/l 96 hours [Fish (Blue Gill)]. 56 mg/l 24 hours [Fish (Fathead minnow)]. 34 mg/l 96 hours [Fish (Fathead minnow)]. 56.8 ppm any hours [Fish (Goldfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Toluene UNNA: 1294 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Toluene California prop. 65 (no significant risk level): Toluene: 7 mg/day (value) California prop. 65 (acceptable daily intake level): Toluene: 7 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Toluene Connecticut hazardous material survey.: Toluene Illinois

toxic substances disclosure to employee act: Toluene Illinois chemical safety act: Toluene New York release reporting list: Toluene Rhode Island RTK hazardous substances: Toluene Pennsylvania RTK: Toluene Florida: Toluene Minnesota: Toluene Michigan critical material: Toluene Massachusetts RTK: Toluene Massachusetts spill list: Toluene New Jersey: Toluene New Jersey spill list: Toluene Louisiana spill reporting: Toluene California Director's List of Hazardous Substances.: Toluene TSCA 8(b) inventory: Toluene TSCA 8(d) H and S data reporting: Toluene: Effective date: 10/04/82; Sunset Date: 10/0/92 SARA 313 toxic chemical notification and release reporting: Toluene CERCLA: Hazardous substances.: Toluene: 1000 lbs. (453.6 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S25- Avoid contact with eyes. S29- Do not empty into drains. S33- Take precautionary measures against static discharges.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

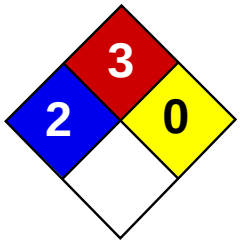
Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:30 PM

Last Updated: 06/09/2012 12:00 PM



Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Ethylbenzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Ethylbenzene

Catalog Codes: SLE2044

CAS#: 100-41-4

RTECS: DA0700000

TSCA: TSCA 8(b) inventory: Ethylbenzene

CI#: Not available.

Synonym: Ethyl Benzene; Ethylbenzol; Phenylethane

Chemical Name: Ethylbenzene

Chemical Formula: C8H10

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Ethylbenzene	100-41-4	100

Toxicological Data on Ingredients: Ethylbenzene: ORAL (LD50): Acute: 3500 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (irritant, sensitizer). CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 432°C (809.6°F)

Flash Points:
CLOSED CUP: 15°C (59°F). (Tagliabue.) OPEN CUP: 26.667°C (80°F) (Cleveland) (CHRIS, 2001) CLOSED CUP: 12.8 C (55 F) (Bingham et al, 2001; NIOSH, 2001) CLOSED CUP: 21 C (70 F) (NFPA)

Flammable Limits: LOWER: 0.8% - 1.6%UPPER: 6.7% - 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. When heated to decomposition it emits acrid smoke and irritating fumes.

Special Remarks on Explosion Hazards: Vapors may form explosive mixtures in air.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Sensitive to light. Store in light-resistant containers.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 STEL: 125 (ppm) from OSHA (PEL) [United States] TWA: 435 STEL: 545 from OSHA (PEL) [United States] TWA: 435 STEL: 545 (mg/m3) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from ACGIH (TLV) [United States] TWA: 100 STEL: 125 (ppm) [United Kingdom (UK)] TWA: 100 STEL: 125 (ppm) [Belgium] TWA: 100 STEL: 125 (ppm) [Finland] TWA: 50 (ppm) [Norway] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish. Gasoline-like. Aromatic.

Taste: Not available.

Molecular Weight: 106.16 g/mole

Color: Colorless.

pH (1% soln/water): Not available.

Boiling Point: 136°C (276.8°F)

Melting Point: -94.9 (-138.8°F)

Critical Temperature: 617.15°C (1142.9°F)

Specific Gravity: 0.867 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.66 (Air = 1)

Volatility: 100% (v/v).

Odor Threshold: 140 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:
Easily soluble in diethyl ether. Very slightly soluble in cold water or practically insoluble in water. Soluble in all proportions in Ethyl alcohol. Soluble in Carbon tetrachloride, Benzene. Insoluble in Ammonia. Slightly soluble in Chloroform. Solubility in Water: 169 mg/l @ 25 deg. C.; 0.014 g/100 ml @ 15 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ingnition sources (flames, sparks, static), incompatible materials, light

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Sensitive to light.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation.

Toxicity to Animals: Acute oral toxicity (LD50): 3500 mg/kg [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Special Remarks on Toxicity to Animals:
Lethal Dose/Conc 50% Kill: LD50 [Rabbit] - Route: Skin; Dose: 17800 ul/kg Lowest Published Lethal Dose/Conc: LDL[Rat] - Route: Inhalation (vapor); Dose: 4000 ppm/4 H

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data. May cause cancer based on animals data. IARC evidence for carcinogenicity in animals is sufficient. IARC evidence of carcinogenicity in humans inadequate. May affect genetic material (mutagenic).

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Can cause mild skin irritation. It can be absorbed through intact skin. Eyes: Contact with vapor or liquid can cause severe eye irritation depending on concentration. It may also cause conjunctivitis. At a vapor exposure level of 85 - 200 ppm , it is mildly and transiently irritating to the eyes; 1000 ppm causes further irritation and tearing; 2000 ppm results in immediate and severe irritation and tearing; 5,000 ppm is intolerable (ACGIH, 1991; Clayton and Clayton, 1994). Standard draize test for eye irritation using 500 mg resulted in severe irritation (RTECS) Inhalation: Exposure to high concentrations can cause nasal, mucous membrane and respiratory tract irritation and can also result in chest constriction and, trouble breathing, respiratory failure, and even death. It can also affect behavior/Central Nervous System. The effective dose for CNS depression in experimental animals was 10,000 ppm (ACGIH, 1991). Symptoms of CNS depression include

headache, nausea, weakness, dizziness, vertigo, irritability, fatigue, lightheadedness, sleepiness, tremor, loss of coordination, judgement and conciousness, coma, and death. It can also cause pulmonary edema. Inhalation of 85 ppm can produce fatigue, insomnia, headache, and mild irritation of the respiratory tract (Haley & Berndt, 1987). Ingestion: Do not drink, pipet or siphon by mouth. May cause gastroinestinal/digestive tract irritation with Abdominal pain, nausea, vomiting. Ethylbenzene is a pulmonary aspiration hazard. Pulmonary aspiration of even small amounts of the liquid may cause fatal pneumonitis. It may also affect behavior/central nervous system with

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 14 mg/l 96 hours [Fish (Trout)] (static). 12.1 mg/l 96 hours [Fish (Fathead Minnow)] (flow-through)]. 150 mg/l 96 hours [Fish (Blue Gill/Sunfish)] (static). 275 mg/l 96 hours [Fish (Sheepshead Minnow)]. 42.3 mg/l 96 hours [Fish (Fathead Minnow)](soft water). 87.6mg/l 96 hours [Shrimp].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Ethylbenzene UNNA: 1175 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Ethylbenzene Illinois toxic substances disclosure to employee act: Ethylbenzene Illinois chemical safety act: Ethylbenzene New York release reporting list: Ethylbenzene Rhode Island RTK hazardous substances: Ethylbenzene Pennsylvania RTK: Ethylbenzene Minnesota: Ethylbenzene Massachusetts RTK: Ethylbenzene Massachusetts spill list: Ethylbenzene New Jersey: Ethylbenzene New Jersey spill list: Ethylbenzene Louisiana spill reporting: Ethylbenzene California Director's List of Hazardous Substances: Ethylbenzene TSCA 8(b) inventory: Ethylbenzene TSCA 4(a) proposed test rules: Ethylbenzene TSCA 8(d) H and S data reporting: Ethylbenzene: Effective Date: 6/19/87; Sunset Date: 6/19/97 SARA 313 toxic chemical notification and release reporting: Ethylbenzene

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASSE D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S24/25- Avoid contact with skin and eyes. S29- Do not empty into drains.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

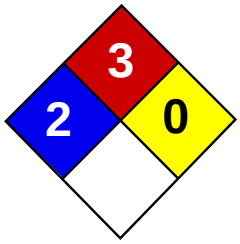
Section 16: Other Information

References:
-Manufacturer's Material Safety Data Sheet. -Fire Protection Guide to Hazardous Materials, 13th ed., National Fire Protection Association (NFPA) -Registry of Toxic Effects of Chemical Substances (RTECS) -Chemical Hazard Response Information System (CHRIS) -Hazardous Substance Data Bank (HSDB) -New Jersey Hazardous Substance Fact Sheet -Ariel Global View -Reprotext System

Other Special Considerations: Not available.

Created: 10/09/2005 05:28 PM

Last Updated: 06/09/2012 12:00 PM



Material Safety Data Sheet
Xylenes MSDS

Section 1: Chemical Product and Company Identification

Product Name: Xylenes

Catalog Codes: SLX1075, SLX1129, SLX1042, SLX1096

CAS#: 1330-20-7

RTECS: ZE2100000

TSCA: TSCA 8(b) inventory: Xylenes

CI#: Not available.

Synonym: Xylenes; Dimethylbenzene; xylol; methyltoluene

Chemical Name: Xylenes (o-, m-, p- isomers)

Chemical Formula: C6H4(CH3)2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Xylenes	1330-20-7	100

Toxicological Data on Ingredients: Xylenes: ORAL (LD50): Acute: 4300 mg/kg [Rat]. 2119 mg/kg [Mouse]. DERMAL (LD50): Acute: >1700 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 464°C (867.2°F)

Flash Points: CLOSED CUP: 24°C (75.2°F). (Tagliabue.) OPEN CUP: 37.8°C (100°F).

Flammable Limits: LOWER: 1% UPPER: 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Vapors may travel to source of ignition and flash back.

Special Remarks on Explosion Hazards:
Vapors may form explosive mixtures with air. Containers may explode when heated. May polymerize explosively when heated. An attempt to chlorinate xylene with 1,3-Dichloro-5,5-dimethyl-2,4-imidazolidindione (dichlorohydrantoin) caused a violent explosion

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined

areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 (ppm) [Canada] TWA: 435 (mg/m3) [Canada] TWA: 434 STEL: 651 (mg/m3) from ACGIH (TLV) [United States] TWA: 100 STEL: 150 (ppm) from ACGIH (TLV) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish.

Taste: Not available.

Molecular Weight: 106.17 g/mole

Color: Colorless. Clear

pH (1% soln/water): Not available.

Boiling Point: 138.5°C (281.3°F)

Melting Point: -47.4°C (-53.3°F)

Critical Temperature: Not available.

Specific Gravity: 0.864 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 1 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Insoluble in cold water, hot water. Miscible with absolute alcohol, ether, and many other organic liquids.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles

Incompatibility with various substances: Reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Store away from acetic acid, nitric acid, chlorine, bromine, and fluorine.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2119 mg/kg [Mouse]. Acute dermal toxicity (LD50): >1700 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5000 4 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS).

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals:
Lowest Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Man] - Route: Oral; Dose: 10000 ppm/6H

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in animal. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects (male and femael fertility (spontaneous abortion and fetotoxicity)) and birth defects based animal data.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. Can be absorbed through skin. Eyes: Causes eye irritation. Inhalation: Vapor causes respiratory tract and mucous membrane irritation. May affect central nervous system and behavior (General anesthetic/CNS depressant with effects including headache, weakness, memory loss, irritability, dizziness, giddiness, loss of coordination and judgement, respiratory depression/arrest or difficulty breathing, loss of appetite, nausea, vomiting, shivering, and possible coma and death). May also affects blood, sense organs, liver, and peripheral nerves. Ingestion: May cause gastrointestinal irritation including abdominal pain, vomiting, and nausea. May also affect liver and urinary system/ kidneys. May cause effects similar to those of acute inhalation. Chronic Potential Health Effects: Chronic inhalation may affect the urinary system (kidneys) blood (anemia), bone marrow (hyperplasia of bone marrow) brain/behavior/Central Nervous system. Chronic inhalation may alsocause mucosal bleeding. Chronic ingestion may affect the liver and metabolism (loss of appetite) and may affect urinary system (kidney damage)

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Xylenes UNNA: 1307 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Xylenes Illinois chemical safety act: Xylenes New York acutely hazardous substances: Xylenes Rhode Island RTK hazardous substances: Xylenes Pennsylvania RTK: Xylenes Minnesota: Xylenes Michigan critical material: Xylenes Massachusetts RTK: Xylenes Massachusetts spill list: Xylenes New Jersey: Xylenes New Jersey spill list: Xylenes Louisiana spill reporting: Xylenes California Director's List of Hazardous Substances: Xylenes TSCA 8(b) inventory: Xylenes SARA 302/304/311/312 hazardous chemicals: Xylenes SARA 313 toxic chemical notification and release reporting: Xylenes CERCLA: Hazardous substances.: Xylenes: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R10- Flammable. R21- Harmful in contact with skin. R36/38- Irritating to eyes and skin. S2- Keep out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

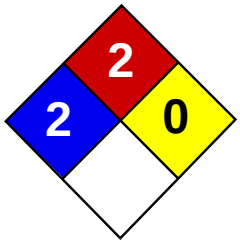
References: Not available.

Other Special Considerations: Not available.

Created: 10/11/2005 12:54 PM

Last Updated: 06/09/2012 12:00 PM

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.



Health	2
Fire	2
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Naphthalene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Naphthalene

Catalog Codes: SLN1789, SLN2401

CAS#: 91-20-3

RTECS: QJ0525000

TSCA: TSCA 8(b) inventory: Naphthalene

CI#: Not available.

Synonym:

Chemical Name: Not available.

Chemical Formula: C10H8

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Naphthalene	91-20-3	100

Toxicological Data on Ingredients: Naphthalene: ORAL (LD50): Acute: 490 mg/kg [Rat]. 533 mg/kg [Mouse]. 1200 mg/kg [Guinea pig]. DERMAL (LD50): Acute: 20001 mg/kg [Rabbit]. VAPOR (LC50): Acute: 170 ppm 4 hour(s) [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion. Hazardous in case of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (irritant, permeator). Severe over-exposure can result in death.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Development toxin [POSSIBLE]. The substance is toxic to blood, kidneys, the nervous system, the reproductive system, liver, mucous membranes, gastrointestinal tract, upper respiratory tract, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 567°C (1052.6°F)

Flash Points: CLOSED CUP: 88°C (190.4°F). OPEN CUP: 79°C (174.2°F).

Flammable Limits: LOWER: 0.9% UPPER: 5.9%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable solid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Flammable solid. Stop leak if without risk. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Avoid contact with eyes Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. Keep container dry. Keep in a cool place.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
Israel: TWA: 10 (ppm) TWA: 10 STEL: 15 (ppm) from ACGIH (TLV) [1995] TWA: 52 STEL: 79 (mg/m3) from ACGIH [1995] Australia: STEL: 15 (ppm) Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Crystalline solid.)

Odor: Aromatic.

Taste: Not available.

Molecular Weight: 128.19 g/mole

Color: White.

pH (1% soln/water): Not available.

Boiling Point: 218°C (424.4°F)

Melting Point: 80.2°C (176.4°F)

Critical Temperature: Not available.

Specific Gravity: 1.162 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: 4.4 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.038 ppm

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties:
Partially dispersed in hot water, methanol, n-octanol. Very slightly dispersed in cold water. See solubility in methanol, n-octanol.

Solubility:
Partially soluble in methanol, n-octanol. Very slightly soluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Highly reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: May attack some forms of rubber and plastic

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 490 mg/kg [Rat]. Acute dermal toxicity (LD50): 20001 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 170 ppm 4 hour(s) [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. DEVELOPMENTAL TOXICITY: Classified Development toxin [POSSIBLE]. The substance is toxic to blood, kidneys, the nervous system, the reproductive system, liver, mucous membranes, gastrointestinal tract, upper respiratory tract, central nervous system (CNS).

Other Toxic Effects on Humans:
Very hazardous in case of ingestion. Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 305.2 ppm 96 hour(s) [Trout].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 4.1: Flammable solid.

Identification: : Naphthalene, refined : UN1334 PG: III

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
Rhode Island RTK hazardous substances: Naphthalene Pennsylvania RTK: Naphthalene Florida: Naphthalene Minnesota: Naphthalene Massachusetts RTK: Naphthalene TSCA 8(b) inventory: Naphthalene TSCA 8(a) PAIR: Naphthalene TSCA 8(d) H and S data reporting: Naphthalene: 06/01/87 SARA 313 toxic chemical notification and release reporting: Naphthalene: 1% CERCLA: Hazardous substances.: Naphthalene: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-4: Flammable solid. CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R36- Irritating to eyes. R40- Possible risks of irreversible effects. R48/22- Harmful: danger of serious damage to health by prolonged exposure if swallowed. R48/23- Toxic: danger of serious damage to health by prolonged exposure through inhalation. R63- Possible risk of harm to the unborn child.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 2

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 2

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/11/2005 01:30 PM

Last Updated: 06/09/2012 12:00 PM

ATTACHMENT B

HEALTH AND SAFETY FORMS

TAILGATE SAFETY MEETING

Project Name:	**Date:**
Project Number:	**Time: Start: Stop:**
Location:	**Sheet: ___ of ___**
Presented By:	
Topics Covered:	

I have reviewed the Site Health and Safety Plan for the _____ Site and understand the potential health and safety hazards at this operation and the emergency response procedures. I agree to conduct all on-site work in conformity with the requirements of the Health and Safety Plan.

NAME (print)	SIGNATURE	COMPANY

Safety and Health Concerns Expressed during Meeting:

Corrective Actions Taken or Planned:

Instructor Signature

Instructor's Company Affiliation

SUBCONTRACTOR AFFIDAVIT

I have reviewed the Site Health and Safety Plan for the _____ Site and understand the potential health and safety hazards at this operation and the emergency response procedures. I agree to conduct all on-site work in conformity with the requirements of the Health and Safety Plan.

Project Number:	**Date:**

NAME (print)	SIGNATURE	COMPANY

Site Supervisor _____

REAL-TIME MONITORING INSTRUMENT CALIBRATION LOG

Project Name:		**Project Number:**
Location:		
Instrument (s):		
Model Number(s):		**Serial Number(s):**
Calibration Gas(es):	**Concentration**	

DATE	TIME	READING	CALIBRATED BY	COMMENTS

REAL-TIME MONITORING LOG

Date:	Person performing sampling:
Project Name:	Signature:
Project No.:	

Time	**Monitoring Location (be specific)**	**READINGS**						**COMMENTS** (Where was sample taken? e.g., breathing zone or other) and **Duration of Monitoring**
		O_2 %	**LEL %**	**VOC ppm**	**CO ppm**	**Dust mg/m^3**	**Noise dB**	

Real Time Instrument Calibration Log should accompany this form.

ATTACHMENT C

EMERGENCY CONTACTS AND HOSPITAL ROUTE MAP

EMERGENCY NUMBERS
Remedial Action
Former MGP Site
Dansville, New York

Fire	911
Police	911
Ambulance	911
Hospital – Nicholas H. Noyes Memorial Hospital	(585) 335-6001
Poison Control Center	(800) 222-1222
Key Environmental Health & Safety Manager - John Francis	(412) 279-3363
Ish, Inc. Project Representative - Ishwar P. Murarka -	(408) 892-3233
NYSEG Contact: John Ruspantini	(607) 762-8787
NYSDEC Spill Hotline	(800) 457-7362
National Response Center – Report spills and releases	(800) 424-8802

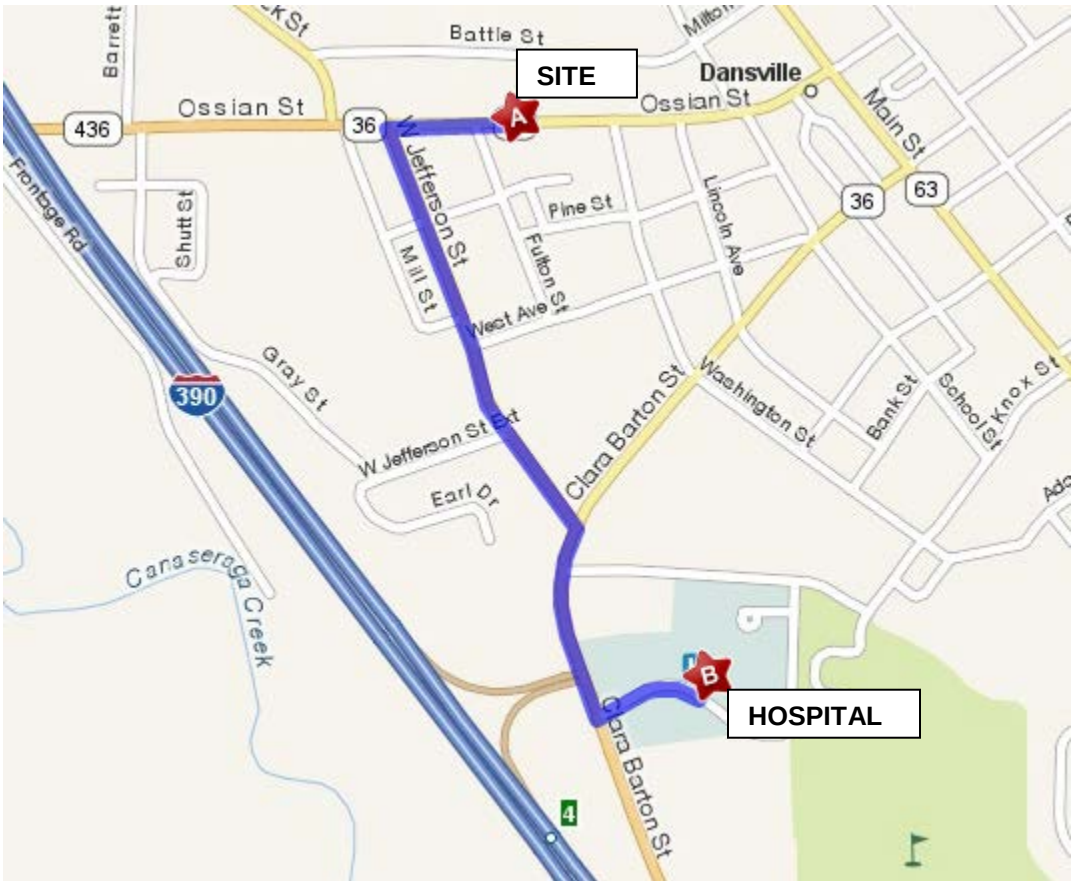
DIRECTIONS TO EMERGENCY ROOM

Start out going **west** on **Ossian St/RT-36** toward **Fulton St**. 0.1 mile
Turn **left** onto **W Jefferson St**. 0.4 mile
Turn **right** onto **Clara Barton St/RT-36**. 0.2 mile
Turn **left**. 0.1 mile
Turn left into hospital.

Driving distance is approximately 0.9 miles. Driving time is approximately 3 minutes.

UTILITY NUMBERS	
Dig Safely New York	(800) 962-7962

HOSPITAL ROUTE MAP



Nicholas H. Noyes Memorial Hospital – (585) 335-6001
111 Clara Barton Street, Dansville, NY 14437

Start out going **west** on **Ossian St/RT-36** toward **Fulton St**. 0.1 mile
Turn **left** onto **W Jefferson St**. 0.4 mile
Turn **right** onto **Clara Barton St/RT-36**. 0.2 mile
Turn **left**. 0.1 mile
Turn left into hospital.

Driving distance is approximately 0.9 miles. Driving time is approximately 3 minutes.

APPENDIX I
PROJECT SCHEDULE

Preliminary Construction Schedule			
Task	Duration	Cumulative Weeks	Preliminary Dates
Mobilization/demobilization including site prep & set up	2 weeks	2	12/16 – 12/27/2013
Installation of Sheet piles	3 weeks	5	12/30 – 1/17/2014
Wastewater pretreatment plant construction & operation & demobilization.	1 week + 20 weeks	6	1/20 -1/24/2014
Fabric Structure erection & 3 moves	2 weeks	8	1/27 – 2/7/2014 + three other times
Excavation & backfilling	14 weeks	22	2/10 – 5/16/2014
Off-site treatment & disposal	During + 1 weeks	23	5/19 -5/23/2014
Removal of sheet piles	2 weeks	25	5/26 – 6/6/2014
Site restoration	1 week	26	6/9 –6/13/2014
Demobilization and close-out	2 weeks	28	6/16 – 6/27/2014