

**REPORT ON  
REMEDIAL DESIGN – 100% FINAL SUBMITTAL  
SENECA FALLS FORMER MGP SITE, NYSDEC SITE # 8-50-010  
SENECA FALLS, NEW YORK**

by Haley & Aldrich of New York  
Rochester, New York

for New York State Electric and Gas Corporation (NYSEG)  
Binghamton, New York

File No. 34507-027  
August 2018



## Engineering Certification

I hereby certify I am currently a New York State registered professional engineer and that this Remedial Design Report for the Seneca Falls Former Manufactured Gas Plant Site was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the New York State Department of Environmental Conservation Division of Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER10).

Respectfully submitted,



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*08/02/18*  
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## List of Acronyms

|          |                                                                   |
|----------|-------------------------------------------------------------------|
| AES      | Atlantic Environmental Services                                   |
| ALTA     | American Land Title Association                                   |
| bgs      | below ground surface                                              |
| BTEX     | Benzene, Toluene, Ethylbenzene and Xylenes                        |
| CAMP     | Community Air Monitoring Plan                                     |
| cf       | cubic feet                                                        |
| cm/sec   | centimeters per second                                            |
| CPP      | Citizen Participation Plan                                        |
| cy       | cubic yards                                                       |
| DOT      | Department of Transportation                                      |
| FCM      | Field Construction Management                                     |
| FEMA     | Federal Emergency Management Agency                               |
| FER      | Final Engineering Report                                          |
| FIRM     | Flood Insurance Rate Map                                          |
| FS       | Feasibility Study                                                 |
| ft       | feet                                                              |
| GGBFS    | Granulated ground blast furnace slag                              |
| HASP     | Health and Safety Plan                                            |
| ISS      | In-situ Solidification                                            |
| mg/kg    | milligram per kilogram                                            |
| MGP      | Manufactured Gas Plant                                            |
| NAPL     | Non-Aqueous Phase Liquid                                          |
| NYPA     | New York Power Authority                                          |
| NYS      | New York State                                                    |
| NYSDEC   | New York State Department of Environmental Conservation           |
| NYSDMV   | New York State Department of Motor Vehicles                       |
| NYSDOH   | New York State Department of Health                               |
| NYSDOT   | New York State Department of Transportation                       |
| NYSOPRHP | New York State Office of Parks Recreation & Historic Preservation |
| NYSEG    | New York State Electric & Gas Corporation                         |
| OSHA     | Occupational Safety and Health Act or Administration              |
| PAHs     | Polycyclic Aromatic Hydrocarbons                                  |
| PDI      | Pre-Design Investigation                                          |
| PPE      | Personal Protective Equipment                                     |
| PSA      | Preliminary Site Assessment                                       |
| psi      | pounds per square inch                                            |
| QAPP     | Quality Assurance Project Plan                                    |
| QA/QC    | Quality Assurance/Quality Control                                 |
| RAOs     | Remedial Action Objectives                                        |
| RAMP     | Remedial Action Monitoring Plan                                   |
| RD       | Remedial Design                                                   |
| REC      | Renewable Energy Credit                                           |
| RI       | Remedial Investigation                                            |
| ROD      | Record of Decision                                                |
| SCOs     | Soil Cleanup Objectives                                           |

|       |                                                       |
|-------|-------------------------------------------------------|
| Site  | Seneca Falls Former Manufactured Gas Plant (MGP) Site |
| SMP   | Site Management Plan                                  |
| SPDES | State Pollution Discharge Elimination System          |
| SVI   | Soil Vapor Intrusion                                  |
| SVOCs | Semi-Volatile Organic Compounds                       |
| SWPPP | Storm Water Pollution Prevention Plan                 |
| TCLP  | Toxicity Characteristic Leachate Procedure            |
| USACE | U.S. Army Corp of Engineers                           |
| USGS  | United States Geological Survey                       |
| VOCs  | Volatile Organic Compounds                            |

# **1. Introduction**

This Remedial Design (RD) details the remedial action associated with the Seneca Falls Former Manufactured Gas Plant (MGP) Site (Site) located in Seneca Falls, Seneca County, New York. This project is being proposed in accordance with Section VII of the Order on Consent (Index Number DO-0002-9309) between the New York State Electric & Gas Corporation (NYSEG) and the New York State Department of Environmental Conservation (NYSDEC), and the Record of Decision (ROD) for the Site dated March 2015. NYSDEC has listed this Site as No. 8-50-010.

The Remedial Design Drawings and Technical Specifications are provided as Appendices A and B, respectively.

## **1.1 SITE LOCATION AND DESCRIPTION**

The footprint of the Seneca Falls Former MGP Site is located at 187 Fall Street, Seneca Falls, Seneca County, New York. The Site is located adjacent to the Seneca River and Canal, which flows east towards Cayuga Lake. The Seneca River and Canal is classified as a Class C surface water near the Site. The Site consists of an approximately 1.2-acre parcel currently owned by NYSEG and located in a mixed residential/commercial area. The Site is bordered by Fall Street to the north, residential properties (181-183 and 185 Fall Street) to the east, a Sunoco gasoline filling station (193 Fall Street) to the west, and the Seneca River and Canal to the south. NYSEG currently owns 185 Fall Street, which abuts the Site to the east. A zoning map obtained from the Village of Seneca Falls dated May 1995 indicates the Site and adjacent properties are zoned as C-2, described as a “Highway Commercial” permitted use zone. The zoning map indicates the Seneca River and Canal waterway shoreline is zoned as L-C, described as “Land Conservation”.

The Site is physically defined by Upland and Lowland Areas separated by a steep slope running east-west, located in the approximate center of the parcel. The Upland Area of the parcel consists of a building floor slab and a paved vehicle parking lot located immediately west of the floor slab. A commercial building located at the Site was demolished during the summer of 2009. The Upland Area is generally flat with an elevation of approximately 456 feet (ft) above mean sea level, bordered to the south by the steep slope and the Lowland Area of the Site. The steep slope and Lowland Area are heavily vegetated. The Lowland Area of the Site gently slopes south to the Seneca River and Canal, with elevations from approximately 430 ft to 433 ft above sea level. Surface drainage appears to be to the south toward the Seneca River and Canal. There is a catch basin present on the upland portion of the Site that drains northerly to a storm sewer line beneath Fall Street.

A Flood Insurance Rate Map (FIRM) obtained from the Federal Emergency Management Agency (FEMA) for the Site vicinity indicates that the 100-year flood zone (Zone A4) is limited to the present riverbanks of the Seneca River and Canal, likely due to the ability to control water levels within the canal system. The FIRM indicates that the Upland and Lowland Areas of the Site and abutting properties are within Zone C, described as areas of limited flooding.

## **1.2 SITE HISTORY**

The Seneca Falls MGP is believed to have begun operations in 1856, producing manufactured gas using coal carbonization processes until plant closure circa 1903. A narrative history of Seneca County

indicates that in 1871 the gas plant included twenty (20) retorts, four (4) purifiers and a large condenser (Atlantic Environmental Services, 1991). The former MGP operational features included: one gas holder, two coal sheds, retorts, purifier house and lime house, engine room, meter room, and gas fitter, as shown on the 1899 and 1904 Sanborn maps reviewed in connection with previous investigations. The gas holder at the Site had a capacity of 25,000 cubic feet (cf). Annual gas production was 8,000,000 cf in 1889 and 7,000,000 cf in 1899 (Atlantic Environmental Services, 1991). A 1904 Sanborn Map indicates that the plant was no longer in operation, suggesting that the Seneca Falls MGP ceased operations between 1899 and 1904. Based on review of the Sanborn fire insurance maps, demolition of the retorts and gas fitter occurred between 1911 and 1916. The remainder of the gas plant was demolished between 1925 and 1944. However, the subsurface remnants of the gas holder appear to still be in place.

The residential dwellings (181-183 and 185 Fall Street) located east of the Site were constructed between 1892 and 1897. The 1897 Sanborn Map shows the residential dwelling configuration was similar to the present configuration. Prior to construction of the residential dwellings, the 1886 Sanborn Map indicates a “planked drive” provided access to a small structure southwest of the MGP. The 1892 Sanborn Map does not show the planked drive and small structure, likely replaced with a coal shed east of the gas holder where the eastern portion of the on-site building stands today. A carpenter’s shop was in the approximate future location of the 185 Fall Street dwelling, although the change in geographic placement and dimensions suggests the carpenter’s shop was demolished between 1892 and 1897 prior to construction of 185 Fall Street.

The Lowland Area between the MGP and Seneca River and Canal was historically used for lumber and coal storage and distribution. Delivery of lumber and coal were likely via the Seneca River and Canal, constructed in 1818 and widened in 1915. The 1886 through 1897 Sanborn Maps indicate the southern portions of the Site and adjacent properties to the east and west were used for storage of “scattered lumber”, lumber sheds, and coal sheds. Lumber and coal storage continued at the F. Maier Coal & Lumber Yard west of the Site through 1925.

A United States Geological Survey (USGS) 7.5-minute quadrangle dated 1905 was reviewed as part of the historic research. The map indicates a “Lehigh Valley Railroad” line terminated at a switchyard operated on the southern side of the Seneca River and Canal. Interpretation of the 1905 topographic contour lines indicate the Seneca River and Canal elevation relative to mean sea level was approximately 420 ft, which is several feet below the current surface water elevations measured during the remedial investigation. This change in elevation is likely the result of lock modifications and canal widening in 1915. Lock modifications and canal widening in 1915 created Van Cleef Lake east of the Site, reportedly displacing 116 industrial buildings and 60 residential dwellings.

The commercial building was constructed in the 1960s or 1970s and was used for various retail establishments. The building was demolished during the summer of 2009.

### **1.3 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS**

The following investigations have occurred at the Site to date:

- In 1991: An initial site screening, which consisted of a Site reconnaissance, collection of three surface soil samples from the Lowland Area of the Site, three sediment samples from the Seneca

River and Canal adjacent to the Site, and three surface water samples from the Seneca River and Canal adjacent to the Site (Atlantic Environmental Services (AES), 1991);

- In 2007: A Preliminary Site Assessment (PSA) which included test pit excavations, soil borings, surface soil sampling, and monitoring well installations to evaluate soil and groundwater conditions on Site, and soil borings and surface soil sampling in the backyard portions of two residential properties east of the Site to evaluate off-site residential soil conditions;
- In 2008: A Soil Vapor Intrusion (SVI) investigation inside the on-site building (demolished in 2009) and additional soil borings and monitoring wells to investigate the former gas holder, located partially beneath the building floor slab; and,
- In 2009: Remedial Investigation (RI) activities to investigate the extent of MGP-related impacts in off-site surface and subsurface soils west of the Site, a sediment mapping and sampling program to evaluate the nature and extent of MGP-related impacts to sediment in the Seneca River and Canal, and soil sampling to quantify the ambient concentrations of metals and semi-volatile organic compounds (SVOCs) in urban fill collected in Seneca Falls Village.

In 2016: A pre-design investigation (PDI) was conducted to develop a comprehensive Site plan, collect Upland Area soil and Seneca River and Canal sediment samples for waste characterization, collect Upland Area soil samples for ISS bench scale testing, and complete a wetlands delineation. The PDI report is included as Appendix C.

A feasibility study (FS) was completed in 2013 and revised in January 2015 (Haley & Aldrich, 2015). Based on the recommendations of the FS, the NYSDEC issued the ROD in March 2015. These documents can be found at:

**Seneca Falls Library**

47 Cayuga Street

Seneca Falls, New York 13148

[www.senecafallslibrary.org](http://www.senecafallslibrary.org)

(315) 568-8265

Hours: M-F 10-8; Sat 10-5; Sun 2-5 (Closed June thru August)

**New York State Department of Environmental Conservation**

Central Office, 625 Broadway 11<sup>th</sup> Floor

Albany, New York 12233-7014

Attn: Mr. Douglas MacNeal

(518) 402-9662

(By appointment only)

No remedial actions have occurred at the Site to date.

## 2. Basis of Design

### 2.1 REMEDIAL GOALS

The remedial action objectives (RAOs) for the Site and the Site cleanup objectives were established in the ROD (2015).

#### 2.1.1 Remedial Action Objectives

The RAOs for the Site by media include:

- Groundwater:
  - Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
  - Prevent contact with, or inhalation of, volatiles from contaminated groundwater.
  - Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.
  - Remove the source of ground or surface water contamination.
- Soil:
  - Prevent ingestion/direct contact with contaminated soil.
  - Prevent inhalation of or exposure to contaminants volatilizing from contaminants in soil.
  - Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Sediment:
  - Prevent direct contact with contaminated sediments.
  - Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
  - Restore sediments to pre-release/background conditions to the extent feasible.
- Soil Vapor:
  - Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the Site.

#### 2.1.2 Site Cleanup Objectives

Based on the RAOs presented in Section 2.1.1, the following media-specific site cleanup objectives have been developed for the Site as listed in the ROD (NYSDEC, 2015):

- Soils: Address soil containing coal tar; polycyclic aromatic hydrocarbons (PAHs); benzene, toluene, ethylbenzene and xylenes (BTEX); and inorganic constituents (cyanide) at concentrations exceeding the 6 NYCRR Part 375-6.8 Commercial Use soil cleanup objectives (SCOs) for the 187 Fall St. parcel and the adjacent commercial parcel to the west (193 Fall St.), and the Residential Use SCOs at the adjacent residential property to the east (185 Fall St.).

- Sediment: Address sediment containing coal tar and total PAHs at concentrations exceeding four (4) milligrams per kilogram (mg/kg) per NYSDEC's Technical Guidance for Screening Contaminated Sediments.
- Groundwater: Address groundwater that contains PAHs, BTEX, and inorganics (cyanide) at concentrations greater than NYSDEC TOGS 1.1.1 – Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

## 2.2 SUMMARY OF THE SELECTED REMEDY

The remedial components for the Site, based on the ROD (NYSDEC, 2015), include:

- Excavation of on-site subsurface structures such as building foundations, the upper portion of the buried former gas holder, and buried piping, which would otherwise interfere with in-situ solidification (ISS) of impacted soils.
- ISS of the on-site impacted materials covering an area of approximately half an acre to depths from six to 23 ft below grade.
- A demarcation layer, clean soil cover, and gravel parking lot constructed following ISS.
- Excavation and off-site disposal of approximately 650 cubic yards (cy) of off-site soil which exceed - Residential Use SCOs. The excavation will be backfilled with soils meeting the clean fill requirements.
- A soil cover in two portions of the Lowland Area.
- Dredging of sediment with MGP impacts in the Seneca River and Canal adjacent to the Site. Approximately 2,200 cy of sediment will be removed. The sediments will be replaced with backfill which meets NYSDEC's chemical and gradation requirements and will restore the benthic habitat.
- Monitored natural attenuation of groundwater.
- Imposition of institutional controls in the form of environmental easements.
- Development of a Site Management Plan (SMP) to identify, maintain, and monitor the institutional and engineering controls at the Site.

This RD provides ISS, excavation, dredging, and soil cover/restoration design details. Monitored natural attenuation of groundwater, institutional controls, and development of an SMP will be completed separately following completion of remedial action construction. The remedial action will be performed with the approval and oversight of NYSDEC and the New York State Department of Health (NYSDOH).



### 3. Organizational Structure and Responsibility

NYSEG and New York State regulatory agencies will participate jointly in this remedial action associated with the Seneca Falls Former MGP Site. NYSEG has the ultimate responsibility for implementing the remedial action for the project. Approval of this RD by NYSDEC and NYSDOH will be secured prior to intrusive activities and site excavation. NYSDEC and NYSDOH personnel are anticipated to be on Site periodically for purposes of general program oversight. The Remediation Contractor will be responsible for on-site construction operations during the project, unless otherwise stated in Section 4.0, including: the construction, excavation, ISS, and material handling activities associated with the remedial action; excavation safety and protection of adjacent structures and utilities; construction personnel health and safety; implementation of contingency plans for odor control; management of wastewater and waste-handling operations; maintenance of site controls (i.e., run-off, run-on); and documentation of the extent of the removal action. The Remediation Engineer will be responsible for implementing the community air monitoring plan (CAMP) and on-site project monitoring of the Remediation Contractor's activities.

Communication with regulatory agencies and with members of the surrounding community will be managed by NYSEG. The plan for sharing project information with the community is described in the Citizen Participation Plan (CPP) for the Seneca Falls Former MGP Site included in Appendix D.

Key personnel and their assigned responsibilities for implementation of the remedial action include:

**NYSEG:**

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**Remediation Engineer:**

To be determined.

**Remediation Contractor:**

To be determined.

### 3.1 OWNER'S RESPONSIBILITIES

The Owner (NYSEG) will be responsible for the following:

- Coordinate with the Remediation Contractor, Design Engineer (as necessary), and Remediation Engineer to implement the required work activities in conformance with the Design.
- Assist NYSDEC in preparing a Notice and Fact Sheet consistent with NYSDEC Program Policy DER-23, Citizen Participation Handbook for Remedial Programs (NYSDEC, 2010a) prior to beginning remedial construction activities. The Notice and Fact Sheet will be distributed by NYSDEC.
- Contract with the selected Remediation Contractor.
- Contract with the selected Remediation Engineer.
- Act as the "Generator" for material resulting from the remedial activities for off-site treatment and/or disposal of the waste.
- Coordinate with NYSDEC and NYSDOH regarding environmental-related work activities.

### 3.2 DESIGN ENGINEER RESPONSIBILITIES

The Design Engineer (Haley & Aldrich) will provide the following services prior to the implementation of the remedial activities:

- Conduct pre-remediation in-situ waste characterization sampling, as described in Section 4.
- Prepare waste profiles for the Owner-selected disposal/treatment/recycling facilities.
- Assist NYSEG with obtaining a NYSDEC temporary State Pollution Discharge Eliminate System (SPDES) permit equivalent for wastewater discharge.
- Assist NYSEG with obtaining U.S. Army Corp of Engineers (USACE) Section 404 and Section 10 Permits.

- Review Remediation Contractor submittals and provide comments, if any, to the Remediation Engineer, Remediation Contractor, and Owner.

### **3.3 REMEDIATION ENGINEER RESPONSIBILITIES**

The Remediation Engineer (to be determined) will provide the following services during implementation of the remedial activities:

- Review Remediation Contractor submittals and provide comments, if any, to the Design Engineer, Remediation Contractor, and Owner.
- Provide field construction management (FCM), project management, and oversight to observe and monitor implementation of the remedial activities.
- Contract with a laboratory(ies) for the analysis of soil, water, and other waste samples, as appropriate and for ISS performance samples.
- Maintain records of the work efforts associated with implementation of the remedial activities, including daily field reports and digital photographs of the work in progress, and document observations, problems, and deficiencies.
- Maintain records of labor, materials, and equipment utilized for the remedial activities and unusual circumstances, if encountered.
- Document that the remedial activities are conducted in general conformance with the design and notify the Owner of deviations.
- Provide a sampling technician to conduct community air monitoring in accordance with the CAMP and to collect and process environmental samples as required (e.g., waste characterization, water discharge, imported fill, ISS performance samples).
- Provide analytical results for imported fill materials for review and approval by NYSDEC prior to material being brought on Site.
- Decommission monitoring wells within the treatment area.
- Coordinate with waste disposal facilities and waste haulers contracted by Owner.
- Coordinate with waste disposal facilities to provide bills of lading/manifests for the off-site shipment of waste materials from the Site. Review and sign, as an authorized agent for the Owner, waste manifests/bills of lading for shipments of waste materials generated by the remedial activities.
- Maintain an on-site project log containing waste manifests/bills of lading for wastes generated by the remedial activities.
- Assist Owner in the review of Remediation Contractor invoices/requests for payment, as required.
- Coordinate a pre-construction project meeting, project construction/coordination meetings, and a project close-out meeting for the remedial activities.
- Install post-construction monitoring wells.
- Prepare a Final Engineering Report (FER) to document completion of the remedial activities.
- Prepare an SMP to document Site management activities following the completion of the remedial components associated with the design.
- Assist the Owner in preparation of the Environmental Easement for the Site.

### **3.4 REMEDIATION CONTRACTOR RESPONSIBILITIES**

In general, the Remediation Contractor is responsible for providing supervision, labor, equipment, and materials needed (unless otherwise noted) to implement the activities described in this RD.

Remediation Contractor responsibilities are detailed throughout the Technical Specifications. The Remediation Contractor's responsibilities also include:

- Verify existing Site conditions.
- Thoroughly review the Contract Documents.
- Provide supervision, labor, equipment, and materials necessary to implement the activities described in the design.
- Review and follow Owner's Contractor Safety Requirements.
- Subcontract with a third party to conduct structural monitoring during remedial construction activities.
- Notify the Remediation Engineer and Owner immediately upon discovery of a discrepancy between the Contract Documents and actual Site conditions.

## 4. Remedial Design

### 4.1 INTRODUCTION

This Remedial Design includes a chronological description and performance schedule of anticipated project activities for the Site remediation. The following documents are included as part of the design:

- Design Drawings (Appendix A)
- Technical Specifications (Appendix B)
- Pre-Design Investigation Report (Appendix C)
- Citizen Participation Plan (CPP, Appendix D)
- Community Air Monitoring Plan (CAMP, Appendix E)
- Remedial Action Monitoring Plan (RAMP, Appendix F)
- Contingency Plan (Appendix G)
- Quality Assurance Project Plan (QAPP, Appendix H)
- NYSDEC Remedial Design Approval Email (Appendix I)

The primary tasks covered under this remedial design include:

- Pre-Remediation Activities
- Site Preparation
- Excavation and Dredging
- In-Situ Solidification
- Waste Management
- Soil Capping
- Site Restoration
- Demobilization
- Environmental Monitoring and Controls

A description of each remediation task is presented in the following subsections.

### 4.2 SUMMARY OF PRE-REMEDIAL ACTIVITIES

The primary pre-remediation activities covered under this remedial design include:

- Assist NYSDEC and the Owner with preparation of a citizen participation notice and fact sheet, per the Citizen Participation Plan (Appendix D);
- Obtain regulatory permits;
- Develop a Site-specific Health and Safety Plan (HASP);
- Perform pre-construction utility location work;
- Relocate specified Site electric utility poles (by NYSEG); and,
- Prepare pre-mobilization submittals.

### 4.3 SUMMARY OF REMEDIATION ACTIVITIES

Remediation activities shall be conducted in the following general sequence described below:

- Mobilize and perform Site preparation;
- Community air monitoring;
- Remove MGP-impacted Seneca River and Canal sediments within dredging limits, moisture condition as required, and transport to a designated off-site licensed disposal facility;
- Backfill Seneca River and Canal to final elevations and grades to provide a stable bank and bottom substrate for restoration of the benthic community;
- Install bank stabilization measures along dredging limits;
- Install soil caps using clean imported soil over two defined areas within the Lowland Area;
- Install temporary excavation support systems in the Upland Area, as necessary;
- Demolish surface structures in the Upland Area, size reduce material, and transport to a designated off-site licensed disposal facility;
- Remove MGP-impacted soil and structures within the Upland Area excavation/ISS limits, moisture condition as needed per the treatment, storage, and disposal facility's requirements, and transport to a designated off-site licensed disposal facility;
- Perform ISS by mixing grout within the limits and to the depths indicated on the Design Drawings and remove excess ISS spoils, if needed, and transport to a designated off-site licensed disposal facility;
- Grade top surface of solidified soil as subgrade in the Upland Area and backfill with clean imported backfill;
- Install gravel parking lot in the Upland Area;
- Remove MGP-impacted soil within the 185 Fall Street (off-site residential property) excavation limits, moisture condition as required, and transport to a designated off-site licensed disposal facility;
- Backfill the residential property to final elevations and grades shown on the Design Drawings and seed and mulch to stabilize restoration; and,
- Perform Site restoration, final survey, and demobilization.

The Remediation Contractor may propose an alternate construction sequence. Alternate construction sequences must be approved by the Owner and the Design Engineer and/or Remediation Engineer prior to implementation.

### 4.4 SITE PREPARATION

The Remediation Contractor will prepare the Site for the required excavation work. Site preparation activities include:

- Mobilization;
- Surveying to establish baseline conditions and grades;
- Installation of security fencing;
- Installation of erosion and sedimentation controls;
- Set-up of temporary Site facilities;
- Utility location, protection, and relocation, unless indicated on the Design Drawings; and
- Set-up of traffic management at the project Site.

The Remediation Engineer will conduct the following site preparation activities:

- Set-up and preliminary background study of CAMP stations; and,
- Operation of CAMP stations prior to (to obtain baseline measurements) and during construction activities.

#### **4.4.1 Mobilization**

The Remediation Contractor will mobilize to the Site necessary manpower, equipment, and materials to initiate the work. The initial mobilization will include the delivery of materials and equipment for Site preparation. This will be followed by delivery of equipment and materials needed for excavation work.

#### **4.4.2 Erosion and Sedimentation Controls**

Erosion and sediment controls will be installed prior to the disruption of Site soil, as detailed in the Design Drawings and Technical Specifications. Prior to clearing vegetation or disturbing Site soils, siltation fence and/or hay bales will be placed around affected catch basins. During construction, areas of disturbance shall have silt fence and/or hay bales to control erosion and sedimentation around their entire perimeter. Proposed erosion and sedimentation controls are shown on the Design Drawings. The Remediation Engineer may direct the Remediation Contractor to install additional erosion and sedimentation controls for surface water runoff (i.e. hay bales and/or earth berms) during construction. The erosion and sediment controls will be inspected and maintained by the Remediation Contractor throughout the duration of the work.

A Storm Water Pollution Prevention Permit will be not required since this remedial action will be conducted under NYSDEC's oversight; however, the intent of the permit must be met.

#### **4.4.3 Clearing and Placement of Site Facilities**

The Remediation Contractor will establish the Site facilities necessary to support and execute the work. Fencing, trees, and other surface features that impede access to the remediation areas will be removed. The following Site facilities may be required during remedial construction:

- Construction offices;
- Utilities (electric, water, sewer, and telephone);
- Lighting;
- Security fencing;
- Fuel storage and dispensing;
- Sanitary facilities;
- Haul roads;
- Decontamination pad(s);
- Health and safety equipment;
- Material laydown areas;
- Construction water treatment system;
- Soil stockpile areas;
- Traffic control signage; and,
- Parking areas.

Site perimeter fencing will have professionally-made signs stating that access to the Site is limited to authorized personnel and work within the Site must be done with the appropriate personal protective equipment (PPE). In addition, a 4-foot by 8-foot sign will be posted reading “NYSDEC Order on Consent No. DO-0002-9309” in compliance with NYSDEC specifications. A hotline will be set up which will provide the public with means of contacting NYSEG or its representatives to express concerns about the project, including odor-and dust-related issues. The Site hotline number will be identified on temporary signs mounted on the perimeter fencing surrounding the Site.

Work zones will be established within the Site boundaries in accordance with the Remediation Contractor’s Site-specific HASP and the Design Drawings that define the initial exclusion zones, the decontamination zones, and the support zone. These zones will change as the work progresses to maintain safety and allow for practical completion of the work.

#### **4.4.4 Surveying**

The Remediation Contractor will retain a New York State-licensed surveyor to provide initial benchmarks and stakeout for horizontal and vertical excavation. The Remediation Contractor will use this initial survey to confirm and maintain horizontal and vertical limits as the work proceeds. The licensed surveyor will return to the Site as needed to document measurements of unit cost bid items, excavation volumes, and to complete an as-built survey of the finished work.

#### **4.4.5 Protection of Utilities and Relocation**

The Design Drawings identify known active utilities in the work areas that must be protected. The Remedial Contractor will confirm the location of the known active utilities and will be responsible for the overall identification and protection of subsurface facilities within the project work limits identified in the RD.

Two utility poles located on the north side of the Site (U.P. 101 114A 119A and U.P. NYSEG 401 114B 119B 113) as shown on the Design Drawings. The utility pole relocations will be performed by NYSEG prior to Remediation Contractor mobilization.

#### **4.4.6 Decommissioning of Monitoring Wells**

Monitoring wells identified in the Design Drawings within the remediation footprint will be abandoned by the Remediation Engineer during the Site preparation activities per NYSDEC Commissioner Policy CP-43 – Groundwater Monitoring Well Decommissioning Policy (NYSDEC, 2009b). Select wells to be preserved and protected by the Remedial Contractor for future monitoring are shown on Drawing C-101.

#### **4.4.7 Traffic Management**

A traffic plan will be submitted by the Remediation Contractor as part of the Technical Execution Plan. The traffic plan will describe the specific off-site transportation routes that will be followed to manage construction traffic during the work and to minimize disturbance to the community. The transportation route shall be approved by NYSEG prior to mobilization. The traffic plan will also detail the on- and off-Site traffic controls to be implemented during the work.



Street sweeping and use of water to control dust will be performed by the Remediation Contractor on public roadways, as required throughout the course of the work.

## **4.5 EXCAVATION AND DREDGING**

### **4.5.1 Excavation Objectives**

Excavation of soils, sediment, and subsurface obstructions will be conducted as part of the Site remediation. The three distinct components to the excavation of materials from the Site include:

- Dredging of the sediment from the Seneca River and Canal;
- Removal of MGP-impacted soil from the off-site residential property 185 Fall Street; and,
- Clearing of shallow obstructions and soils to permit ISS.

### **4.5.2 Sediment Removal**

The horizontal and vertical limits of sediment removal are shown on the Design Drawings. These sediments contain source material, as defined by the presence of MGP tar, petroleum non-aqueous phase liquid (NAPL), or concentrations of total PAHS above four (4) mg/kg, as identified in the ROD. The nine dredging cells shown on Drawing C-401 will remove sediment down to bedrock with dredging depths up to six ft. The estimated volume of sediment to be removed is 2,200 cubic yards (cy).

Excavation will be performed by a long stick excavator with a minimum horizontal reach of 50 ft. Since several of the dredging areas extend beyond the 50-ft reach of an excavator located on the bank, three crane pads will be required to remove sediment at the most distant points from the bank. The proposed locations of these pads are shown on Drawing C-401. The excavator will be equipped with a location sensor to verify the lateral and vertical extent of the dredging activities.

Dredging is scheduled to occur during the winter months when the water level in the Seneca River and Canal is lowest.

Excavated sediment will then be placed in the dewatering staging area. Dewatered sediment will be moisture conditioned and/or stabilized, as necessary, prior to transport to a designated off-site licensed disposal facility. Waste handling is discussed in Section 4.7 and Technical Specification 02 53 00 – Waste Transportation, Treatment, and Disposal.

The sediments will be replaced with backfill which meets the chemical and gradation requirements of NYSDEC and will, at a minimum, restore the benthic habitat.

### **4.5.3 185 Fall Street Excavation**

Excavation at 185 Fall Street will address soil containing PAHs and metals at concentrations exceeding the 6 NYCRR Part 375-6.8 Residential Use SCOs for protection of public health as identified in the ROD. Seven excavation cells are shown on Drawing C-400 and have depths varying from two to seven ft. The intent is to remove fill material at 185 Fall Street above glacial till, so the actual depth of excavation may vary. The estimated excavation volume is 650 cy.

The horizontal and vertical limits of MGP-related impacts were previously identified during the remedial investigation, and are based on those provided in the ROD. Therefore, confirmatory sampling is not anticipated during the remedial implementation. However, to protect the building foundation at 185 Fall Street from settlement, only the top 2 feet of soil will be removed up to 5 feet away from the western and southern sides of the building. Documentation samples will be collected from the exposed soil and analyzed for BTEX, PAHs and cyanide. If the sample results are found to be below the Residential Use SCOs, then no further action will be required prior to the placement of the backfill. If the sample results are found to be above the Residential Use SCOs, then a demarcation barrier will be placed prior to the placement of backfill. Sampling and analytical requirements are provided in the RAMP and QAPP (Appendices F and G), respectively.

If groundwater is encountered during excavation, then groundwater will be pumped and treated by an on-site construction water treatment system and discharged to the Seneca River under a temporary SPDES permit-equivalent. Water treatment and handling is discussed in Section 4.7 and Technical Specifications 02 70 00 – Water Treatment and 02 53 00 – Waste Transportation, Treatment, and Disposal.

The final excavation limits will be surveyed prior to backfilling. The excavation areas will be restored to the grade shown on the Design Drawings. Restoration will consist of common borrow with 6-inches of topsoil. A demarcation barrier may be placed at the bottom of the excavation if glacial till is not encountered and documentation samples indicate that the remaining soils are above 6 NYCRR Part 375-6.8 Residential Use SCOs for protection of public health. Soil used as part of the cover system shall meet the requirements as set forth in 6 NYCRR Part 375-6.7(d) for residential use.

#### **4.5.4 Pre-ISS Excavation**

The horizontal limits of the pre-ISS excavation are shown on the Design Drawings. Excavation is planned to allow for expansion of soils during ISS, to remove existing subsurface structures (e.g., foundations) that would interfere with ISS, and to address soil containing PAHs, BTEX, or inorganic constituents at concentrations exceeding the 6 NYCRR Part 375-6.8 Commercial Use SCOs for protection of public health. The horizontal limits have been defined in accordance with those shown in the ROD and the anticipated structural/geotechnical and practical constraints of the work area. The vertical limit of excavation will be approximately four feet below existing ground surface, though deeper excavations may be required to clear obstructions below this depth to allow for ISS mixing. Slopes shall comply with Occupational Safety and Health Administration (OSHA) requirements (29 CFR 1926.650 to 1926.652). The Remediation Contractor will be responsible for supporting utilities and structures as needed to complete the work. Due to the depth of the gas holder foundation, only the gas holder walls will be removed to the top of pre-ISS excavation cut.

The ISS area has a footprint of approximately 19,506 square feet. The pre-ISS excavation area has a footprint of 20,944 square feet based on a 1.5:1 sidewall slope on the east, south, and western sides of the ISS treatment area and a sheeting/shoring system to the north. A total of approximately 3,700 cy of material is anticipated to be removed during the pre-ISS excavation.

Soil removed as part of the pre-ISS excavation will be transported to a designated off-site licensed disposal facility. Subsurface piping and remnant MGP structures will be reduced in size, as needed, and transported to a designated off-site licensed disposal facility. Waste handling is discussed in Section 4.7

and Technical Specification 02 53 00 – Waste Transportation, Treatment, and Disposal. Pipe handling is discussed in Technical Specification 02 61 13 – Piping Removal.

#### **4.5.5 Shoring**

Shoring protection will be required along the right-of-way, adjacent to the residential structure, and along the property boundary with 181-183 Fall Street where the excavation depth is five feet (excavation cell E3). Additional shoring may be required if the excavation proceeds deeper than the intended depth.

A trench box will be used to excavate material adjacent to the residential structure and in cell E3. The trench box will be installed at least five feet away from and perpendicular to the residential structure. Shoring along the right-of-way will consist of an ISS support wall. The support wall will extend to two feet below the top of glacial till and will be nine feet wide.

The existing retaining wall between the Site and 185 Fall Street will be demolished as part of this remedial work.

#### **4.6 LOWLAND AREA COVER SYSTEM**

The limits of the Lowland Area soil cover system are shown on the Design Drawings. Two distinct areas of the Lowland Area and a lowland portion of neighboring 193 Fall Street will be capped with a soil cover. The cover area will total 21,280 square feet.

The cap areas will be cleared and grubbed during site preparation (see Section 4.4). A demarcation layer will be installed at ground surface prior to installation of the soil cover. A one-foot thick clean soil cover will be installed per the Design Drawings and Technical Specifications. Fill material will meet NYSDEC chemical requirements for commercial site use, as provided in Technical Specification 31 23 23.13 – Backfill. Hydro seed will be installed, and temporary erosion controls will be installed and maintained until grass is established.

Institutional controls to document the soil cover and limit Site use will be implemented following completion of the remedial action. Inspections and maintenance of the soil cap will be discussed in the SMP.

#### **4.7 IN-SITU SOLIDIFICATION**

The Remediation Contractor will conduct ISS in accordance with the Design Drawings and Technical Specifications. This section presents the basis for the ISS design, including consideration of the horizontal and vertical limits and mixing.

##### **4.7.1 Treatment Volume**

The horizontal limits of ISS are shown in the Design Drawings, in accordance with the ROD. The ISS area has a footprint of approximately 19,506 square feet. The volume of soil to be treated by ISS below the 4-foot pre-ISS excavation cut is approximately 4,230 cy. The ISS treatment area has nine treatment cells based on targeted treatment depth. The depths range from six to 23 ft below grade as defined in the ROD. The gas holder foundation was found to be at a depth of 20 ft based on previous investigations.

Depth to water within the holder has been measured as much as four feet above the groundwater table outside the holder, which indicates that the gas holder foundation and wall have not been compromised. Given the depth of excavation required to remove the gas holder foundation (> 20 feet), the gas holder foundation will remain in place and the upper part of the gas holder wall will be removed to the pre-ISS excavation elevation. Material within the remaining gas holder structure will be solidified in the same manner as the soil throughout the ISS area.

#### **4.7.2 ISS Mixing**

Mixing will be conducted in an overlapping sequence so that a monolithic solidified mass is created within the horizontal and vertical limits of ISS, as shown on the Design Drawings. Soil will be solidified using a hydraulic mixing rig or other suitable rotary blending equipment. The ISS equipment shall be equipped with a sensor to verify that the lateral and vertical limits of the ISS area have been met.

Quality Assurance/Quality Control (QA/QC) testing of the solidified material will be conducted to confirm that the ISS monolith meets the performance criteria of an unconfined compressive strength of 50 pounds per square inch (psi) and a hydraulic conductivity of no more than  $1 \times 10^{-6}$  centimeters per second (cm/sec). ISS performance sampling procedures and criteria are provided in Technical Specification 31 32 13 – In-Situ Solidification. The Remediation Contractor will recover solidified material QA/QC samples at the direction of the Remediation Engineer. The Remediation Contractor will form the sample cylinders and submit them for analysis. Extra sample cylinders will be formed at each sample location should repeat testing be necessary. The Remediation Contractor will also collect core samples of solidified materials to visually inspect the mixing of the impacted material, especially areas with known NAPL. Information on the coring program are included in Technical Specification 31 32 13.

Bench scale testing conducted during the PDI (Haley & Aldrich, 2016) tested a series of mixes against the project performance requirements. The results of the bench scale testing, which is provided in the Technical Specifications, indicate that a mixture of 9% granulated ground blast furnace slag (GGBFS) and 3% Portland Type I/II cement met the performance criteria. However, each bidding Remediation Contractor shall submit their proposed mix design during the bidding process. The selected Remediation Contractor will be required to demonstrate their mixture meets performance criteria with Site soils prior to being selected. The Remediation Contractor is responsible for meeting the project's performance requirements.

#### **4.7.3 ISS Expansion**

ISS expansion is expected to be approximately 15 to 30 percent (%) by volume. Following ISS, the Remediation Contractor will grade the top of the ISS monolith to allow for the required clean cover and gravel cover as shown on the Design Drawings. If generated, ISS spoils will be transported to the designated off-site licensed disposal facility. Waste handling is discussed in Section 4.7 and Technical Specification 02 53 00 – Waste Transportation, Treatment, and Disposal.

#### **4.7.4 ISS Monolith Stability**

The solidified material should form a stable monolith across the Site. Experience at other sites indicates the unit weight of the solidified soil is similar or slightly higher than the existing soil. Therefore, loading from the increased weight of the solidified monolith to the underlying soils is expected to be small and would result in a negligible load increase on the underlying soils.

#### 4.7.5 ISS Cover System

A cover system will be placed over the ISS monolith to protect from freeze-thaw and root penetration damage. A demarcation barrier will be placed between the soil cover and monolith. A minimum of 4 feet of cover will be established between the top of the monolith and the final finished surface. The cover system will generally consist of 8-inch graded aggregate subbase over a clean soil layer. Soil used as part of the cover system shall meet the requirements as set forth in 6 NYCRR Part 375-6.7(d) for commercial use.

#### 4.8 WASTE MANAGEMENT

Potential remedial action waste streams have been identified as follows:

- Land Clearing Debris
- Grubbing
- Sanitary Waste (General Refuse)
- Remediation-related Solid Waste
- Construction and Demolition Debris
- MGP-Impacted Construction and Demolition Debris
- MGP-Impacted Soil
- MGP-Impacted Sediment
- Construction Water

Excavated material will be sent to an off-site licensed disposal facility permitted to accept the waste and approved by NYSEG. Waste Management details are further described in Technical Specification 02 53 00 - Waste Transportation, Treatment, and Disposal.

##### 4.8.1 Waste Characterization

Soil and sediment to be excavated has been characterized for disposal by the Design Engineer. This waste characterization data is provided in the Technical Specifications and the PDI Report (Appendix C). The Remediation Engineer will provide relevant data to the Remediation Contractor and the selected disposal facilities.

##### 4.8.2 On-Site Waste Management

To the extent practicable, impacted material generated during excavation will be loaded directly into trucks for transportation off-site. Impacted material may be temporarily stored on Site to consolidate large amounts for bulk transport, and to accommodate construction sequencing and disposal facility scheduling. Where feasible, stockpile areas will be located over areas to be excavated, negating the need for liners. The use of liners will be determined by the Remediation Engineer based on whether the material underlying the stockpile area will eventually be excavated. On-site storage will be managed in accordance with applicable laws and regulations dealing with the type of waste being stored. Liquid wastes will be stored in appropriate tanks or drums. Other (non-soil) solid materials will be stored in roll-off containers or covered stockpiles.

Debris generated during demolition and excavation may require decontamination to meet facility acceptance requirements. Decontamination will be conducted using brushes, steam cleaners, and/or

pressure washers. Residues from decontamination operations will be collected and managed with other contaminated soil. Decontamination water will be collected for on-site treatment or off-site disposal.

Waste management activities, including handling and loading, will be done in such a manner that odors and vapors are controlled, in accordance with the CAMP.

#### **4.8.3 Off-Site Transportation and Disposal or Treatment**

The Remediation Contractor will stockpile, load, transport, and dispose of the excavated material. Waste materials will be transported in dump or tanker trucks to the receiving disposal facilities. Transportation of impacted materials from the Site will be performed in accordance with hazardous waste, non-hazardous waste, and transportation regulatory requirements.

Haul trucks will have poly bed liners, tarp covers, and gasketed tailgates. Trucks will be sprayed, as necessary, with odor suppressive foam prior to covering to reduce vapor and odor emissions.

Trucks will be loaded in such a way as to avoid contamination of their exteriors, including tires. Trucks will be thoroughly inspected for contamination prior to leaving the Site. If truck exteriors do become contaminated they will be decontaminated prior to leaving the Site.

Waste materials will be documented using waste tracking forms, bills of lading, and receipts. Shipments of waste from the Site will be documented, at a minimum, to describe the type and amount of waste and the receiving facility. The Remediation Engineer will sign the transportation manifests prior to loads leaving the Site as a representative for NYSEG.

Waste materials will be transported to off-site disposal facilities permitted to accept such waste and approved by NYSEG.

#### **4.8.4 Water Management**

Water containing MGP constituents will be generated, collected, and treated during remedial activities. Potential sources of water requiring management include, at a minimum: dewatering of excavation, dewatering of sediment, storm water entering containment cell or contaminated areas, and decontamination of debris and equipment. The volume of collected impacted water is expected to be minimal as excavation will take place primarily above the groundwater table; groundwater entering the excavation will likely be from perched conditions. In addition, the use of proper run-on and run-off controls will further limit the amount of impacted water to be collected.

Wastewater will be treated on Site using a construction water treatment system. The treated water will be discharged to the Seneca River and Canal through a temporary SPDES permit. The construction water treatment system generally consists of influent frac tanks (removal of NAPL), organo-clay filtration (removal of emulsified NAPL), bag filters (removal of sediment), activated carbon filtration (removal of VOCs and PAHs), and ion exchange resin (removal of cyanide). Specific requirements are provided on the Design Drawings and Technical Specification 02 70 00 – Construction Water Management.

## 4.9 SITE RESTORATION

Site restoration activities will include the following:

- Regrade Upland and Lowland Areas as shown on the Design Drawings (the retaining wall between the Site and 185 Fall Street will not be replaced);
- Install gravel parking area over the ISS treatment area;
- Install four monitoring wells as shown on the Drawings (the Remediation Engineer will be responsible for well installation);
- Regrade Canal Area as shown on the Design Drawings;
- Plant specified seed mixes in the Upland Area 185 Fall Street excavation areas identified for seeding;
- Place topsoil in the bank restoration areas as shown on the Design Drawings;
- Install a floodplain seed mix, subaqueous vegetation, and erosion controls in the bank restoration areas; and
- Maintain plantings for the required maintenance period.

Design Drawings C-500 through C-503 and C-600 describe the materials and procedures for installation, monitoring and maintenance of the restoration measures.

## 4.10 DEMOBILIZATION

Demobilization activities will include the following:

- Decommission and remove designated on-site temporary facilities and controls;
- Perform post-construction inspection and survey, as necessary, of buildings, utilities, and other structures in or adjacent to areas of planned remedial activities that may be impacted by excavation or other aspects of the work;
- Provide project documentation including submittals, daily reports, results of quality control testing, as-built survey, and other documents required by the Technical Specifications;
- Decommission and remove designated temporary erosion and sedimentation controls;
- Remove facilities and imported material from the off-site soils stockpile and provide seeding and erosion control; and
- Clean Site, dispose of refuse and manage remaining miscellaneous materials as required.

## 4.11 ENVIRONMENTAL MONITORING AND CONTROLS

### 4.11.1 Environmental Controls

The Remediation Contractor will provide environmental controls to ensure that the work activities do not spread impacted soil and MGP wastes outside the impacted areas and to maintain the protection of human health and the environment throughout the project. These controls are described in detail in the following Technical Specifications:

- Technical Specification 01 57 26 – Dust Control;
- Technical Specification 35 11 00 – Signaling and Control Equipment for Waterways (includes turbidity controls); and
- Technical Specification 44 32 00 – Vapor and Odor Control.

A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared by the Remediation Contractor and submitted to the Remediation Engineer for review prior to beginning intrusive work on Site.

#### **4.11.2 Environmental and Construction Monitoring**

FCM and project monitoring will generally be conducted by the Remediation Engineer in accordance with the CAMP (Appendix E), RAMP (Appendix F), and QAPP (Appendix H). Erosion and sedimentation control inspections and monitoring will be conducted by the Remediation Contractor in concert with the Remediation Engineer under the SWPPP.

Site perimeter and work zone air monitoring will be conducted in accordance with Section 5, the Site HASP, QAPP (Appendix H), and CAMP (Appendix E). Emergency response measures associated with air monitoring are presented in the CAMP.

Surface water monitoring will be conducted by the Remediation Contractor, and reviewed by the Remediation Engineer, to monitor potential impacts and unauthorized construction discharges the Seneca River and Canal. Vibration and structural monitoring will be conducted by the Remediation Contractor, and reviewed by the Remediation Engineer, to monitor the structural integrity of the residential structure at 185 Fall Street. Monitoring requirements are provided in the RAMP (Appendix F).

#### **4.12 CONTINGENCY PLAN**

The Site-specific Contingency Plan is included in Appendix G. In the event of a Site emergency such as a spill, power loss, severe weather, fire, structural collapse, or other life-threatening incident not specifically addressed in the Site HASP, the employees on scene should immediately check the scene, evacuate if life threatening, call 911, and give care as appropriate within the scope of their training.



## 5. Permitting and Regulatory Requirements

### 5.1 PERMITTING

In addition to performance requirements established to ensure that the remedial action design meets the remedial action objectives set in the ROD (NYSDEC, 2015), the design will also be prepared to meet permitting and other regulatory requirements of the local, state, and federal laws and regulations. As specified in Appendix 7B of the DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, May 2010), NYSDEC may grant exemption from most state permits required for completion of this remedial action, provided the substantive requirements of the permit programs are followed.

Based on the remedial activities to be conducted at the Site and information currently available, the authorizations and/or notifications that have been identified, at a minimum, as potentially applicable with respect to approval of remedial activities are provided in Table I.

In addition to those listed, the Remediation Contractor shall be responsible for obtaining other pertinent and applicable local, state, or federal permits associated with the implementation of this remedial design.

### 5.2 REGULATORY REQUIREMENTS

Environmental regulations regarding non-hazardous waste management apply to this work and will be implemented accordingly. These include provisions for the containment and cleanup of spills and other standard provisions that may be included in this work.

Regulations promulgated by OSHA specify safety and health requirements for work procedures at work places and specifically at construction sites and hazardous waste sites.

Industry standards for work at hazardous waste sites presented in 29 CFR 1910.120 describe specific requirements, including the following:

- Preparation of a project HASP;
- Training and medical monitoring of personnel who may be exposed to hazardous substances; and
- Air monitoring, respiratory protection, and PPE.

The Remediation Engineer will prepare a HASP to govern the work performed by their employees during implementation of this RD. The Remediation Contractor shall prepare a Site-specific HASP as a bid submittal to govern the work performed by their employees and subcontractors. The Remediation Contractor's HASP will be subject to the Remediation Engineer's review and NYSEG's approval. The Remediation Contractor shall follow the requirements of their own HASP throughout the work.

Prior to the work, the selected Remediation Contractor will provide to the Remediation Engineer written evidence of the following items for each person who will be entering the work zone:

- Date of respirator fit test;
- Date of OSHA 40-hour training (or 8-hour refresher training); and

- Date of annual physical.

Persons without these items up-to-date and on file with the Remediation Engineer will not be allowed to enter the work zone.

### **5.3 TRANSPORTATION REQUIREMENTS**

Site-specific requirements for truck drivers and specific requirements for hazardous material shipments are provided in Technical Specification 02 53 00 – Waste Transportation, Treatment, and Disposal. Truck driver safety requirements will be provided in the HASP.

## **6. Quality Assurance**

Quality assurance procedures will be implemented during the work to ensure that it is in conformance with the Remedial Design, and to provide the basis for implementation of contingency actions, if necessary, to bring the work into conformance with the Remedial Design. Construction quality requirements are prescribed in Technical Specification 01 40 00 – Quality Requirements. Sampling quality assurance measures are detailed in the Quality Assurance Project Plan (QAPP) (Appendix H).

## **7. Post-Remediation Activities**

This section presents the remedial activities to be conducted following the completion of the remedial activities at the Site.

### **7.1 FINAL ENGINEERING REPORT**

Within 90 days of completion of the remedial activities, the Remediation Engineer will prepare a FER for the Site, approved by a professional engineer licensed in the State of New York. The FER will be completed in accordance with the requirements presented in NYSDEC DER-10 and, at a minimum, will include the following information:

- A description of the all completed remedial activities. The descriptions shall include any problems encountered and variations (if any) from the NYSDEC-approved RD.
- Record drawings, tables, and figures detailing the remedial activities completed.
- Certification statement.
- Information and documentation regarding the final quantities of materials disposed/treated off-site during implementation of the supplemental remedial activities, including executed manifests and bills of lading.

### **7.2 SITE MANAGEMENT PLAN AND ENVIRONMENTAL EASEMENT**

As presented in the ROD, an SMP will be developed by the Remediation Engineer to document required and potential future activities to be conducted at the Site following the completion of remedial construction activities. The SMP will include the following:

- An Excavation Plan that includes the soil handling and management protocols for future excavation in areas of remaining contamination.
- A Monitoring Plan that provides the requirements for periodic groundwater monitoring and inspection/monitoring of the Lowland Area soil cap and Upland Area gravel cover.
- Identification of institutional controls with the preparation and filing of the appropriate Deed Restriction.
- Requirements for Site access controls such as fencing, signage, and security.
- Provisions for a soil vapor intrusion study, depending on the Site future use and/or redevelopment.

Additionally, the Remediation Engineer shall assist NYSEG in establishing an Environmental Easement for the Site.

The Environmental Easement and associated American Land Title Association (ALTA) survey shall be prepared in accordance with 6 NYCRR Part 375-1.8(h)(2)(i). The Environmental Easement will restrict the use of the Site for commercial and industrial development and restrict groundwater use at the Site.

## 8. Green Remediation

The work completed under this RD will comply with NYSDEC guidance documents, including DER-31: Green Remediation (NYSDEC 2011). To ensure compliance with DER-31, the work will be completed using the best practices and techniques described below. In addition to the items discussed in Section 8.0, specific reporting methods relative to DER-31 are further described below.

### 8.1 BEST PRACTICES AND TECHNIQUES

Attachment 1 of the DER-31 policy provides some examples of best practices and techniques that could be applied during remediation. In addition, NYSDEC expects that the techniques identified below will be implemented at sites unless a site-specific evaluation demonstrates impracticability or favors an alternative green approach:

| Practice/Technique                                                                                                                         | Potential Benefits <sup>1</sup>                   | Applicable to this Work Plan |
|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| Use renewable energy where possible or purchase Renewable Energy Credits (RECs)                                                            | Reduce/supplement purchased energy use            |                              |
| Use of remediation technologies with an intermittent energy supply (i.e., energy use during peak energy generation only)                   | Reduce energy use                                 |                              |
| Incorporate green building design                                                                                                          | Reduce future use impacts                         |                              |
| Reuse existing buildings and infrastructure to reduce waste                                                                                | Reduce waste and material use                     |                              |
| Reuse and Recycle construction and demolition (C&D) debris and other materials (i.e., grind waste wood and other organics for on Site use) | Reduce waste and material use                     | X                            |
| Design cover systems to be usable (i.e., habitat or recreation)                                                                            | Reduce construction impacts of future development | X                            |
| Reduce vehicle idling                                                                                                                      | Reduce air emissions and fuel use                 | X                            |
| Use of alternate fuels (i.e., biodiesel or E85)                                                                                            | Reduce air emissions                              | X                            |
| Sequence work to minimize double-handling of materials                                                                                     | Reduce construction impacts                       | X                            |
| Use energy efficient systems and office equipment in the job trailer                                                                       | Reduce energy use                                 | X                            |

Note: <sup>1</sup> Potential benefits listed are not all inclusive and will vary dependent upon the site and implementation of the practice or technique.

To comply with the requirements of DER-31, the following actions will be taken:

- On-site vehicles and fuel consuming equipment will be shut off if not in use for more than 5 minutes.

- Electricity use associated with the Site (e.g., site trailer, wastewater treatment plant) will be minimal and, therefore, renewable energy credits will not be purchased to offset that electricity use following construction completion or at the end of each calendar year, whichever comes first.
- Work will be sequenced, to the extent practicable, to allow the direct loading of waste containers for off-site disposal.
- To the extent practicable, energy efficient systems and office equipment will be utilized within the Site trailers.
- Where practicable, non-impacted excavated soil and construction debris that has been segregated from impacted materials will be reused on Site during backfill and Site restoration activities.
- Vehicles and equipment that consume diesel fuel will be required to use ultra-low sulfur diesel.

## 8.2 REPORTING

Green and sustainable practices and techniques employed each day will be discussed in daily field reports. Specifically, the report will acknowledge that the five actions described above were taken that day (if applicable). In addition, the following information will be provided within the daily report:

- The estimated quantity of fuel consumed by on-site vehicles and equipment;
- The estimated distance traveled by trucks and equipment delivering goods or removing waste; and
- The estimated water use during on-site activities.

The information collected will be presented within the FER with a discussion of the estimated environmental impact associated with the information.

## **9. Schedule and Hours of Operation**

The remedial activities are planned to begin in 2018 and be substantially completed by the end of fall 2020. Weather-dependent restoration activities, such as establishment of vegetative cover, are anticipated to continue periodically through late spring 2019. The overall remedial project is anticipated to take approximately 8 months.

Hours allowed for equipment operation during the remedial activities will be daylight hours between 7 AM and 5 PM, Monday through Friday, unless otherwise allowed in writing by the Owner and notification of NYSDEC. The Remediation Contractor may be on Site earlier or later than actual hours of equipment operation, holding safety meetings and other daily planning associated with the Site work.

## References

1. Haley & Aldrich, Inc. 2008. "Data Summary Report, Seneca Falls Former MGP Site, Site No. 8-50-010, Seneca Falls, New York," dated July 2008.
2. Haley & Aldrich, Inc. 2009. "Data Summary Report Addendum, Seneca Falls Former MGP Site, Site No. 8-50-010, Seneca Falls, New York," dated December 2009.
3. Haley & Aldrich, Inc. 2013. "Remedial Investigation Report, Seneca Falls Former MGP Site, Site No. 8-50-010, Seneca Falls, New York," dated April 2013.
4. Haley & Aldrich, Inc. 2015. "Feasibility Study, Seneca Falls Former MGP Site, Site No. 8-50-010, Seneca Falls, New York," dated January 2015.
5. Haley & Aldrich, Inc. 2016. "Pre-Design Investigation, Seneca Falls Former MGP Site, Site No. 8-50-010, Seneca Falls, New York," dated March 2016.
6. New York State Department of Environmental Conservation, 1994. Administrative Order on Consent Index No. D0-0002-9309.
7. New York State Department of Environmental Conservation, 2006. "6 NYCRR Part 375 Environmental Remediation Programs," dated December 2006.
8. New York State Department of Environmental Conservation, 2010. "DER-10 Technical Guidance for Site Investigation and Remediation," dated May 2010.
9. New York State Department of Environmental Conservation, 2011. "DER-31 Green Remediation," dated August 2010 and revised January 2011.
10. New York State Department of Environmental Conservation, 2015. "Record of Decision, Seneca Falls Former MGP Site, Site No. 8-50-010, Seneca Falls, New York," dated March 2015.

\\haleyaldrich.com\share\man\_common\34507\_Seneca\_Falls\974 Design\Remedial Design\Final 100% Submission to NYSDEC\2018-0814-NYSEG Seneca Falls 100% RD\_NYSDEC-F.docx



## TABLE

TABLE I  
PERMIT AND AUTHORIZATION EVALUATION  
SENECA FALLS FORMER MGP SITE  
SENECA FALLS, NEW YORK

| Permit/Authorization              | Statute, Regulation, or Authority         | Agency                                                                       | General Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Applicability | Responsible Party |
|-----------------------------------|-------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------|
| Federal                           |                                           |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |                   |
| Jurisdictional Determination (JD) | Clean Water Act                           | United States Army Corp of Engineers (USACE)                                 | To determine if the Seneca River and Canal is a Water of the United States. A preliminary JD will be requested for the Work.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Dredging      | Design Engineer   |
| Section 404                       | Clean Water Act                           | USACE                                                                        | For discharge of dredged or fill material into waters of the United States, including wetlands.<br><br>Implementation of Nationwide Permit (NWP) 38 - Cleanup of Hazardous and Toxic Waste will fulfill the requirements of Section 404. NWP 38 applies for specific activities required to effect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority. Court ordered remedial action plans or related settlements are also authorized by this NWP. | Dredging      | Design Engineer   |
| Section 10                        | Rivers and Harbors Act                    | USACE                                                                        | For excavation/fill work in any navigable water of the United States; the Seneca River and Canal is a navigable waterway.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Dredging      | Design Engineer   |
| Section 7                         | Endangered Species Act                    | United States Fish & Wildlife Service (USFWS)                                | To determine if the project will result in the take of any species listed as endangered or threatened by USFWS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Site-wide     | Design Engineer   |
| Section 106                       | National Historic Preservation Act (NHPA) | New York State Office of Parks, Recreation and Historic Preservation (OPRHP) | To identify historic properties at the Site. Administered by the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) under the State Historic Preservation Act (further described below).                                                                                                                                                                                                                                                                                                                                                                               | Site-wide     | Design Engineer   |

**TABLE I**  
**PERMIT AND AUTHORIZATION EVALUATION**

SENECA FALLS FORMER MGP SITE

SENECA FALLS, NEW YORK

| Permit/Authorization                                                                                                                            | Statute, Regulation, or Authority                | Agency                                                                    | General Information                                                                                                                                                                                                                                                                                                                                                  | Applicability                  | Responsible Party                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------------------------------------|
| <b>State</b>                                                                                                                                    |                                                  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                      |                                |                                                                                  |
| Canal Work Permit                                                                                                                               | Canal Regulations Section 156.4                  | New York State (NYS) Canal Corporation                                    | "Any party who plans to perform any work on the canal system must apply for and obtain a revocable canal work permit."<br><br>Work permit must be obtained by the remediation contractor along with bonding and and insurance requirements through a single application.                                                                                             | Dredging                       | Remediation Contractor                                                           |
| State Pollutant Discharge Elimination System (SPDES) Permit - General Permit for Stormwater Discharges from Construction Activity (GP-0-15-002) | 6NYCRR, Parts 750-757 and several Parts of 40CFR | NYS Department of Environmental Conservation (NYSDEC) - Division of Water | Regulates stormwater discharges from construction activities to Waters of the State to protect human health, recreation, and fish and wildlife. Projects that disturb less than one (1) acre are exempt. Remediation projects under a consent order are exempt, though the substantial requirements of the permit must be met.                                       | Site-wide                      | Exempt - Remediation Contractor to submit SWPPP to meet substantive requirements |
| Temporary SPDES Permit - Wastewater Discharge                                                                                                   | 6NYCRR, Parts 750-757 and several Parts of 40CFR | NYSDEC - Division of Water                                                | Regulates wastewater discharges from treatment facilities to Waters of the State to protect human health, recreation, and fish and wildlife.                                                                                                                                                                                                                         | Wastewater treatment discharge | Design Engineer                                                                  |
| Construction, Reconstruction or Repair of Dams and Other Impoundment Structures                                                                 | 6NYCRR, Part 608                                 | NYSDEC - Division of Water                                                | Under Evaluation                                                                                                                                                                                                                                                                                                                                                     | Under Evaluation               | Likely Exempt - Remediation Contractor, if needed                                |
| Construction, Reconstruction or Expansion of Docking and Mooring Facilities                                                                     | 6NYCRR, Part 608                                 | NYSDEC - Division of Water                                                | Under Evaluation                                                                                                                                                                                                                                                                                                                                                     | Under Evaluation               | Likely Exempt - Remediation Contractor, if needed                                |
| 401 Water Quality Certification                                                                                                                 | Clean Water Act                                  | NYSDEC - Division of Water                                                | "Applicants for a Federal license or permit for activities (including but not limited to the construction or operation of facilities that may result in any discharge into waters of the United States) are required to apply for and obtain a Water Quality Certification from DEC indicating that the proposed activity will not violate water quality standards." | Dredging                       | Design Engineer                                                                  |
| Floating Objects                                                                                                                                | NAV 35-a                                         | NYSDEC - Division of Environmental Permits                                | Required for floating objects in the Canal, "other than aids to navigation". Hazard warning markers, such as information markers and controlled area markers, etc. require a permit.                                                                                                                                                                                 | Likely needed during Dredging  | Likely Exempt - Design Engineer, if needed                                       |
| Request to Import/Reuse Fill or Soil                                                                                                            | DER-10                                           | NYSDEC Environmental Remediation                                          | For the import of backfill or soil cover material to a remediation site. This should be submitted to the DEC project manager with at least 5 business days for review.                                                                                                                                                                                               | Site-wide                      | Remediation Engineer                                                             |
| Highway Work Permit                                                                                                                             | NYS Highway Law, Section 52                      | NY Department of Transportation (NYSDOT)                                  | For work within the state highway right-of-way.                                                                                                                                                                                                                                                                                                                      | Upland                         | Remediation Contractor                                                           |

TABLE I  
PERMIT AND AUTHORIZATION EVALUATION  
SENECA FALLS FORMER MGP SITE  
SENECA FALLS, NEW YORK

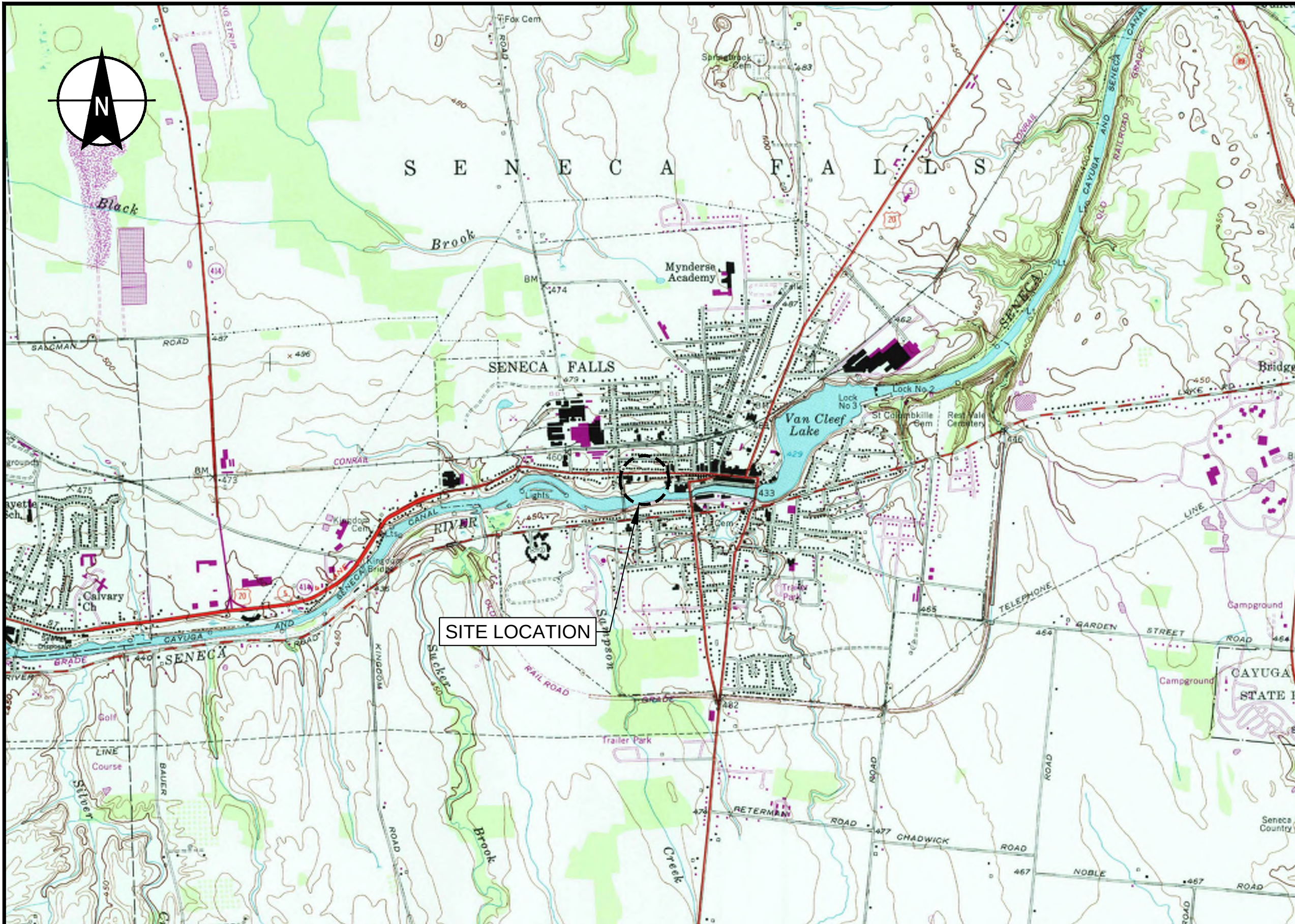
| Permit/Authorization            | Statute, Regulation, or Authority      | Agency                                                        | General Information                                                                                                                                                                                                                                                                                                           | Applicability | Responsible Party                                                                            |
|---------------------------------|----------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------|
| State Endangered Species Review | 6NYCRR, Part 182                       | NYS Natural Heritage Program                                  | To determine if the project will result in the take of any species listed as endangered or threatened by the State.                                                                                                                                                                                                           | Site-wide     | Exempt - However, project must comply with substantive intent of this regulation, if needed. |
| Historic Environmental Review   | State Historic Preservation Act (SHPA) | Office of Parks, Recreation and Historic Preservation (OPRHP) | To determine if the Site is listed on the State or National Register of Historic Places or list of potential candidate sites AND to determine the impact of the project on properties listed on or eligible for listing on the State or National Register of Historic Places. This authorization satisfies NHPA requirements. | Site-wide     | Exempt - However, project must comply with substantive intent of this regulation, if needed. |

**Note:**  
1. All NYSDEC Protection of Waters Permits and USACE Section 404 permits are submitted via a single Joint Application.  
The application form used to apply for a permit in New York is the NYSDEC/USACE "Joint Application for Permit." Must be submitted to BOTH agencies.

## **APPENDIX A**

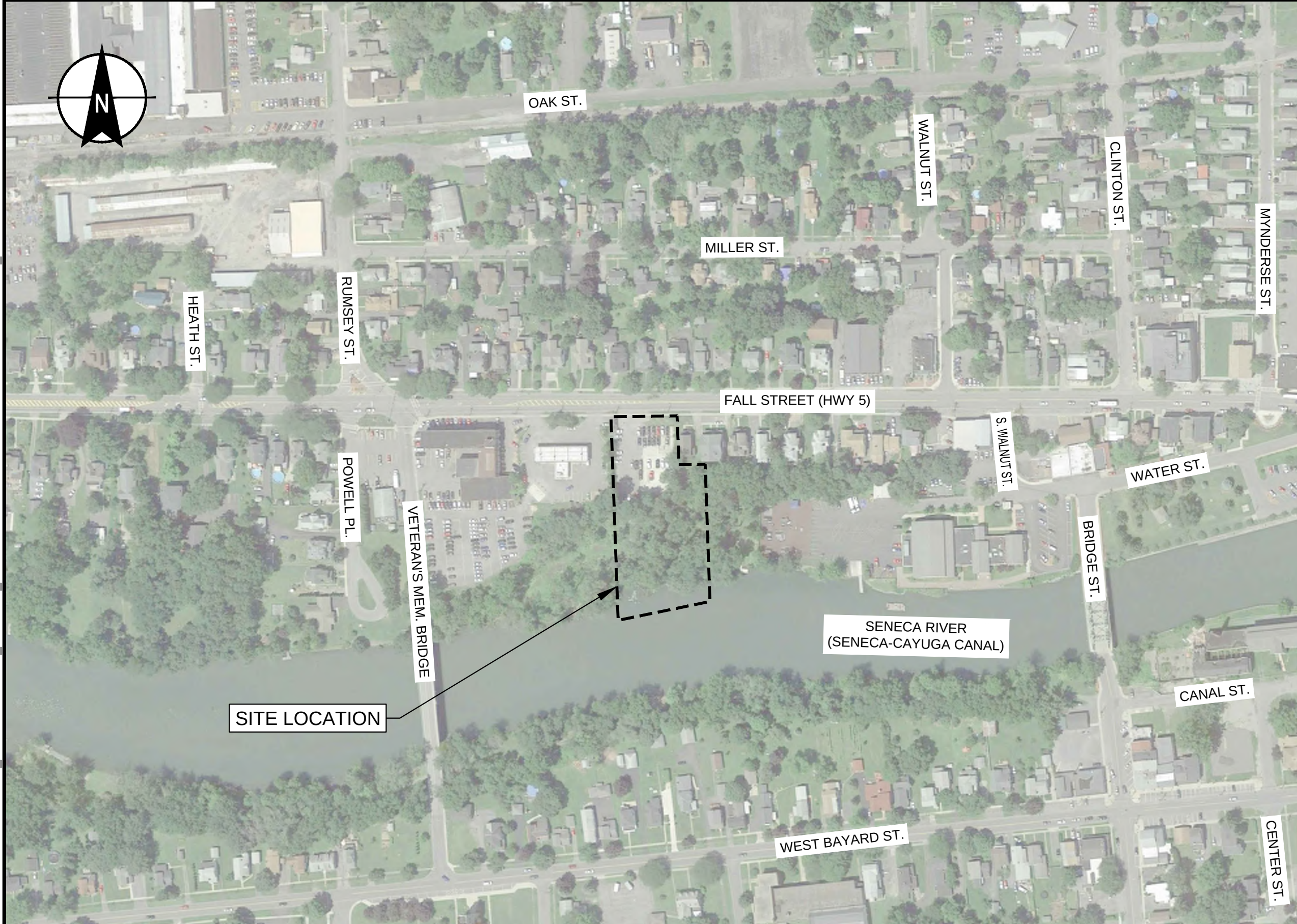
### **Design Drawings**





**SITE LOCUS**  
TOPO SOURCE: USGS TOPOGRAPHIC MAP, SENECA FALLS,  
NEW YORK (1953, REV. 1978).

0 2000 4000  
SCALE IN FEET



**SITE AERIAL**  
MAP SOURCE: IMAGE DATED 07/15/2015 TAKEN  
ELECTRONICALLY FROM GOOGLE EARTH PRO.

0 200 400  
SCALE IN FEET

# REMEDIAL DESIGN NYSEG - SENECA FALLS FORMER MANUFACTURED GAS PLANT (MGP) SITE SITE NUMBER 850010

187 FALL STREET  
SENECA FALLS, NEW YORK

**HALEY  
ALDRICH**

Haley & Aldrich of New York  
200 Town Centre Drive, Suite 2  
Rochester, NY 14623-4264  
Tel: 585.359.9000  
Fax: 585.359.4650  
www.haleyaldrich.com



NEW YORK STATE EDUCATION LAW  
SECTION  
7209 STATES THAT IT IS A VIOLATION  
OF THIS LAW FOR ANY PERSON TO  
ALTER A DOCUMENT IN ANY WAY,  
UNLESS ACTING UNDER THE DIRECTION  
OF A LICENSED PROFESSIONAL  
ENGINEER.

IF A DOCUMENT BEARING THE SEAL OF  
AN ENGINEER IS ALTERED, THE  
ALTERING ENGINEER SHALL AFFIX TO  
THE DOCUMENT THEIR SEAL AND THE  
NOTATION "ALTERED BY" FOLLOWED  
BY THEIR SIGNATURE AND THE DATE  
OF SUCH ALTERATION, AND A SPECIFIC  
DESCRIPTION OF THE ALTERATION.

Project No.: 34507-027  
Scale: AS SHOWN  
Date: 10-AUGUST-2018  
Drawn By: TWJ  
Designed By: ZGG  
Checked By: JPM  
Approved By: JES/SAU  
Stamp:



0 ISSUED FOR BID/ H&A 08/10/18  
CONSTRUCTION

Rev. Description By Date  
REMEDIAL DESIGN  
NYSEG - SENECA FALLS  
FORMER MANUFACTURED  
GAS PLANT (MGP) SITE  
SITE NUMBER 850010  
187 FALL STREET  
SENECA FALLS, NEW YORK

TITLE SHEET

**G-100**

Sheet: 1 of 25

| DRAWING INDEX |             |                                                            |
|---------------|-------------|------------------------------------------------------------|
| Sheet Number  | Sheet Title | Sheet Description                                          |
| 1             | G-100       | TITLE SHEET                                                |
| 2             | G-200       | GENERAL NOTES, ABBREVIATIONS, AND LEGEND                   |
| 3             | G-201       | EROSION AND SEDIMENT CONTROL NOTES                         |
| 4             | C-100       | EXISTING CONDITIONS PLAN                                   |
| 5             | C-101       | EXPLORATION LOCATION PLAN                                  |
| 6             | C-200       | REMEDIAL OVERVIEW PLAN                                     |
| 7             | C-300       | SITE PREPARATION PLAN (UPLAND AREA)                        |
| 8             | C-301       | SITE PREPARATION PLAN (LOWLAND AREA)                       |
| 9             | C-302       | EROSION AND SEDIMENT CONTROL PLAN                          |
| 10            | C-303       | STRUCTURE DEMOLITION AND UTILITY REMOVAL PLAN              |
| 11            | C-400       | EXCAVATION, SUPPORT OF EXCAVATION, AND SOLIDIFICATION PLAN |
| 12            | C-401       | SEDIMENT DREDGING PLAN                                     |
| 13            | C-402       | REMEDIAL SECTIONS 1 OF 2                                   |
| 14            | C-403       | REMEDIAL SECTIONS 2 OF 2                                   |
| 15            | C-404       | SUPPORT OF EXCAVATION SECTIONS                             |
| 16            | C-405       | EXCAVATION/ISS SECTIONS                                    |
| 17            | C-500       | UPLAND AND LOWLAND RESTORATION PLAN                        |
| 18            | C-501       | SENECA CANAL RESTORATION PLAN                              |
| 19            | C-700       | CIVIL DETAILS 1 OF 5                                       |
| 20            | C-701       | CIVIL DETAILS 2 OF 5                                       |
| 21            | C-702       | CIVIL DETAILS 3 OF 5                                       |
| 22            | C-703       | CIVIL DETAILS 4 OF 5                                       |
| 23            | C-704       | CIVIL DETAILS 5 OF 5                                       |
| 24            | P-100       | CONSTRUCTION WATER TREATMENT SYSTEM NOTES AND LEGEND       |
| 25            | P-101       | CONSTRUCTION WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM   |



1. SEE SHEET C-101 FOR EXPLORATION LOCATION PLAN.
2. APPROXIMATE WATER LEVEL EL 428.5', TAKEN ON DECEMBER 12, 2015.
3. NAVIGATION CHANNEL WAS ADDED FROM FILES PROVIDED BY NEW YORK STATE THRUWAY AUTHORITY ON AUGUST 4, 1999.
4. AREAS OF REMEDIATION DEVELOPED FROM "PROPOSED REMEDY, FIGURE 4" BY HALEY & ALDRICH DATED FEBRUARY 2015.

|                                                                                     |                                                  |
|-------------------------------------------------------------------------------------|--------------------------------------------------|
|    | MAJOR EXISTING CONTOUR ELEVATION                 |
|    | MINOR EXISTING CONTOUR ELEVATION                 |
|    | OVERHEAD ELECTRIC LINE                           |
|    | UNDERGROUND ELECTRIC LINE                        |
|    | SANITARY LINE                                    |
|    | STORM LINE                                       |
|    | GAS LINE                                         |
|    | UNKNOWN UTILITY LINE                             |
|    | PROPERTY BOUNDARY                                |
|    | RIGHT-OF-WAY LINE BOUNDARY                       |
|    | HISTORICAL MGP STRUCTURE OR<br>REMNANT STRUCTURE |
|    | EVERGREEN TREE                                   |
|    | DECIDUOUS TREE                                   |
|    | TREE STUMP                                       |
|    | LIGHT POLE                                       |
|    | UTILITY POLE                                     |
|    | UTILITY POLE WITH LIGHT                          |
|    | UTILITY PAINT MARKER                             |
|    | GUY ANCHOR                                       |
|    | SANITARY SEWER MANHOLE                           |
|    | DRAINAGE MANHOLE                                 |
|    | UNKNOWN MANHOLE                                  |
|  | WATER VALVE                                      |
|  | HYDRANT                                          |
|  | SIGN                                             |
|  | CATCH BASIN                                      |
|  | WATER SERVICE VALVE                              |
|  | GAS SERVICE VALVE                                |
|  | CAPPED PIPE FOUND                                |
|  | PIPE FOUND                                       |
|  | NAIL FOUND                                       |

 SB-07-18  
**SOIL BORING (2007 & 2008)**

 MW-08-02  
 SB-08-02  
**GROUNDWATER MONITORING WELL (2007 & 2008)**

 SV-07-04-SS  
 SV-07-04-INA  
**SOIL VAPOR MONITORING POINT (2008)**

 TP-07-06  
**TEST PIT (2007)**

 SS-07-04  
**SURFACE SOIL SAMPLE LOCATION (2007)**

 SS-70202  
**HISTORIC SURFACE SOIL SAMPLING LOCATION (2003)**

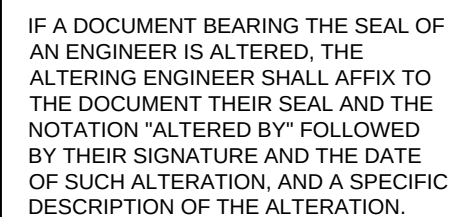
 SS-3  
 (15X10)  
**HISTORIC SOIL SAMPLING AREA (1990)**

 SE-09-31  
**SEDIMENT EXPLORATION LOCATION (AUG. 2009)**

 SW-3  
 SE-3  
**HISTORIC SURFACE WATER/SEDIMENT SAMPLING LOCATION (1990)**

|                                                                                       |                                                   |
|---------------------------------------------------------------------------------------|---------------------------------------------------|
|    | MONITORING WELLS TO BE DECOMMISSIONED             |
|    | SUPPORT OF EXCAVATION                             |
|    | UTILITY/PIPE DEMOLITION/REMOVAL                   |
|    | STRUCTURE DEMOLITION                              |
|    | LIMITS OF WORK                                    |
|    | SILT FENCE                                        |
|    | AUGMENTED SILT FENCE                              |
|    | TURBIDITY CURTAIN                                 |
|    | TEMPORARY DIVERSION SWALE<br>WITH STONE CHECK DAM |
|    | TEMPORARY CHAIN LINK FENCE                        |
|    | TEMPORARY CONSTRUCTION FENCE                      |
|    | SANDBAGS                                          |
|    | PERMANENT CHAIN LINK FENCE                        |
|    | EXCAVATION / ISS AREA                             |
|    | EXCAVATION AREA                                   |
|    | SOIL CAP AREA                                     |
|    | CANAL DREDGING AREA                               |
|    | PAVEMENT RESTORATION                              |
|   | VEGETATED RESTORATION                             |
|  | DRIVE RESTORATION                                 |

|        |                                             |
|--------|---------------------------------------------|
| AKA    | ALSO KNOWN AS                               |
| BGS    | BELOW GROUND SURFACE                        |
| CB     | CATCH BASIN                                 |
| CI     | CAST IRON                                   |
| CL     | CENTERLINE                                  |
| CM     | CENTIMETER                                  |
| CMP    | CORRUGATED METAL PIPE                       |
| COMB   | COMBINED                                    |
| CONC   | CONCRETE                                    |
| CPP    | CORRUGATED PLASTIC PIPE                     |
| DIA    | DIAMETER                                    |
| E      | EAST, EASTING                               |
| ELEC   | ELECTRIC                                    |
| ELEV   | ELEVATION                                   |
| ENC    | ENCLOSED                                    |
| ENVIR  | ENVIROMENTAL                                |
| EP     | EDGE OF PAVEMENT                            |
| FF     | FINISHED FLOOR                              |
| FND    | FOUND                                       |
| FT     | FEET                                        |
| HDPE   | HIGH DENSITY POLYETHYLENE                   |
| INV    | INVERT                                      |
| ISS    | IN-SITU SOLIDIFICATION                      |
| L      | LIBER (BOOK)                                |
| LP     | LIGHT POLE                                  |
| MAX    | MAXIMUM                                     |
| MEAS   | MEASURED                                    |
| MGP    | MANUFACTURED GAS PLANT                      |
| MIN    | MINIMUM                                     |
| MTL    | METAL                                       |
| MUTCD  | MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES   |
| MW     | MONITORING WELL                             |
| N      | NORTH, NORTHING                             |
| N/F    | NOW OR FORMERLY OF                          |
| NAD    | NORTH AMERICAN DATUM                        |
| NAVD   | NORTH AMERICAN VERTICAL DATUM               |
| NE     | NORTHEAST                                   |
| NW     | NORTHWEST                                   |
| NYSDOT | NEW YORK STATE DEPARTMENT OF TRANSPORTATION |
| NYSEG  | NEW YORK STATE ELECTRIC AND GAS CORPORATION |
| NYS    | NEW YORK STATE                              |
| NYT    | NEW YORK TELEPHONE                          |
| O/C    | ON CENTER                                   |
| OD     | OUTSIDE DIAMETER                            |
| OZ     | OUNCE                                       |
| P      | PAGE                                        |
| PVC    | POLYVINYL CHLORIDE                          |
| R/W    | RIGHT-OF-WAY                                |
| S      | SOUTH                                       |
| SAN    | SANITARY                                    |
| SB     | SOIL BORING                                 |
| SE     | SEDIMENT EVAPORATION                        |
| SOE    | SUPPORT OF EXCAVATION                       |
| SS     | SURFACE SOIL                                |
| ST     | STORM                                       |
| SW     | SOUTHWEST                                   |
| TOB    | TOP OF BANK                                 |
| TP     | TEST PIT                                    |
| TYP    | TYPICAL                                     |
| UP     | UTILITY POLE                                |
| UPL    | UTILITY POLE WITH LIGHT                     |
| US     | UNITED STATES                               |
| W/F    | WOOD/FRAME                                  |
| W      | WEST                                        |
| WV     | WATER VALVE                                 |



STATE OF NEW YORK  
SCOTT ANDREW UNDERHILL  
LICENSED PROFESSIONAL ENGINEER  
075332

|      |                 |     |        |
|------|-----------------|-----|--------|
| 0    | ISSUED FOR BID/ | H&A | 08/10/ |
|      | CONSTRUCTION    |     |        |
| Rev. | Description     | By  | Date   |

## GENERAL NOTES, ABBREVIATIONS, AND LEGEND

Sheet: 2 of 25



McCRADY, JEFF  
W:\HALEYALDRICH\COMMON\34507 - SENECA FALLS\600-DESIGN\04-DESIGN PLANS\34507-027\_G-201.DWG  
Printed: 8/10/2018 2:11 PM Layout: G-201

EROSION AND SEDIMENT CONTROL NOTES

- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE APPROVED STORMWATER POLLUTION PREVENTION PLAN.
- ALL SITE ACTIVITIES SHALL TAKE PLACE WITHIN THE LIMITS OF WORK.
- INSPECT, MAINTAIN AND REPAIR/REPLACE EROSION AND SEDIMENT CONTROLS DAILY AND CONTINUOUSLY THROUGHOUT THE DURATION OF THE WORK.
- THE EROSION AND SEDIMENT CONTROLS AS INDICATED ON THE DRAWINGS SHALL BE CONSTRUED AS THE MINIMUM REQUIRED STANDARDS. ADDITIONAL CONTROLS SHALL BE PROVIDED AS NECESSARY TO PREVENT SEDIMENT LADEN DISCHARGES FROM LEAVING THE SITE.
- CONTINUOUSLY MONITOR THE INSTALLED CONTROLS FOR FUNCTIONALITY AND PROVIDE ADDITIONAL MEASURES AS DIRECTED BY THE OWNER OR REMEDIATION ENGINEER. MAINTAIN AND REPAIR/REPLACE ALL EROSION AND SEDIMENT CONTROLS UPON DAMAGE OR FAILURE TO FUNCTION AS INTENDED, UNTIL SITE CONSTRUCTION IS COMPLETE.
- ALL CLEAN STOCKPILED SOIL ON SITE SHALL RECEIVE SILT FENCE ALONG THE DOWNGRADE AREAS OR PROVIDE ADDITIONAL LENGTH OF SILT FENCE.
- ALL CLEAN STOCKPILED SOILS SHALL BE COVERED WITH TEMPORARY SEED AND MULCH WITHIN 14 DAYS (NY) FROM THE LAST ACTIVE DATE OF DISTURBANCE OR SOONER. ALL OTHER STOCKPILES SHALL BE MANAGED IN ACCORDANCE WITH OTHER PROJECT REQUIREMENTS.
- ALL EXISTING INLETS ADJACENT TO OR ON SITE SHALL BE PROTECTED FROM SEDIMENT AS APPLICABLE PER THE INLET PROTECTION DETAIL.
- ENSURE THAT STABILIZED CONSTRUCTION ENTRANCE IS BEING UTILIZED. PREVENT MIGRATION OF SEDIMENT AND TRACKED MUD/DIRT ONTO THE PUBLIC RIGHT OF WAY, ROAD OR ACROSS PRIVATE DRIVEWAYS.
- INSPECT DAILY, SWEEP, AND CLEAN STREETS / DRIVES AS NECESSARY TO MAINTAIN CLEAN AND CLEAR SURFACES. LARGE STONES, ACCUMULATED GRAVEL AND/OR MUD THAT MAY IMPACT PASSING VEHICLES SHALL BE CLEANED IMMEDIATELY.
- REMOVE ALL ACCUMULATED SEDIMENT FROM SILT FENCES AND EROSION CONTROLS WHEN 50% OF AVAILABLE STORAGE AREA HAS BEEN ACHIEVED; WHEN THE DEVICE NO LONGER FUNCTIONS AS INTENDED; OR SEDIMENT LADEN WATER IS PASSING THROUGH OR AROUND THE CONTROL. SILT FENCE THAT IS TORN, HAS BROKEN STAKES, OR IS BOWING OUT DUE TO ACCUMULATED SOILS SHALL BE REPAIRED, REPLACED, OR CLEANED AND RESET.
- INSPECT ALL EROSION CONTROLS AND CLEAN OF SEDIMENT AS NECESSARY TO ENSURE NO DISCHARGE OF SEDIMENT OFF THE PROPERTY OR OUTSIDE OF LIMITS OF WORK IS TAKING PLACE.
- EMPLOY DUST CONTROL AS NECESSARY TO MINIMIZE AIRBORNE DUST AND WIND EROSION.
- DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, CLEARING DEBRIS, AND GRUBBINGS OFFSITE AT A LICENSED LANDFILL, AS REQUIRED IN A TIMELY MANNER.
- ALL EARTHWORK SLOPES 10H:1V (10%) OR STEEPER, OR AS DIRECTED BY THE REMEDIATION ENGINEER SHALL REQUIRE EROSION CONTROL BLANKET (STRAW FILLED, DOUBLE NETTING, DEGRADABLE) OR SLOPES AS DIRECTED BY THE REMEDIATION ENGINEER.
- LOCATE SOIL STOCKPILES ON SITE WITHIN THE LIMITS OF WORK OR AS NOTED ELSEWHERE ON THE DRAWINGS.
- UNDER NO CIRCUMSTANCES SHALL THE DISCHARGE OF SILT LADEN WATER BE ALLOWED TO BE PUMPED FROM TRENCHES / EXCAVATIONS DIRECTLY TO ANY WETLAND OR WATER BODY.
- CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE PROJECT SITE AND NOT BURIED OR LEFT BEHIND, UNLESS OTHERWISE SPECIFIED.

CONSTRUCTION SEQUENCE FOR REMEDIATION EROSION CONTROL

- VERIFY THAT ALL APPLICABLE PERMITS HAVE BEEN OBTAINED.
- OWNER TO HOLD A PRE-CONSTRUCTION MEETING PRIOR TO START OF CONSTRUCTION.
- CONSTRUCT SITE ACCESS AND INSTALL ASSOCIATED EROSION AND SEDIMENT CONTROLS.
- INSTALL TEMPORARY CONSTRUCTION FENCING AROUND THE STAGING AREA(S) OR AS INDICATED ON THE CONSTRUCTION DRAWINGS.
- INSTALL STABILIZED CONSTRUCTION ENTRANCE AS PER DRAWING LOCATION. UTILIZE ENTRANCE FOR ALL CONSTRUCTION VEHICLES ENTERING/EXITING SITE FOR THE DURATION OF THE CONSTRUCTION.
- INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS.
- INSPECT ALL EROSION CONTROLS ON A DAILY BASIS FROM INSTALLATION THROUGH THE DURATION OF THE PROJECT. THE EROSION CONTROLS ARE TO BE FUNCTIONING AS INTENDED OR REPAIRED/REPLACED AS NECESSARY. ADDITIONAL REQUESTS FOR REPAIR/REPLACEMENT MAY COME FROM THE REMEDIATION ENGINEER OR THE OWNER.
- PROTECT ALL TREES AND VEGETATION TO REMAIN.
- CLEAR AND GRUB AND STRIP TOPSOIL FROM AREAS WITHIN THE INDICATED EXCAVATION OR COVER LIMITS. TEMPORARY STOCKPILING WITHIN THE LIMITS OF WORK IS PERMISSIBLE. PROVIDE SEDIMENT BARRIER (SILT FENCE) SOIL STOCKPILE PROTECTION AT THE DOWNGRADE AREAS OR ADDITIONAL FENCE AS DIRECTED BY THE REMEDIATION ENGINEER.
- CONCURRENT WITH EARTHWORK AND EXCAVATION, CONSTRUCT REMAINING TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES, AS NEEDED. PROVIDE TEMPORARY SEDIMENT CONTROLS AT APPLICABLE WETLAND(S) AND WATERCOURSE(S) AS PER THE DRAWINGS; AS ADDITIONALLY REQUIRED GIVEN THE SITE CONDITIONS; OR AS DIRECTED BY THE REMEDIATION ENGINEER OR OWNER.
- CONTINUE TO MAINTAIN AND MONITOR ALL SITE EROSION AND SEDIMENT CONTROLS DAILY.
- BEGIN EARTHWORK, EXCAVATION AND ROUGH SITE GRADING. EARTHWORK TO REMAIN WITHIN THE APPROVED BOUNDARIES OF THE PROJECT (LIMITS OF WORK). TEMPORARY, ROUGH OR FINAL GRADED INACTIVE AREAS SHALL BE STABILIZED AS PER TEMPORARY/PERMANENT SEEDING SPECIFICATIONS AS SOON AS POSSIBLE, BUT NO LONGER THAN 14 DAYS (NY) FROM LAST CONSTRUCTION ACTIVE DISTURBANCE DATE. MOVING OF EARTHWORK IS ACTIVE DISTURBANCE, TRACKING OVER DISTURBED AREAS IS NOT CONSIDERED ACTIVE DISTURBANCE.
- COMPLETE FINAL GRADING, TOPSOILING, PERMANENT SEEDING, AND MULCHING OF ALL DISTURBED AREAS. FINAL GRADED SLOPES STEEPER THAN 10H:1V SHALL BE PROTECTED WITH EROSION CONTROL BLANKET.
- UPON COMPLETE STABILIZATION OF DISTURBED SITE (VEGETATIVE COVER = 80% (NY)), ALL TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE REMOVED AND DISTURBANCE RESTORED.

SPECIFICATION NOTES FOR TOPSOILING

SITE PREPARATION

- COMPLETE VEGETATIVE RESTORATION FINAL GRADING TO SUBSOIL AND ALLOW FOR FULL DEPTH OF TOPSOIL TO BE ADDED TO ACHIEVE FINAL GRADE.
- SCARIFY ALL COMPACTED SUBSOIL AREAS.

APPLICATION AND GRADING

- TOPSOIL SHALL BE DISTRIBUTED EVENLY TO A UNIFORM DEPTH TO 6" MINIMUM, OVER THE VEGETATED RESTORATION AREA AND LOWLAND CAP AREAS. THE TOPSOIL SHALL NOT BE PLACED WHEN IT IS PARTLY FROZEN, MUDDY, OR ON FROZEN SLOPES OR OVER ICE, SNOW, OR STANDING WATER PUDDLES.

SPECIFICATION NOTES FOR PERMANENT SEEDING

TIME OF PLANTING

- REFER TO TURF AND GRASSES SPECIFICATION FOR PERMANENT SEEDING MIXTURE AND SEEDING DATES.

SITE RESTORATION

- PROVIDE EROSION CONTROL MEASURES, BRING THE TOPSOILED AREA TO DESIRED FINAL GRADE AND PREPARE FOR SEEDING. RESTORE THE STOCKPILED SOIL AREAS TO EXISTING GRADE (UNLESS DESIGNATED TO REMAIN) AND PROVIDE TOPSOIL, SEED, MULCH AND ADD SOIL AMENDMENTS AS NECESSARY.
- TOPSOIL TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- PREPARE SEEDBED, LOOSENING SOIL TO A DEPTH OF 3-4 INCHES.
- REMOVE ALL STONES OVER THREE INCH (3") IN DIAMETER, STICKS AND FOREIGN MATTER FROM THE SURFACE.
- FERTILIZE AS PER SOIL TEST OR APPLIED AT A RATE OF 5 LBS PER 1,000 SF WITH 10-0-20 FERTILIZER.
- LIME TO BE APPLIED AT 2 TONS PER ACRE FOR 6.0 pH SILTY SOILS. OTHER RATES ARE pH AND SOIL TYPE DEPENDENT.
- INCORPORATE LIME AND FERTILIZER IN TOP 2-4 INCHES OF TOPSOIL.
- SEED DISTURBED AREAS WITH SEED MIX AT APPLICATION RATE SPECIFIED.
- SMOOTH AND FIRM SEEDBED.

CONSTRUCTION SEQUENCE

- MOBILIZE CONSTRUCTION EQUIPMENT AND PERSONNEL TO THE SITE.
- PERFORM PRE-CONSTRUCTION INSPECTION AND SURVEY, AS NECESSARY, OF BUILDINGS, UTILITIES, AND OTHER STRUCTURES IN OR ADJACENT TO AREAS OF PLANNED REMEDIAL ACTIVITIES THAT MAY BE IMPACTED BY EXCAVATION OR ANY OTHER ASPECT OF WORK.
- IMPLEMENT DUST, VAPOR, AND ODOR EMISSIONS CONTROLS THROUGHOUT THE DURATION OF THE WORK.
- INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS DESCRIBED IN THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND DRAWINGS. MAINTAIN MEASURES, SUPPLEMENT, AND ADJUST AS REQUIRED THROUGHOUT PROJECT DURATION AS CONSTRUCTION PROGRESSES AND THE ACTIVE WORK AREA CHANGES.
- CLEAR AND GRUB SITE WITHIN THE IDENTIFIED LIMITS OF WORK AS SHOWN ON THE DRAWINGS. SEQUENCE GRUBBING TO COORDINATE WITH THE ACTIVE WORK AREA TO MINIMIZE THE OPEN AREA OF DISTURBANCE.
- INSTALL AND MAINTAIN TEMPORARY FACILITIES AND CONTROLS INCLUDING FIELD OFFICES WITH UTILITIES, TEMPORARY CONSTRUCTION ACCESS ROADS, FENCING AND BARRICADES, DECONTAMINATION PAD, CONTAMINATED MATERIAL CONTAINMENT STOCKPILE AREA(S), SEDIMENT DEWATERING AREA, CONSTRUCTION WATER STORAGE FACILITIES, CONSTRUCTION WATER TREATMENT SYSTEM, AND IN-SITU SOLIDIFICATION BATCH PLANT.
- MANAGE ON-SITE CONSTRUCTION WATER GENERATED FROM DEWATERING ACTIVITIES DUE TO GROUNDWATER, STORMWATER, AND SEDIMENT PROCESSING. COLLECT, CONVEY, AND STORE CONSTRUCTION WATER ON-SITE, TREAT, AND DISCHARGE TO THE SENECA RIVER (SENECA-CAYUGA CANAL) OR TRANSPORT TO A DESIGNATED OFF-SITE LICENSED DISPOSAL FACILITY. REMEDIATION ENGINEER WILL COLLECT REQUIRED SAMPLES FOR CHARACTERIZATION AND PROVIDE ANALYTICAL RESULTS TO CONTRACTOR UPON RECEIPT.
- REMOVE MGP-IMPACTED SENECA RIVER (SENECA-CAYUGA CANAL) SEDIMENT WITHIN THE DREDGE AREA LIMIT, PROCESS/MOISTURE CONDITION SEDIMENT AS NECESSARY, AND TRANSPORT TO A DESIGNATED OFF-SITE LICENSED DISPOSAL FACILITY.
- BACKFILL SENECA RIVER (SENECA-CAYUGA CANAL) TO FINAL ELEVATIONS AND GRADES SHOWN ON THE DRAWINGS TO PROVIDE A STABLE BANK AND BOTTOM SUBSTRATE FOR RESTORATION OF THE BENTHIC COMMUNITY.
- INSTALL BANK STABILIZATION MEASURES ALONG THE DREDGE AREA LIMIT.
- INSTALL LOWLAND COVER SYSTEMS USING CLEAN IMPORTED SOIL OVER TWO (2) DEFINED AREAS WITHIN THE LOWLAND AREA. SEED AND MULCH OR SEED AND INSTALL EROSION CONTROL BLANKET TO RESTORE VEGETATION.
- INSTALL AND MAINTAIN TEMPORARY SUPPORT OF EXCAVATION SYSTEMS WITHIN THE RESIDENTIAL PROPERTY, AS NECESSARY.
- REMOVE MGP-IMPACTED SOIL WITHIN THE RESIDENTIAL PROPERTY EXCAVATION LIMITS, MOISTURE CONDITION AS NECESSARY, AND TRANSPORT TO A DESIGNATED OFF-SITE LICENSED DISPOSAL FACILITY
- BACKFILL RESIDENTIAL PROPERTY TO FINAL ELEVATIONS AND GRADES SHOWN ON THE DRAWINGS. SEED AND MULCH TO STABILIZE RESTORATION.
- DEMOLISH SURFACE STRUCTURES IN THE UPLAND AREA, SIZE REDUCE MATERIAL, AND TRANSPORT TO A DESIGNATED OFF-SITE LICENSED DISPOSAL FACILITY.
- INSTALL AND MAINTAIN THE ISS SUPPORT WALL IN THE UPLAND AREA, AS NECESSARY.
- REMOVE MGP-IMPACTED SOIL WITHIN THE UPLAND AREA EXCAVATION/ISS LIMITS, MOISTURE CONDITION AS REQUIRED, AND TRANSPORT TO A DESIGNATED OFF-SITE LICENSED DISPOSAL FACILITY. DEMOLISH AND REMOVE SUBSURFACE PIPING AND REMNANT MGP STRUCTURES IN PREPARATION FOR ISS. SIZE REDUCE MGP-IMPACTED CONSTRUCTION AND DEMOLITION DEBRIS AND TRANSPORT TO A DESIGNATED OFF-SITE LICENSED DISPOSAL FACILITY.
- SOLIDIFY MGP-IMPACTED SOIL IN THE UPLAND AREA WITHIN THE EXCAVATION/ISS LIMITS TO THE DEPTHS INDICATED ON THE DRAWINGS. PERFORM IN-SITU SOLIDIFICATION BY MIXING CEMENT WITH IMPACTED SOIL TO MEET THE PERFORMANCE REQUIREMENTS OF THE SPECIFICATIONS. REMOVE EXCESS ISS SPOILS AND TRANSPORT TO A DESIGNATED OFF-SITE LICENSED DISPOSAL FACILITY.
- GRADE TOP SURFACE OF SOLIDIFIED SOIL SPOILS AS SUBGRADE WITHIN THE UPLAND AREA AND BACKFILL WITH CLEAN IMPORTED BACKFILL.
- CONSTRUCT GRAVEL PARKING AREA IN UPLAND AREA TO THE LINES AND GRADES SHOWN ON THE DRAWINGS. SEED AND MULCH ALL OTHER AREAS TO RESTORE VEGETATION.
- SEED AND MULCH ALL DISTURBED AREAS WITHIN THE LIMIT OF WORK. REPAIR ACCESS ROAD TO LOWLAND AREA AS NECESSARY TO SUPPORT FUTURE SITE OPERATION AND MAINTENANCE ACTIVITIES.
- REMEDIAL ENGINEER WILL INSTALL FOUR (4) GROUNDWATER MONITORING WELLS.
- INSTALL CHAIN LINK FENCE AND GATE.
- DECONTAMINATE EQUIPMENT AND PERSONNEL.
- CLEAN SITE, REMOVE TEMPORARY FACILITIES AND CONTROLS.
- DEMOBILIZE.



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|      | REMEDIAL DESIGN<br>NYSEG - SENECA FALLS<br>FORMER MANUFACTURED<br>GAS PLANT (MGP) SITE<br>SITE NUMBER 850010<br>187 FALL STREET<br>SENECA FALLS, NEW YORK |    |      |

EROSION AND  
SEDIMENT  
CONTROL NOTES

G-201



SURVEYOR'S SITE NOTES

1. FEATURES SHOWN HEREON ARE BASED ON A SURVEY PERFORMED NOVEMBER 19 & 20 AND DECEMBER 12 & 19, 2015 BY HOFFMAN LAND SURVEYING AND GEOMATICS.
2. COMMUNICATION, ELECTRIC, WATER, UNIDENTIFIED, DRAINAGE AND SANITARY ARE SHOWN BASED ON PAINT MARKINGS AND/ OR PINS BY OTHERS OBSERVED DURING THE FIELD SURVEY AND FEATURES OBSERVED DURING THE FIELD SURVEY. THESE LOCATIONS ARE CONSIDERED APPROXIMATE AND REQUIRE VERIFICATION.
3. COORDINATES SHOWN REFERENCE NY STATE PLANE COORDINATES, NAD83, NEW YORK CENTRAL ZONE, IN US SURVEY FEET THROUGH TIES TO EXITING CONTROL PROVIDED BY H&A.
4. ELEVATIONS SHOWN REFERENCE EXISTING CONTROL PROVIDED BY H&A, ESTABLISHED BY OTHERS. IT APPEARS TO BE BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).
5. RIVER BOTTOM CONTOURS WERE OBTAINED THOUGH SONAR METHODS UTILIZING RTK GPS AND SHOULD BE CONSIDERED APPROXIMATE AND FOR GENERAL BOTTOM GRADE. RIVER BOTTOM WAS IRREGULAR AND BOTTOM WAS SILT AND VEGETATED.
6. BEARINGS SHOWN HEREON BASED ON GRID COORDINATES PER NOTE 4 ABOVE.
7. SANITARY AND WATER SERVICE LINES SHOWN RUNNING TOWARD FOUNDATION REMAINS WITHIN THE PUBLIC RIGHT OF WAY ARE BASED ON MARKINGS BY OTHERS AND CONSIDERED APPROXIMATE. LINES TO FOUNDATION REMAINS WAS NOT APPARENT OR OBSERVABLE DURING THE FIELD SURVEY.
8. SURVEY COMPLETED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS THEREFORE SUBJECT TO ANY EASEMENT, RESTRICTIONS, COVENANTS AND RIGHT OF WAY OF RECORD.

REFERENCES

1. MAP ENTITLED "SURVEY MAP OF THE PREMISES OF WALTER J. & CATHERINE M. SMITHOOVER" BY DONALD D. SHEPHERD, DATED FEBRUARY 1, 1990, BEING PROJECT NO. SF9001-02 AND FILED IN THE SCCO FEBUARY 23, 1990 AS MC 70-130.
2. MAP ENTITLED "SURVEY MAP OF THE PREMISES OF ROGER E. LEWIS REALTY, INC." BY DONALD D. SHEPHERD, DATED JULY 11, 1996, BEING PROJECT NO. SF9611-07 AND FILED IN THE SCCO SEPTEMBER 6, 1996 AS MC 96-261.
3. MAP ENTITLED "LANDS OF FEDERAL HOME LOAN MORTGAGE CORPORATION" BY CHARLES E. CARROLL DATED AUGUST 17, 2011, BEING PROJECT NO. SF6.262 AND FILED IN THE SCCO AUGUST 29, 2011 AS MC 11-206.
4. MAP ENTITLED "BOUNDARY SURVEY" BY ERDMAN ANTHONY DATED AUGUST 9, 2012, BEING PROJECT NO. 19397.01.
5. OTHER DEEDS LISTED HEREON.

TITLE

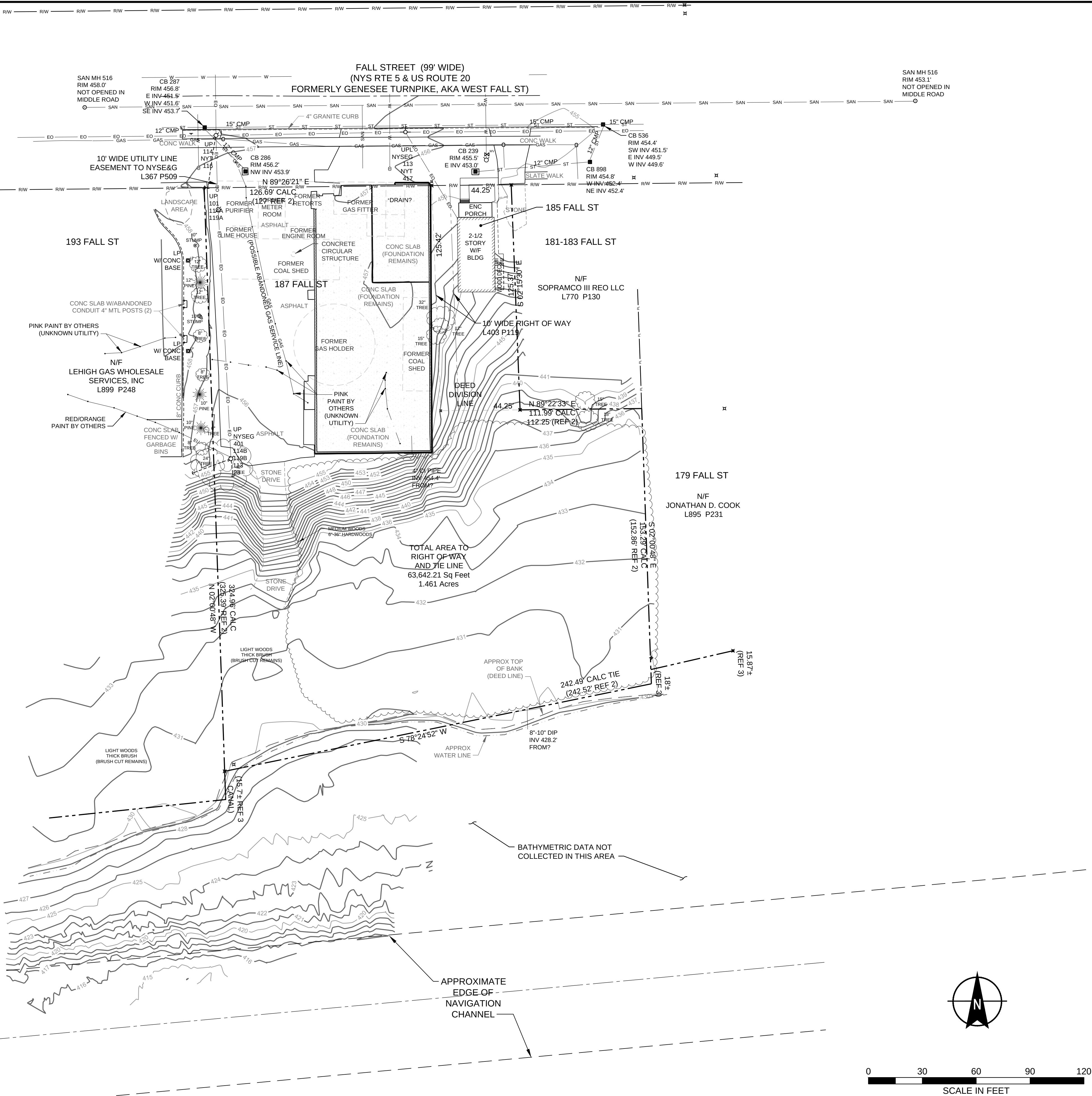
1. THIS SURVEY WAS COMPLETED WITH THE AID OF AN ABSTRACT BY TITLE SEARCH FOR EASEMENTS BY MONROE ABSTRACT & TITLE CORPORATION, ABSTRACT NO. 22492, ACCT. NO. 54906 DATED OCTOBER 24, 1989. AN UPDATED ABSTRACT OF TITLE WAS NOT PROVIDED. PARCEL IS SUBJECT TO ANY EASEMENTS, RESTRICTIONS AND ENCUMBRANCES THAT RESEARCH BEYOND THAT COMPLETED MAY SHOW.

RIGHT OF WAY

1. THE RIGHT OF WAY OF NY ROUTE 5 & US ROUTE 20 IS 99' PER REFERENCES NOTED.
2. RIGHT OF WAY SHOWN BASED ON EVIDENCE RECOVERED AND REFERENCES NOTED.

EASEMENTS

1. PARCEL IS SUBJECT TO ANY EASEMENT, RESTRICTIONS, COVENANTS AND RIGHT OF WAY OF RECORD.



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SITE NUMBER 850010  
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EXISTING  
CONDITIONS PLAN

**C-100**

Sheet: 4 of 25







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- LEGEND**
- UPLAND EXCAVATION / ISS AREA
  - RESIDENTIAL EXCAVATION AREA
  - LOWLAND SOIL COVER
  - CANAL DREDGE AREA
  - 2 FOOT BGS RESIDENTIAL EXCAVATION AREA

- NOTES**
- FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE G-200.
  - FOR EROSION AND SEDIMENT CONTROL NOTES, SEE G-201.

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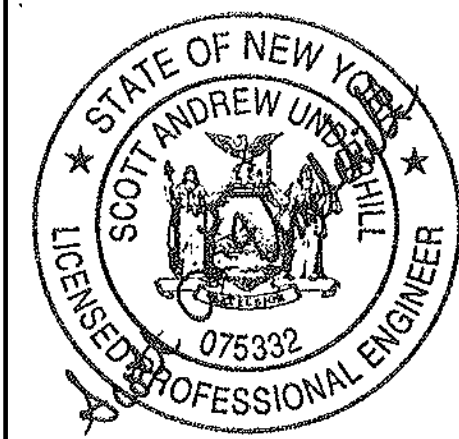
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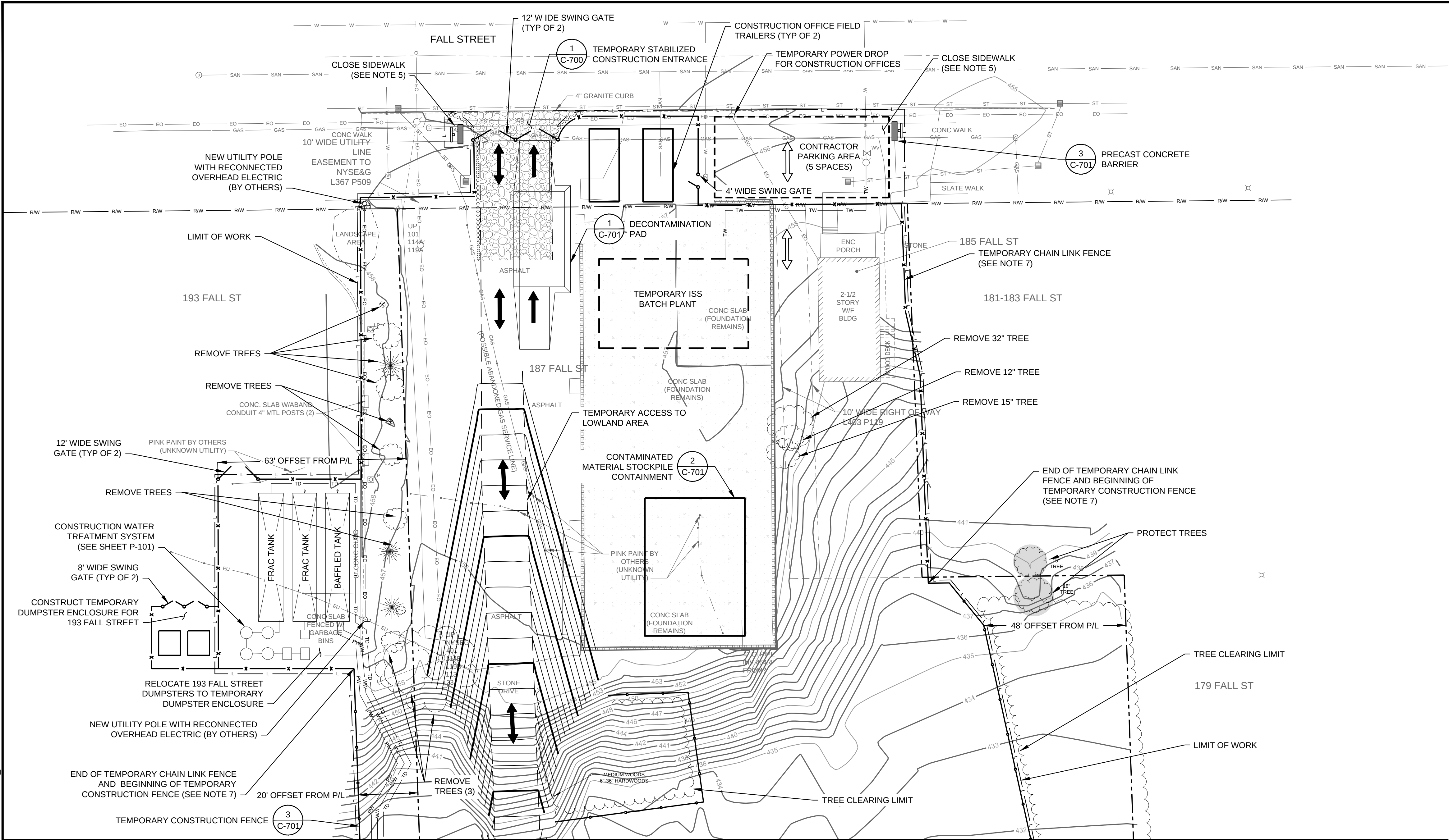
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OVERVIEW PLAN

**C-200**

Sheet: 6 of 25



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MATCH LINE SEE SHEET C-301

#### LEGEND

- TEMPORARY CONSTRUCTION ACCESS
- PRIMARY SINGLE LANE TWO-WAY TRAFFIC
- SECONDARY SINGLE LANE TWO-WAY TRAFFIC
- TEMPORARY CHAIN LINK FENCE
- TEMPORARY CONSTRUCTION FENCE
- LIMITS OF WORK
- TEMPORARY WATER SERVICE
- TEMPORARY CONSTRUCTION PROCESS WATER
- TEMPORARY WASTEWATER SLUDGE
- TEMPORARY TREATED CONSTRUCTION WATER DISCHARGE

#### NOTES

- FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE G-200.
- SIZE OF CONSTRUCTION LAYDOWN/ WORK AREAS TO BE DETERMINED BY CONTRACTOR. LOCATIONS MUST BE APPROVED BY REMEDIATION ENGINEER.
- LIMIT OF WORK GENERALLY FOLLOWS THE TEMPORARY CHAIN LINK FENCE AND TEMPORARY CONSTRUCTION FENCE ALONG THE PERIMETER OF THE SITE.
- PROTECT TEMPORARY WATER SERVICE AT ALL VEHICLE CROSSINGS.
- CLOSE SIDEWALK TO PUBLIC ALONG THE SOUTH SIDE OF FALL STREET ADJACENT TO THE SITE. PROVIDE PRECAST CONCRETE BARRIERS AND SIGNAGE IN ACCORDANCE WITH MUTCD AND NYSDOT REQUIREMENTS. INSTALL TEMPORARY CROSSWALK MARKINGS ACROSS FALL STREET TO DETOUR PEDESTRIANS TO THE SIDEWALK ALONG THE NORTH SIDE OF FALL STREET.
- PROVIDE MUTCD/NYSOT COMPLIANT SIGNAGE TO WARN PUBLIC TRAFFIC ALONG FALL STREET ABOUT "CONSTRUCTION AHEAD" AND "TRUCKS ENTERING/EXITING" THE SITE.
- TEMPORARY CHAIN LINK FENCE ALONG THE LIMIT OF WORK IN PROXIMITY TO THE PUBLIC AND/OR ABUTTING PROPERTY OWNERS SHALL BE 6 FOOT HIGH WITH SCREENING FABRIC. OTHER LOCATIONS ALONG WOODED SECTIONS OF THE SITE MAY BE DELINEATED WITH TEMPORARY CONSTRUCTION FENCE PER DETAIL 4 ON C-701.

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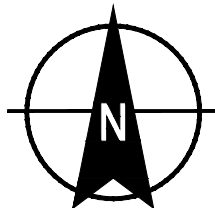
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SITE PREPARATION  
PLAN (UPLAND  
AREA)

**C-300**

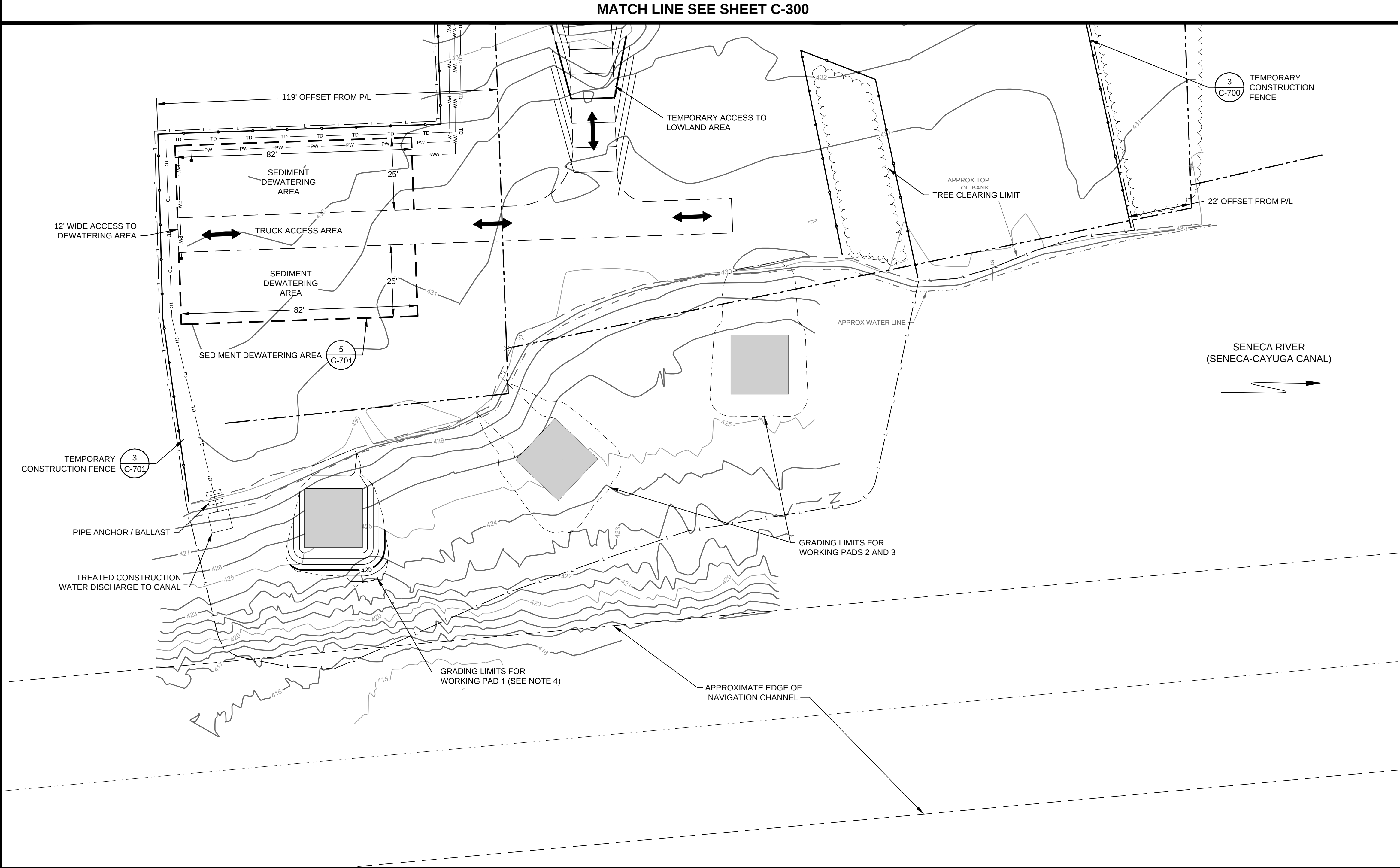
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- LEGEND**
- TEMPORARY CONSTRUCTION ACCESS
  - SINGLE LANE TWO-WAY TRAFFIC
  - TEMPORARY CHAIN LINK FENCE
  - TEMPORARY CONSTRUCTION FENCE
  - LIMITS OF WORK
  - TEMPORARY CONSTRUCTION PROCESS WATER
  - TEMPORARY WASTEWATER SLUDGE
  - TEMPORARY TREATED CONSTRUCTION WATER DISCHARGE

- NOTES**
- FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE G-200.
  - SIZE OF CONSTRUCTION LAYDOWN/ WORK AREAS TO BE DETERMINED BY CONTRACTOR. LOCATIONS MUST BE APPROVED BY ENGINEER.
  - LIMITS OF WORK TO BE INSIDE OF TEMPORARY CHAIN LINK OR TEMPORARY CONSTRUCTION FENCE.
  - WORKING PADS SHALL BE CONSTRUCTED OF NYS DOT #3 AND #4 STONE MIX. ONLY ONE WORKING PAD SHALL BE INSTALLED WITHIN THE CANAL AT A TIME. INSTALL AND REMOVE PADS TO COORDINATE WITH THE SEQUENCE OF DREDGING.

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Scale: AS SHOWN  
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Drawn By: TWJ  
Designed By: ZGG  
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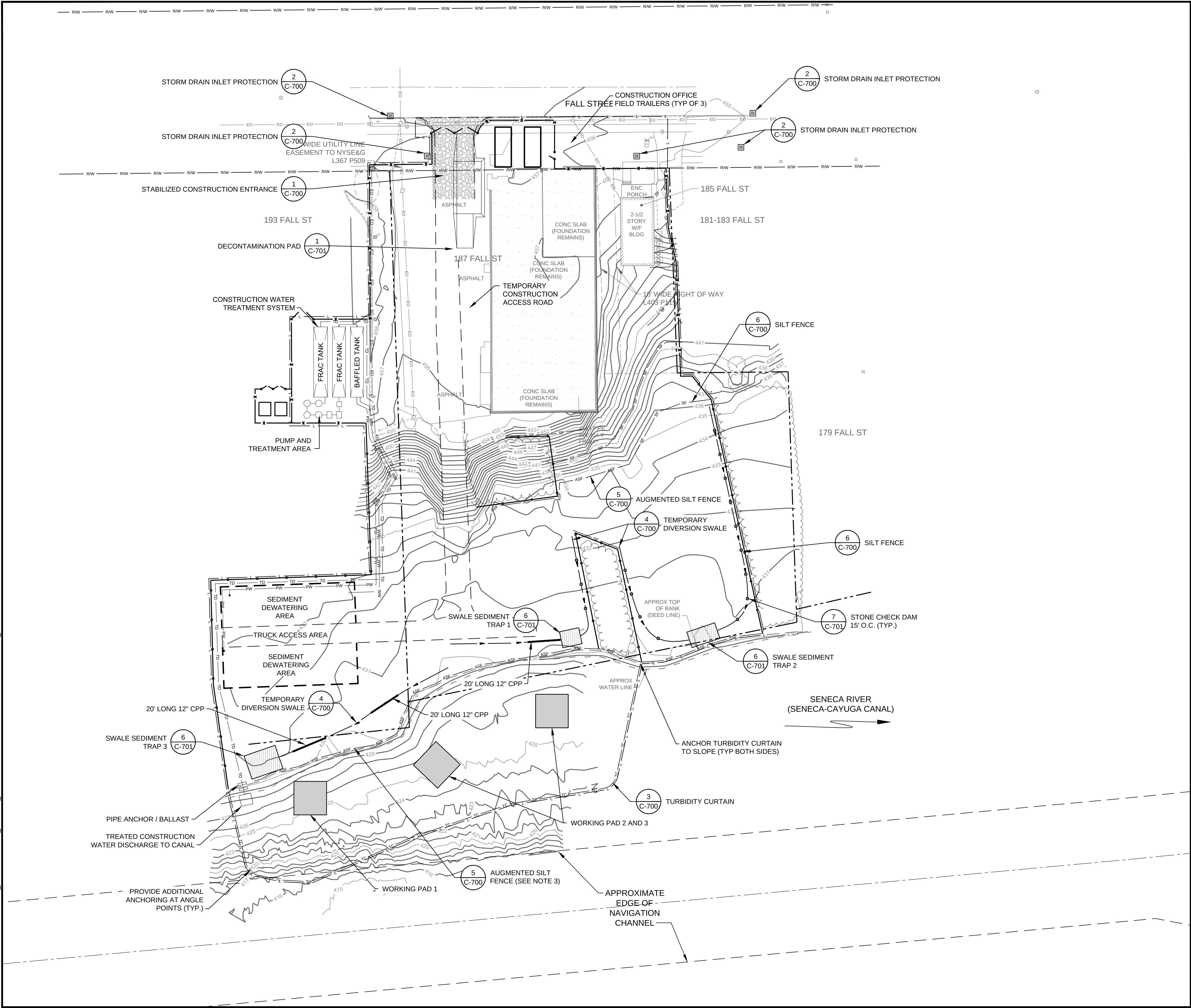
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SITE NUMBER 850010  
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**SITE PREPARATION  
PLAN (LOWLAND  
AREA)**

**C-301**  
Sheet: 8 of 25



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#### LEGEND

- SF SILT FENCE
- ASF AUGMENTED SILT FENCE
- TC TURBIDITY CURTAIN
- TD TEMPORARY DIVERSION SWALE WITH STONE CHECK DAM
- PW TEMPORARY CONSTRUCTION PROCESS WATER
- WW TEMPORARY WASTEWATER SLUDGE
- TD TEMPORARY TREATED CONSTRUCTION WATER DISCHARGE

#### NOTES

- FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE G-200.
- THE EROSION AND SEDIMENT CONTROLS AS INDICATED ON THE DRAWINGS SHALL BE CONSTRUED AS THE MINIMUM REQUIRED STANDARDS. PROVIDE ADDITIONAL CONTROLS AS NECESSARY TO PREVENT SEDIMENT LADEN DISCHARGES FROM LEAVING THE SITE.
- REMOVE AND REPLACE SECTION OF AUGMENTED SILT FENCE AS NECESSARY FOR ACCESS TO WORKING PADS DURING DREDGE ACTIVITIES.

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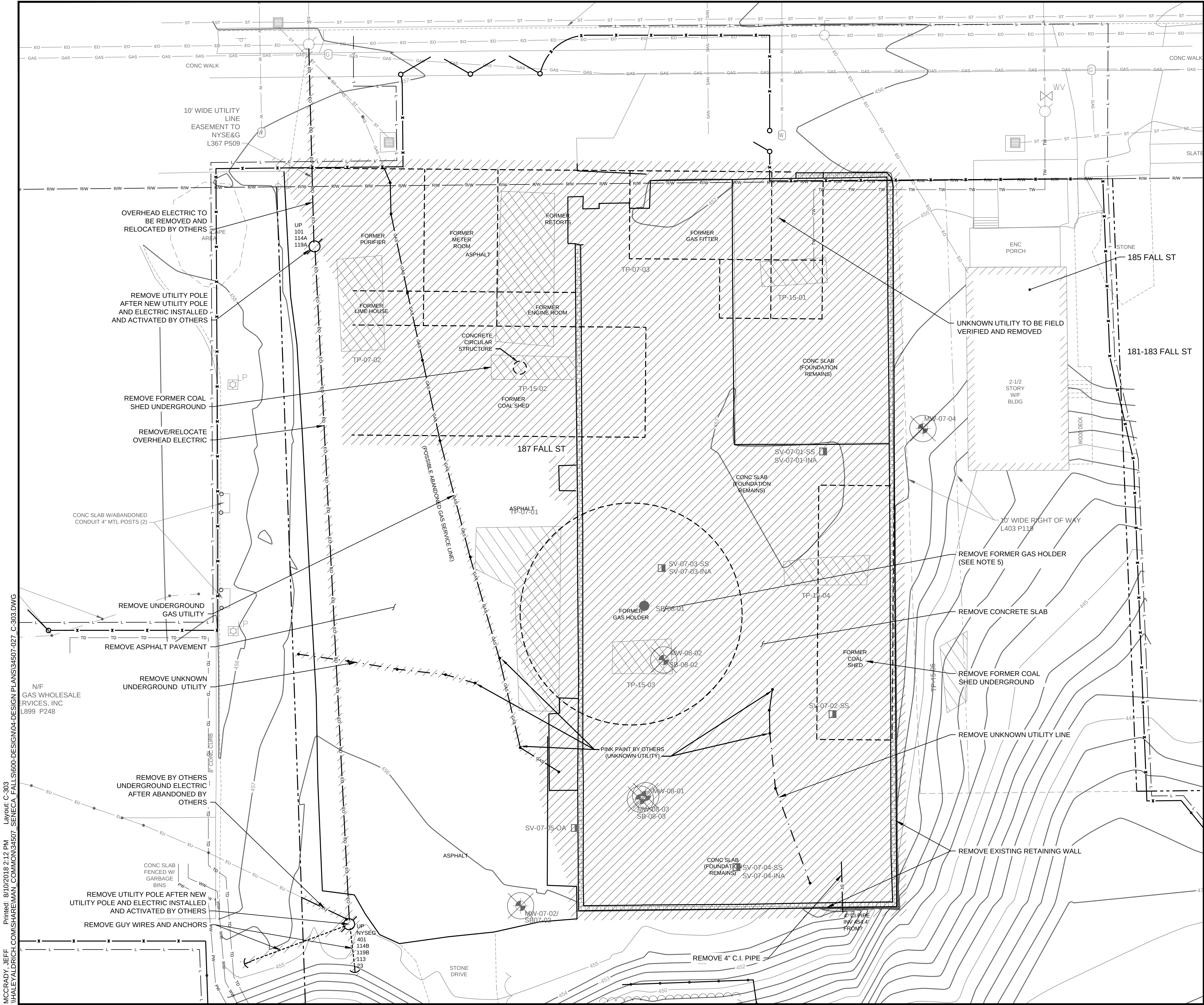
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EROSION AND  
SEDIMENT  
CONTROL PLAN

**C-302**

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LEGEND

- STRUCTURES AND UTILITIES TO BE DEMOLISHED AND REMOVED
- MONITORING WELL TO BE DECOMMISSIONED
- FORMER TEST PIT LOCATION

NOTES:

- FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE G-200.
- REMOVE PAVEMENT WITHIN THE LIMIT OF WORK AS REQUIRED TO COMPLETE SUBGRADE WORK.
- ABANDON UTILITIES IN COORDINATION WITH UTILITY OWNER REQUIREMENTS.
- UNKNOWN UTILITY "DRAIN" TO BE FIELD VERIFIED.
- DEMOLISH AND REMOVE GAS HOLDER FOUNDATION WALLS TO 4 FEET BELOW GROUND SURFACE.
- DEMOLISH AND REMOVE ALL ASPHALT PAVEMENT WITHIN THE LIMITS OF WORK. ASPHALT PAVEMENT EXTENDS BEYOND THE AREAS NOTED FOR STRUCTURE/UTILITY DEMOLITION AND REMOVAL.
- CONCRETE CIRCULAR STRUCTURE FOUND IN TP-15-02: APPROXIMATELY 4 FEET IN DIAMETER AND FILLED WITH WATER. STRUCTURE AND CONTENTS TO BE REMOVED PRIOR TO IN-SITU SOLIDIFICATION.

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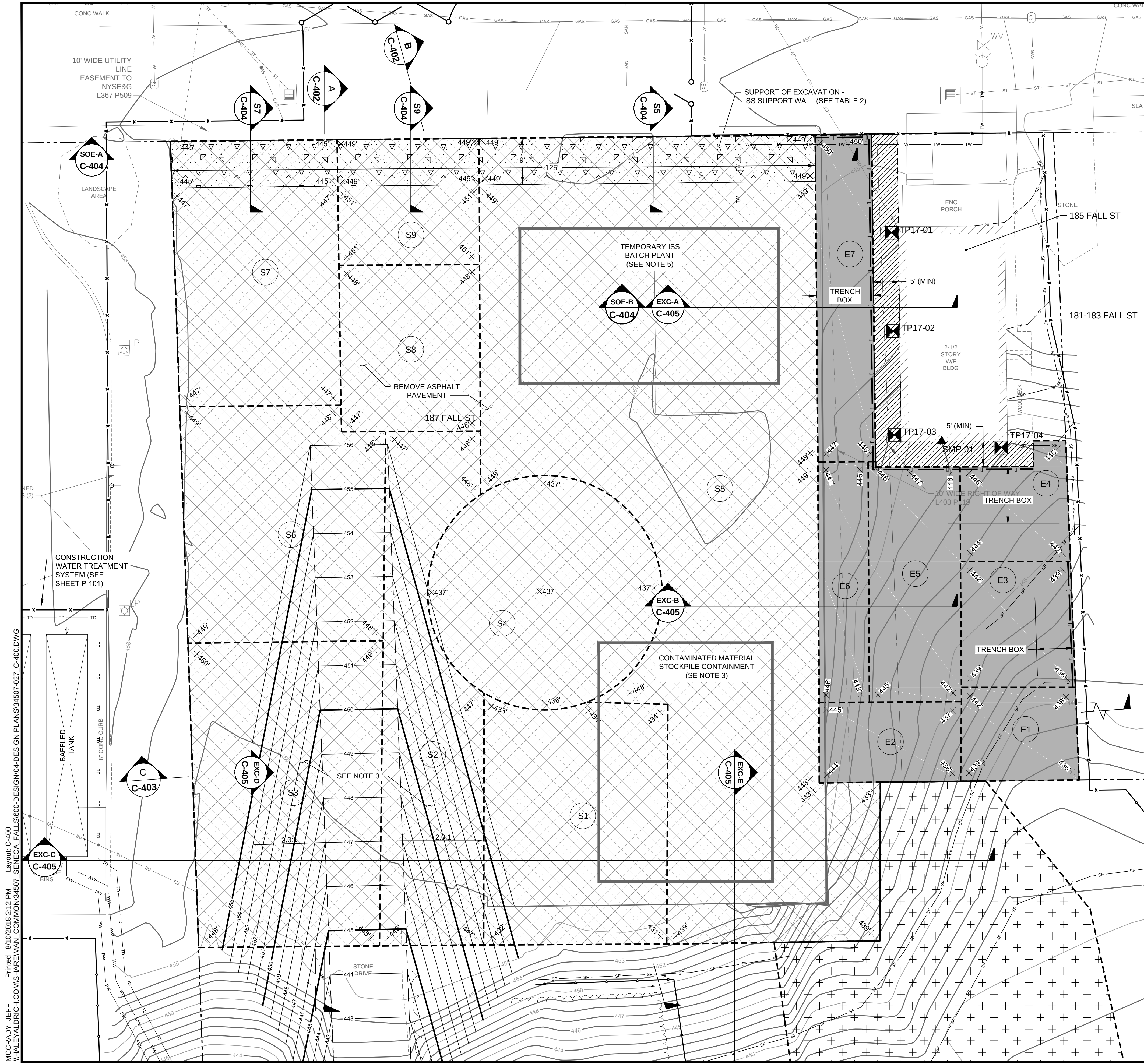
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STRUCTURE  
DEMOLITION AND  
UTILITY REMOVAL  
PLAN

C-303

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LEGEND

- UPLAND EXCAVATION / ISS AREA
- RESIDENTIAL EXCAVATION AREA (FULL DEPTH PER TABLE 3)
- LOWLAND SOIL COVER
- CANAL DREDGE AREA
- ISS SUPPORT WALL
- 2-FT. BELOW GROUND SURFACE RESIDENTIAL EXCAVATION AREA
- TRENCH BOX EXCAVATION
- ISS BOTTOM ELEVATION OR RESIDENTIAL EXCAVATION BOTTOM ELEVATION
- ISS AREA 1
- EXCAVATION AREA 1
- NEW TEST PIT TO BE PERFORMED
- STRUCTURAL MONITORING POINT

NOTES

- FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE G-200.
- SEE DRAWING C-404 FOR ISS SUPPORT WALL AND TRENCH BOX EXCAVATION, SECTIONS AND NOTES.
- BACKFILL MGP-IMPACTED SOIL EXCAVATED TO CONSTRUCT TEMPORARY CONSTRUCTION ACCESS ROAD AND STAGED IN THE CONTAMINATED MATERIAL STOCKPILE CONTAINMENT AREA TO 4' BELOW GROUND SURFACE PRIOR TO PERFORMING ISS.
- EXCAVATION AND ISS DEPTHS FROM RECORD OF DECISION (NYSDEC, 2015).
- ADJUST THE LOCATION OF TEMPORARY ISS BATCH PLANT AS NECESSARY TO ACCOMMODATE THE SEQUENCE OF ISS.
- REMEDATION ENGINEER TO COLLECT DOCUMENTATION SAMPLES FROM THE 2-FT EXCAVATION ADJACENT TO BUILDING FOUNDATION.
- TEST PITS TO DETERMINE DEPTH OF BUILDING FOUNDATION.

TABLE 1: ISS DEPTH AND ELEVATION \*

| ID | ESTIMATED BOTTOM DEPTH (FT. BGS) * | ESTIMATED BOTTOM EL. RANGE (NAVD 88) |
|----|------------------------------------|--------------------------------------|
| S1 | 23                                 | 431' - 434'                          |
| S2 | 9                                  | 446' - 448'                          |
| S3 | 7                                  | 448' - 450'                          |
| S4 | 20                                 | 436' - 437'                          |
| S5 | 8                                  | 431' - 449'                          |
| S6 | 8                                  | 448' - 449'                          |
| S7 | 10                                 | 447'                                 |
| S8 | 9                                  | 447' - 448'                          |
| S9 | 6                                  | 451'                                 |

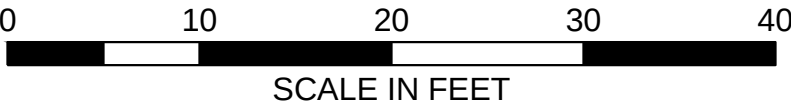
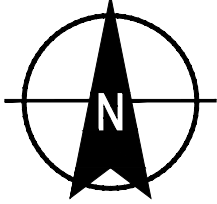
\* EXCAVATE 4' BELOW GROUND SURFACE PRIOR TO ISS

TABLE 2: ISS SUPPORT WALL DEPTH AND ELEVATION

| ID | ESTIMATED BOTTOM DEPTH (FT. BGS) | ESTIMATED BOTTOM EL. RANGE (NAVD 88) |
|----|----------------------------------|--------------------------------------|
| S7 | 12                               | 445 (2 FT BELOW TOP OF GLACIAL TILL) |
| S9 | 8                                | 449 (2 FT BELOW TOP OF GLACIAL TILL) |
| S5 | 8                                | 449 (2 FT BELOW TOP OF GLACIAL TILL) |

TABLE 3: EXCAVATION DEPTH AND ELEVATION FOR RESIDENTIAL PROPERTY

| ID | ESTIMATED BOTTOM DEPTH (FT. BGS) | ESTIMATED BOTTOM EL. RANGE (NAVD 88) |
|----|----------------------------------|--------------------------------------|
| E1 | 2                                | 436' - 442'                          |
| E2 | 7                                | 436' - 445'                          |
| E3 | 5                                | 436' - 442'                          |
| E4 | 3                                | 442' - 446'                          |
| E5 | 3                                | 442' - 448'                          |
| E6 | 6                                | 443' - 447'                          |
| E7 | 6                                | 445' - 450'                          |



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EXCAVATION,  
SUPPORT OF  
EXCAVATION, AND  
SOLIDIFICATION  
PLAN

C-400

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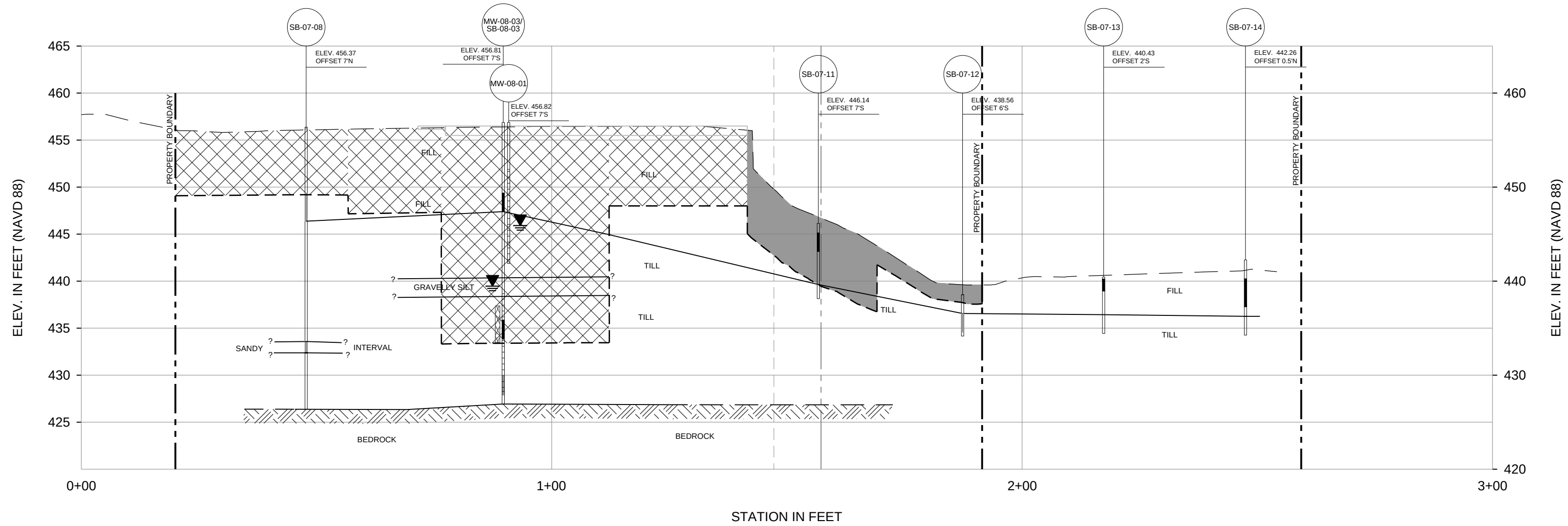




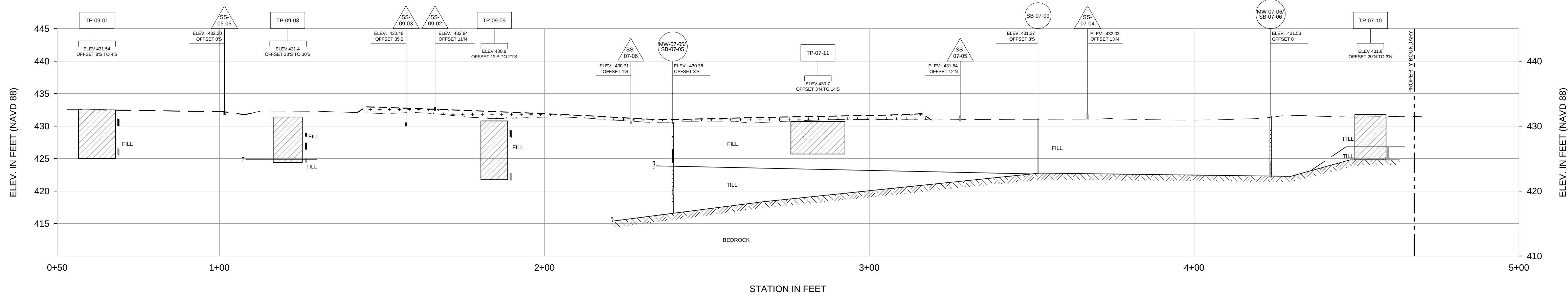




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**C** REMEDIAL SECTION  
SCALE: AS SHOWN



- LEGEND**
- EXISTING GROUND
  - /// BEDROCK
  - - - - - LIMIT OF EXCAVATION, ISS, OR DREDGE
  - [Cross-hatched] EXCAVATION/ISS AREA
  - [Diagonal lines] CANAL DREDGE AREA
  - [Solid grey] RESIDENTIAL EXCAVATION AREA
  - [Dotted] LOWLAND COVER AREA

**D** REMEDIAL SECTION  
SCALE: AS SHOWN



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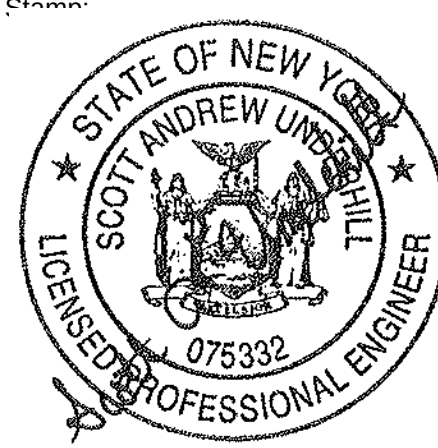
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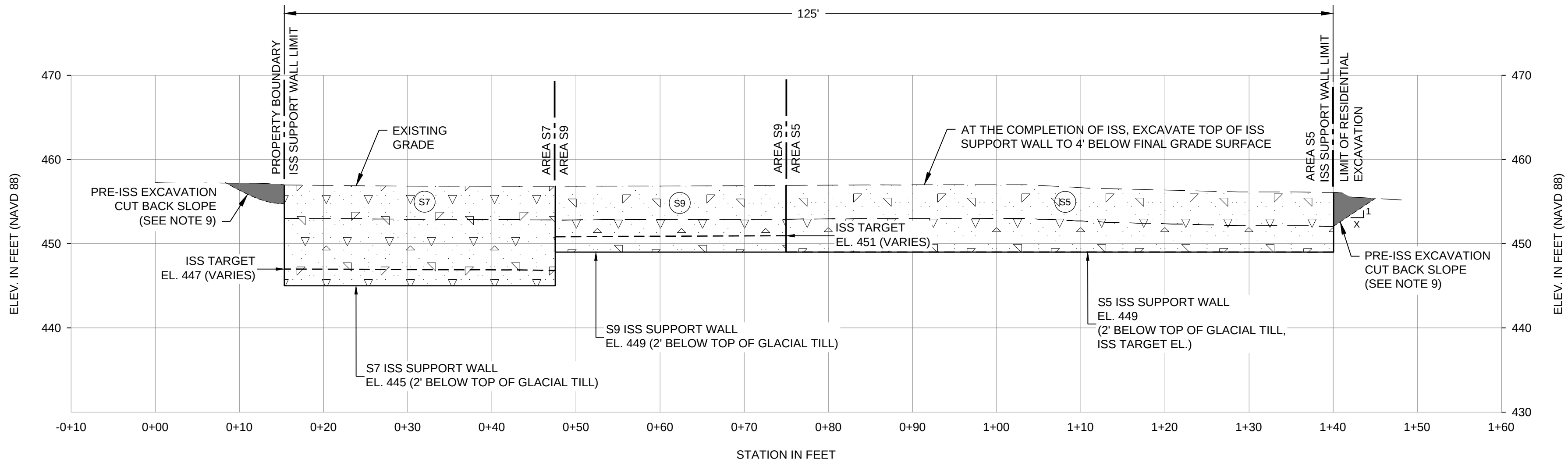
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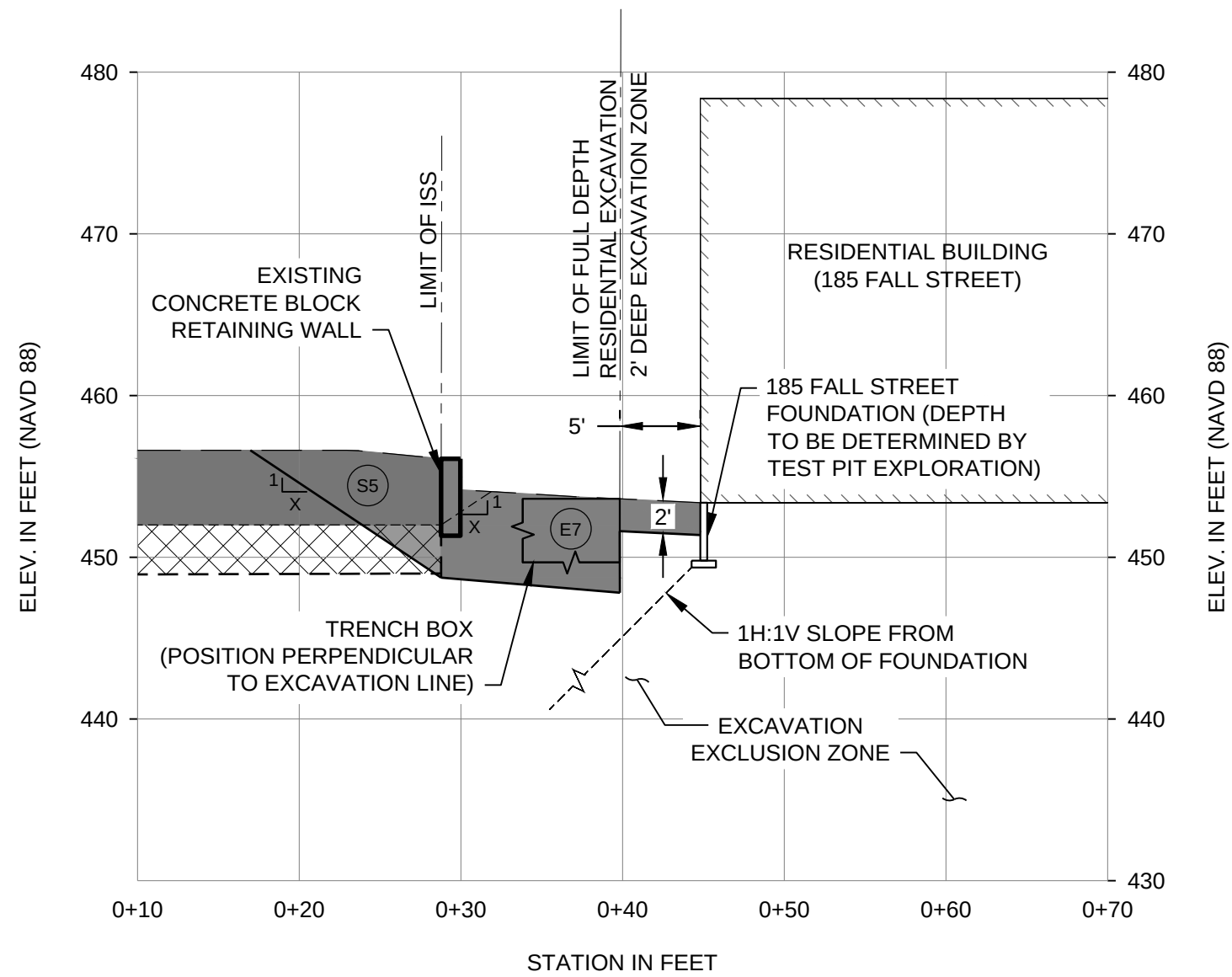
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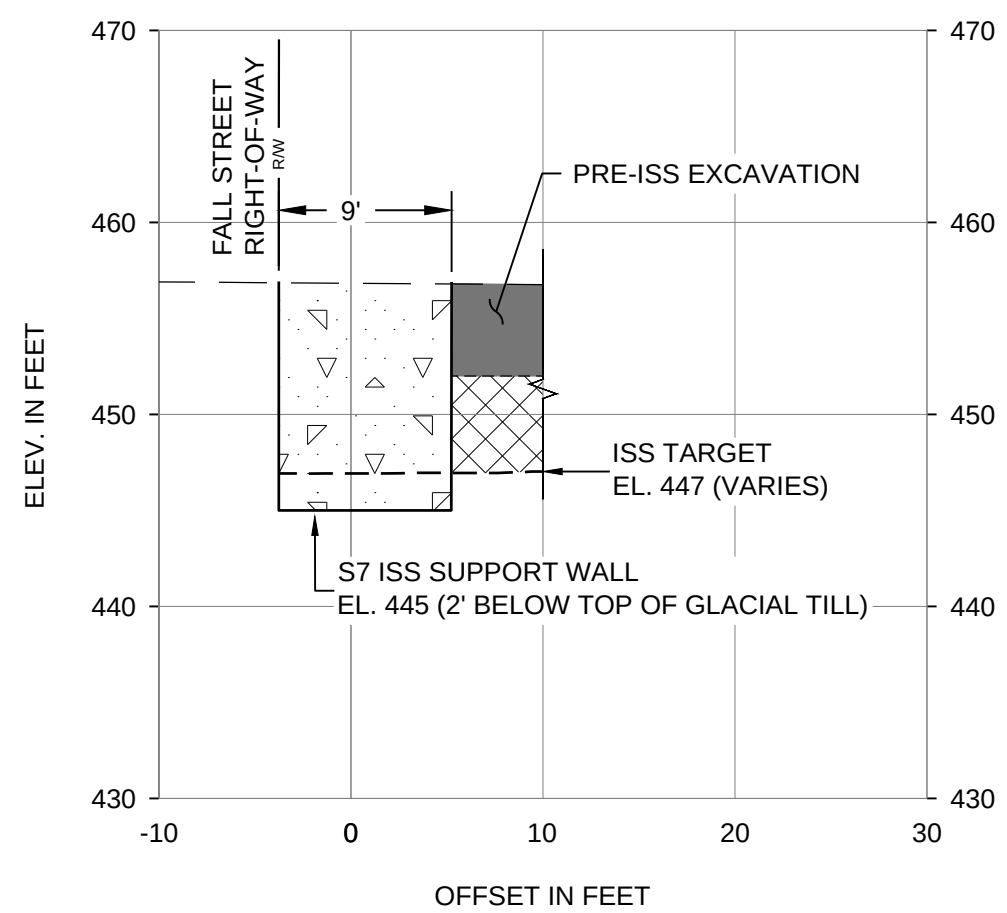
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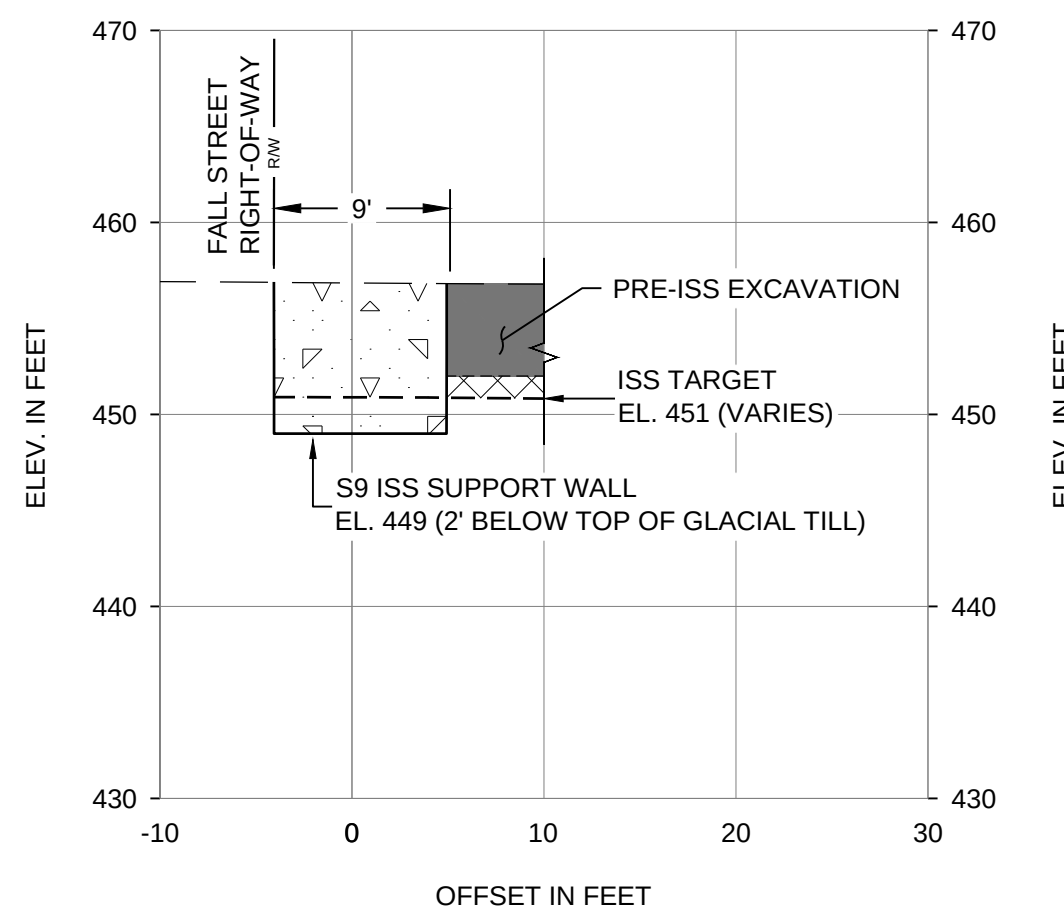
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SCALE: AS SHOWN



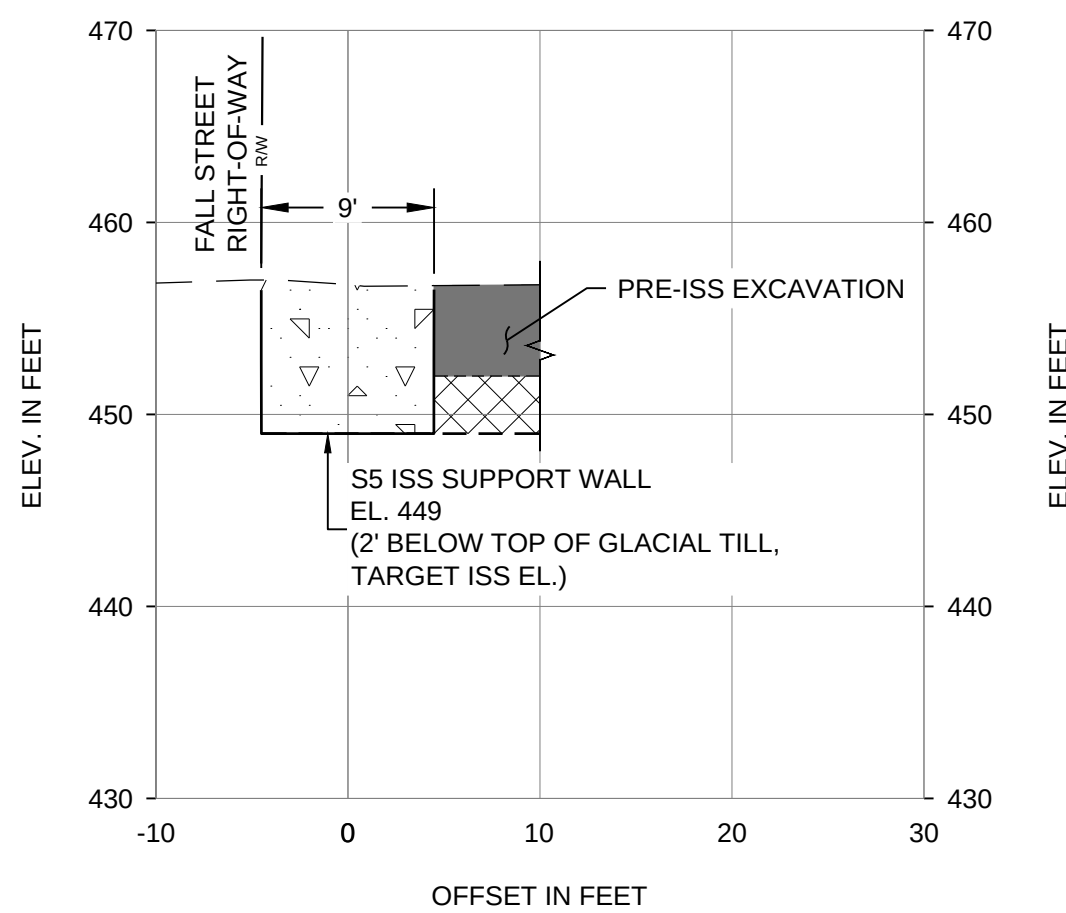
**SOE-B** TRENCH BOX EXCAVATION  
SCALE: AS SHOWN



**S7** ISS SUPPORT WALL SECTION  
SCALE: AS SHOWN



**S9** ISS SUPPORT WALL SECTION  
SCALE: AS SHOWN



**S5** ISS SUPPORT WALL SECTION  
SCALE: AS SHOWN

#### LEGEND

- ISS AREA
- PRE-ISS EXCAVATION AREA
- RESIDENTIAL EXCAVATION AREA
- ISS SUPPORT WALL
- EXISTING GROUND SURFACE
- ISS SUPPORT WALL LIMITS
- ISS LIMITS (SEE TABLE 1, DRAWING C-400)

#### NOTES

- FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE G-200.
- IN ISS AREA, EXCAVATE TO APPROXIMATELY 4' BELOW GROUND SURFACE PRIOR TO PERFORMING ISS SOIL MIXING. CONSTRUCT ISS WALL PRIOR TO ANY FURTHER EXCAVATION.
- ISS SUPPORT WALL IS APPROXIMATELY 125-FT. LONG AND 9-FT. WIDE. DEPTH VARIES (SEE TABLE 2, DRAWING C-400).
- DEPTH OF ISS SUPPORT WALL IS REQUIRED TO BE 2-FT. BELOW TOP OF GLACIAL TILL LAYER AND MEET THE REQUIRED ISS DEPTH AND ELEVATION ACCORDING TO TABLE 1, DRAWING C-400.
- CONSTRUCT THE ISS WALL IN SECTIONS NOT EXCEEDING 15 FT IN LENGTH. A 48 HOUR WAIT TIME SHALL BE IMPLEMENTED AFTER AN ISS WALL SECTION IS COMPLETE AND PRIOR TO CONSTRUCTION OF AN ADJACENT ISS WALL SECTION. NO MORE THAN 4 FT OF EXCAVATION SHALL BE PERFORMED PRIOR TO INTRODUCING SLURRY DURING CONSTRUCTION OF THE ISS WALL.
- PRIOR TO THE START OF RESIDENTIAL EXCAVATION AREA WORK, EXCAVATE A SERIES OF TEST PITS AS SHOWN ON DRAWING C-400 TO DETERMINE THE BOTTOM DEPTH OF THE FOUNDATION FOOTING AT 185 FALL STREET. IF THE BOTTOM OF FOOTING IS FOUND AT A DEPTH LESS THAN 1-FOOT BELOW GROUND SURFACE, THEN THE REMEDIATION CONTRACTOR SHALL REPORT TO THE REMEDIATION ENGINEER FOR DIRECTION ASSOCIATED WITH EXCAVATING AREAS E7, E5, AND E4.
- AT THE TRENCH BOX EXCAVATION AREAS (SEE DRAWING C-400), POSITION THE TRENCH BOX PERPENDICULAR TO THE EXCAVATION LINE AT ALL TIMES. THE TRENCH BOX SHALL HAVE MAXIMUM WIDTH OF 4 FT. THE TRENCH BOX EXCAVATION SHALL BE A MINIMUM DISTANCE OF 5 FT FROM THE RESIDENTIAL BUILDING FOOTPRINT (OUTSIDE FACE OF FOUNDATION) AT 185 FALL STREET. NO MORE THAN ONE EXCAVATION SECTION WITH THE TRENCH BOX SHALL BE PERFORMED AT ANY GIVEN TIME. BACKFILL AND COMPACTION REQUIREMENTS ARE DESCRIBED IN THE SPECIFICATIONS. SEE SECTION SOE-B TRENCH BOX EXCAVATION.
- EXCEPT AS OTHERWISE NOTED, CUT BACK SLOPES SHALL BE EXCAVATED AS NECESSARY TO COORDINATE WITH SOIL TYPE, GROUNDWATER CONDITION, AND THE REQUIREMENTS OF OSHA SAFETY STANDARDS.



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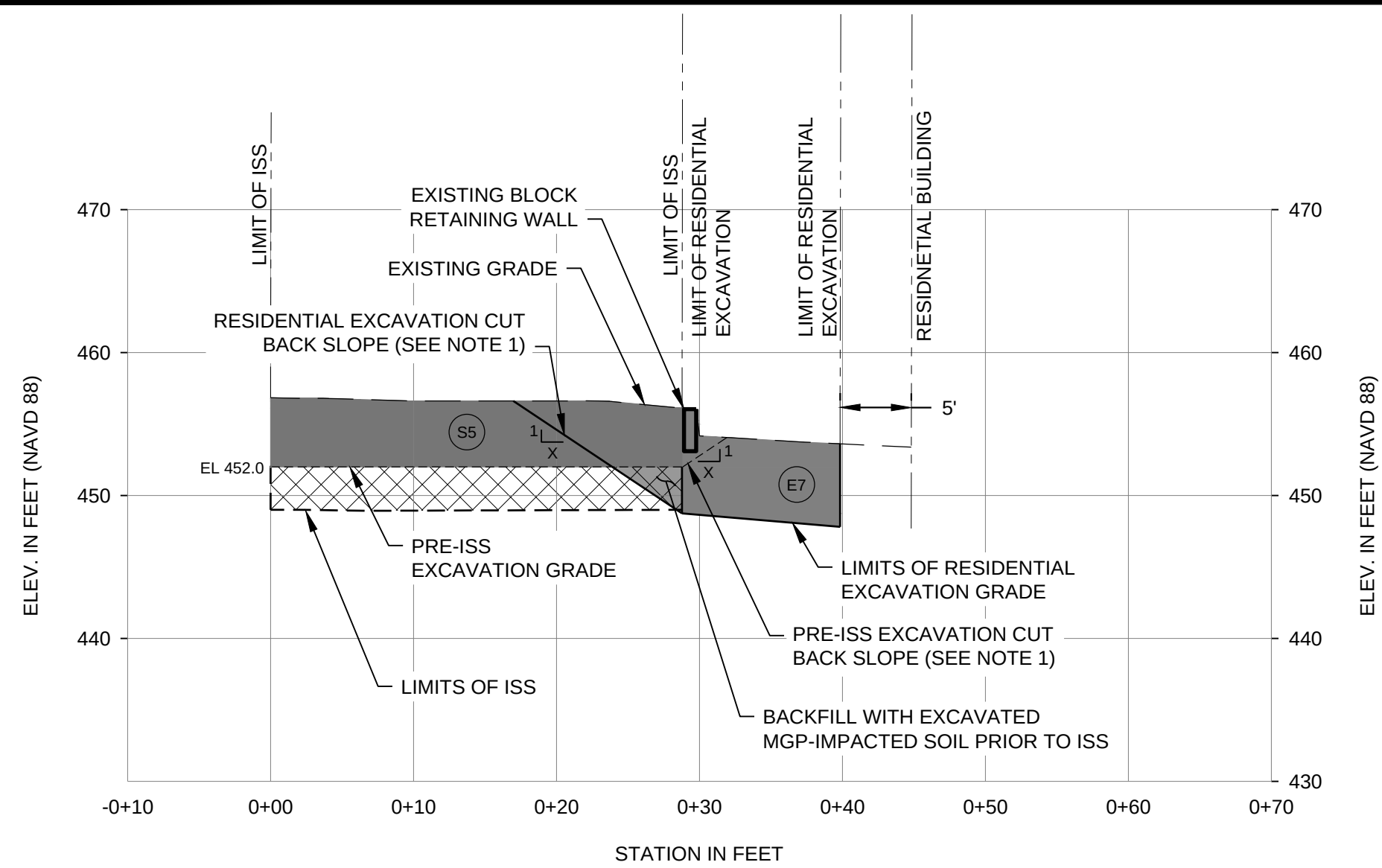
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**C-404**

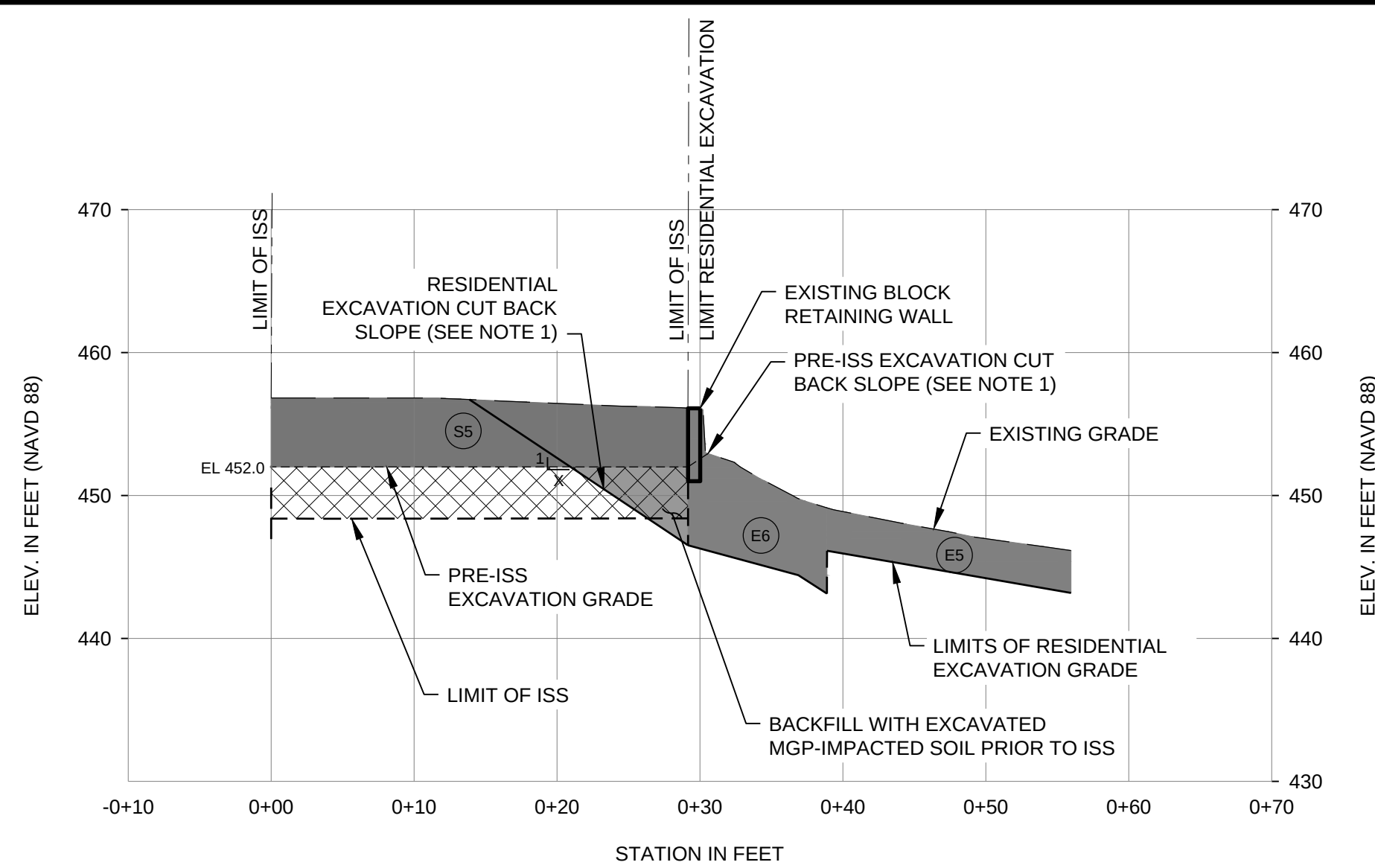
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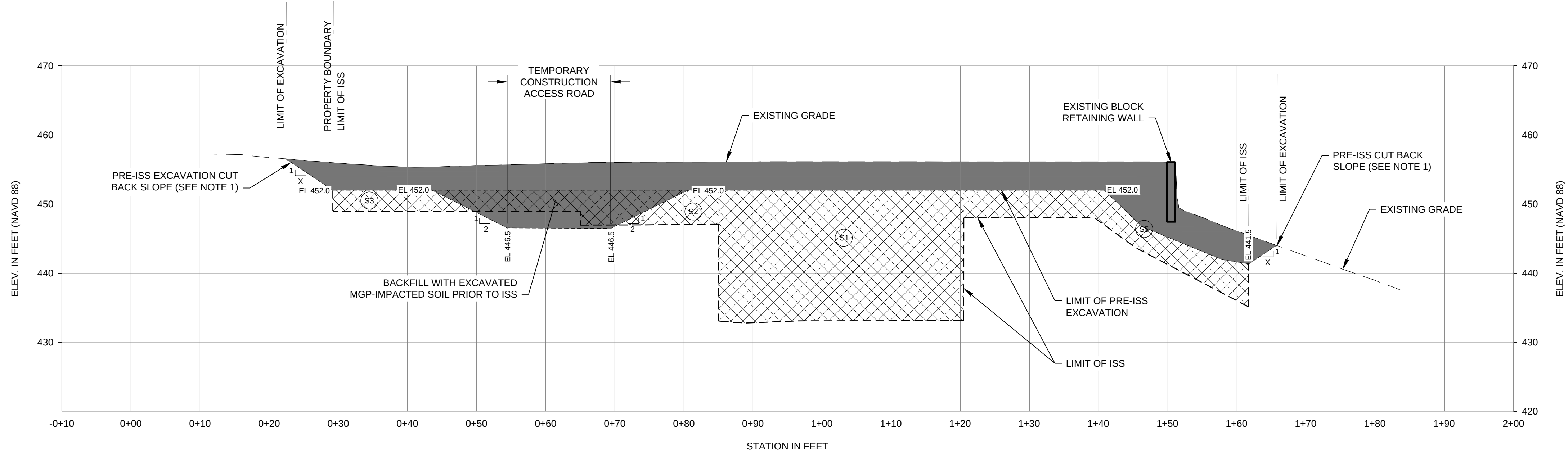
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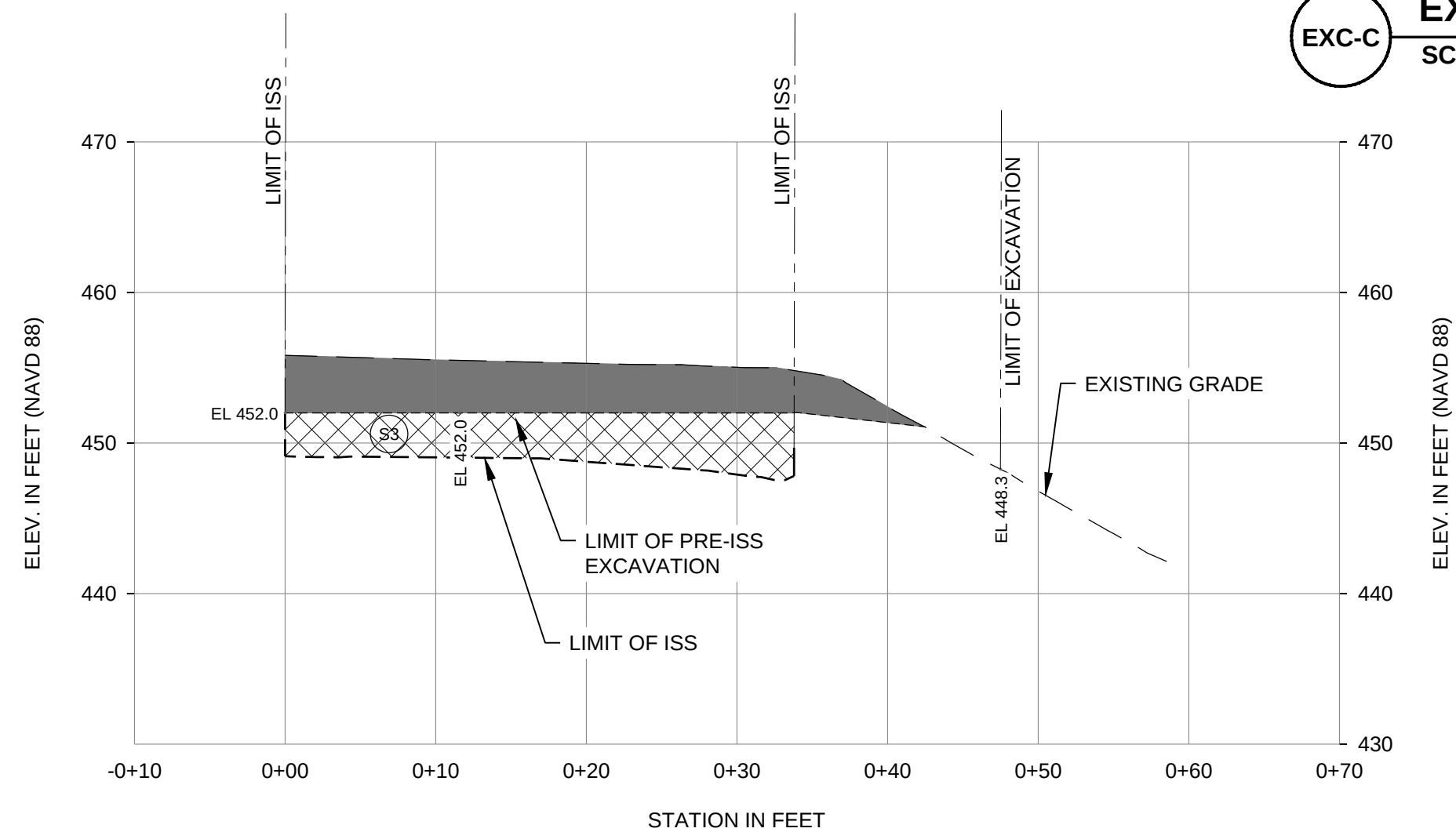
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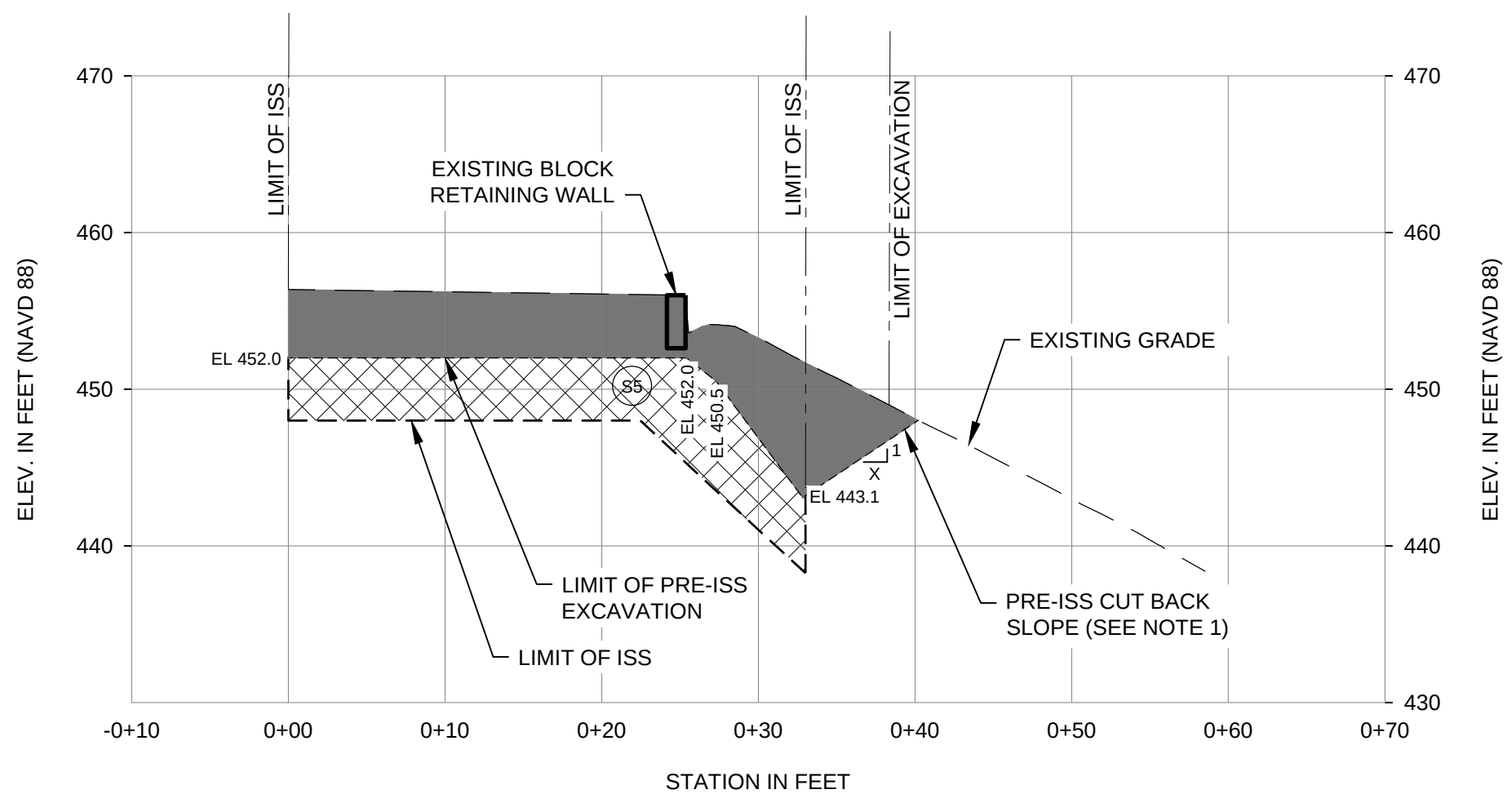
**EXC-B** EXCAVATION / ISS SECTION  
SCALE: AS SHOWN



**EXC-C** EXCAVATION / ISS SECTION  
SCALE: AS SHOWN



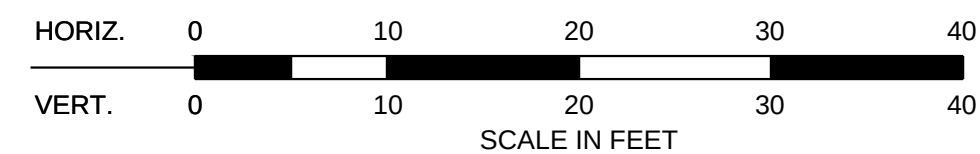
**EXC-D** EXCAVATION / ISS SECTION  
SCALE: AS SHOWN



**EXC-E** EXCAVATION / ISS SECTION  
SCALE: AS SHOWN

- LEGEND**
- ISS AREA
  - PRE-ISS EXCAVATION AREA
  - RESIDENTIAL EXCAVATION AREA
  - EXISTING GROUND SURFACE
  - LIMIT OF ISS
  - LIMITS OF PRE-ISS EXCAVATION
  - LIMIT OF RESIDENTIAL EXCAVATION

- NOTES**
- CUT BACK SLOPE (1:1) SHALL BE EXCAVATED AS NECESSARY TO COORDINATE WITH SOIL TYPE, GROUNDWATER CONTROLS, AND THE REQUIREMENTS OF OSHA SAFETY STANDARDS.



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Project No.: 34507-027  
Scale: AS SHOWN  
Date: 10-AUGUST-2018  
Drawn By: TWJ  
Designed By: ZGG  
Checked By: JPM  
Approved By: JES/SAU



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|------|-----------------|-----|----------|
| 0    | ISSUED FOR BID/ | H&A | 08/10/18 |
|      | CONSTRUCTION    |     |          |

REMEDIAL DESIGN  
NYSEG - SENECA FALLS  
FORMER MANUFACTURED  
GAS PLANT (MGP) SITE  
SITE NUMBER 850010  
187 FALL STREET  
SENECA FALLS, NEW YORK

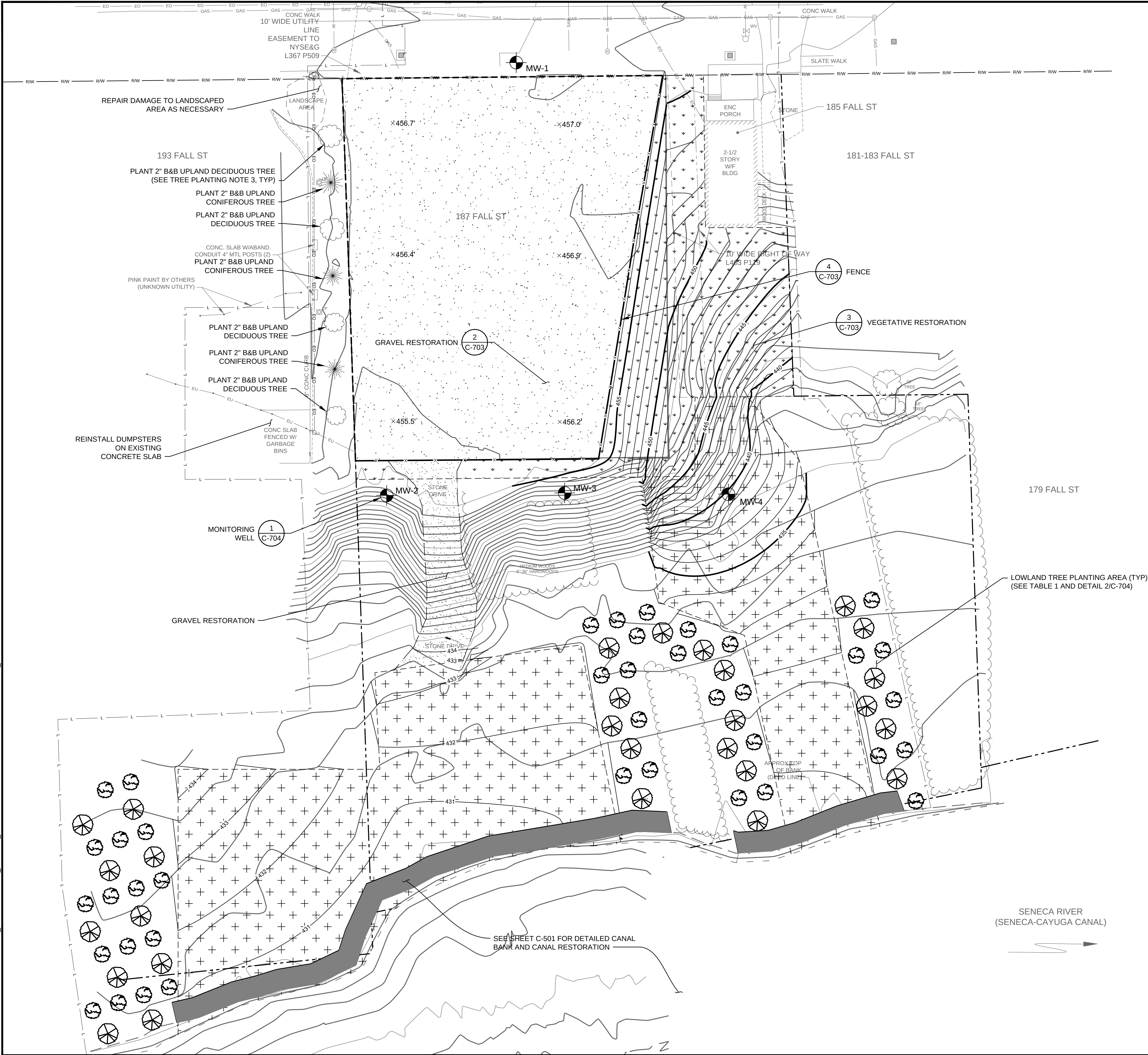
EXCAVATION/ISS  
SECTIONS

**C-405**

Sheet: 16 of 25



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**LEGEND**

- GRAVEL RESTORATION
- VEGETATED RESTORATION
- LOWLAND SOIL COVER
- CHAIN LINK FENCE
- ×455.5' FINAL GRADE SPOT ELEVATION
- NEW MONITORING WELL

**NOTES:**

- FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE G-200.
- ALL TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS INCLUDING EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED ONCE RESTORATION IS COMPLETE.
- INSTALL EROSION CONTROL BLANKET PER DETAIL 4, SHEET C-703 ON ALL FINAL GRADE SLOPES 10 PERCENT OR STEEP OR AS OTHERWISE NOTED.
- REPAIR ANY DAMAGE TO PAVEMENT CAUSED BY CONSTRUCTION ACTIVITIES WITHIN LIMIT OF WORK ON 193 FALL STREET.
- SEED AND MULCH ALL DISTURBED AREAS WITHIN THE LIMIT OF WORK NOT OTHERWISE DESIGNATED FOR RESTORATION.

| TABLE 1: LOWLAND TREE PLANTINGS |    |                         |                         |                         |
|---------------------------------|----|-------------------------|-------------------------|-------------------------|
| TYPE                            | #  | BOTANICAL / COMMON NAME |                         | SIZE                    |
| TREE                            | 17 | RED MAPLE               | ACER RUBRUM             | 1" B&B OR CONTAINERIZED |
| TREE                            | 17 | BLACK GUM               | NYSSA SYLVATICA         | 1" B&B OR CONTAINERIZED |
| TREE                            | 17 | SWEET GUM               | LIQUIDAMBAR STYRACIFLUA | 1" B&B OR CONTAINERIZED |
| TREE                            | 17 | RIVER BIRCH             | BETULA PAPYRIFERA       | 1" B&B OR CONTAINERIZED |

- TREE PLANTING NOTES:**
- NOMENCLATURE: 1" B&B, MEANS 1" CALIPER SPECIMEN BALLED AND BURLAPPED.
  - TREE PLANTINGS TO BE 8-FT - 10-FT ON CENTER AT A RANDOM SPACING.
  - UPLAND TREE SPECIMENS SHALL BE LOCALLY VIABLE AND AVAILABLE SPECIES APPROVED BY THE REMEDIAL ENGINEER.

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|--------------|----------------|
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| Drawn By:    | TWJ            |
| Designed By: | ZGG            |
| Checked By:  | JPM            |
| Approved By: | JES/SAU        |

Stamp:

|      |                 |     |          |
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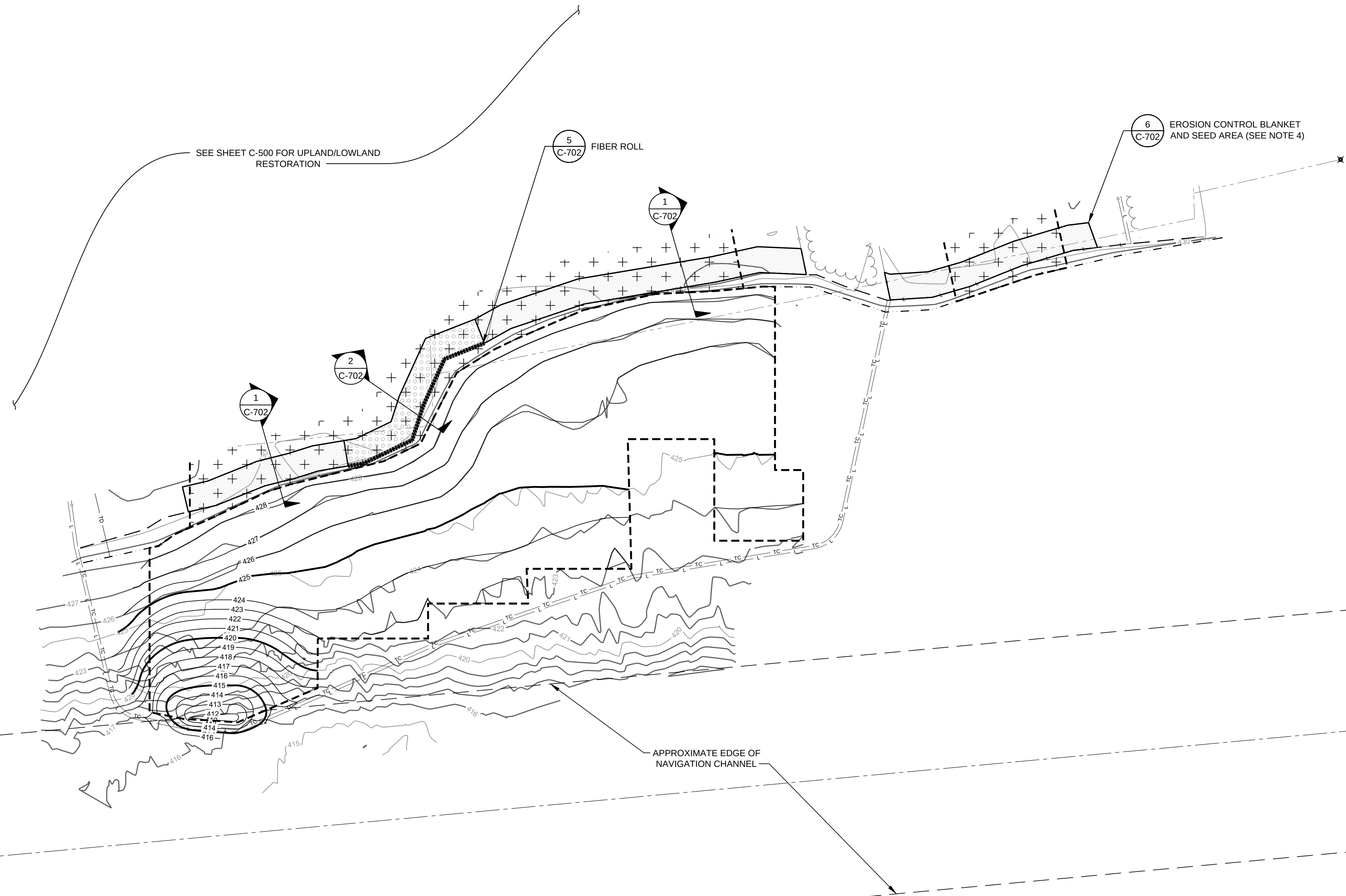
**UPLAND AND  
LOWLAND  
RESTORATION  
PLAN**

**C-500**

Sheet: 17 of 25



MCBRADY, JEFF      Printed: 9/10/2018 3:41 PM      Layout: C-501  
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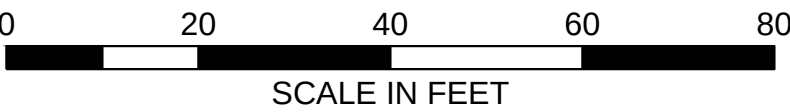
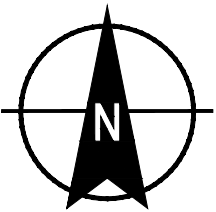


LEGEND

- FIBER ROLL
- CANAL BANK RESTORATION AREA TYPE A
- CANAL BANK RESTORATION AREA TYPE B

NOTES:

1. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND, SEE G-200.
2. DREDGING RESTORATION IS SUBJECT TO APPROVAL BY CANAL CORPORATION AND NYSDEC FISH AND WILDLIFE.
3. ALL TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS INCLUDING EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED ONCE RESTORATION IS COMPLETE.
4. RESTORE CANAL BANKS IN ACCORDANCE WITH DETAILS 1 AND 2 SHEET C-702. SEED WITH PERMANENT RIPARIAN SEED MIX CANAL RESTORATION AREA.
5. SEED WITH PERMANENT SEED MIX LOWLAND COVER AREAS AND DISTURBED AREAS OUTSIDE THE CANAL BANK RESTORATION AREA.
6. MAINTAIN TURBIDITY CURTAIN IN PLACE UNTIL CANAL WATER TURBIDITY IS ACCEPTABLE AS DETERMINED BY REMEDIATION ENGINEER VISUAL OBSERVATION.



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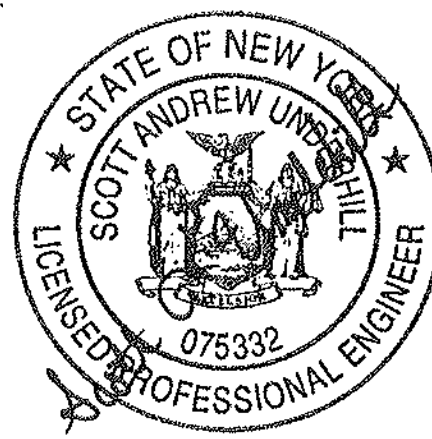
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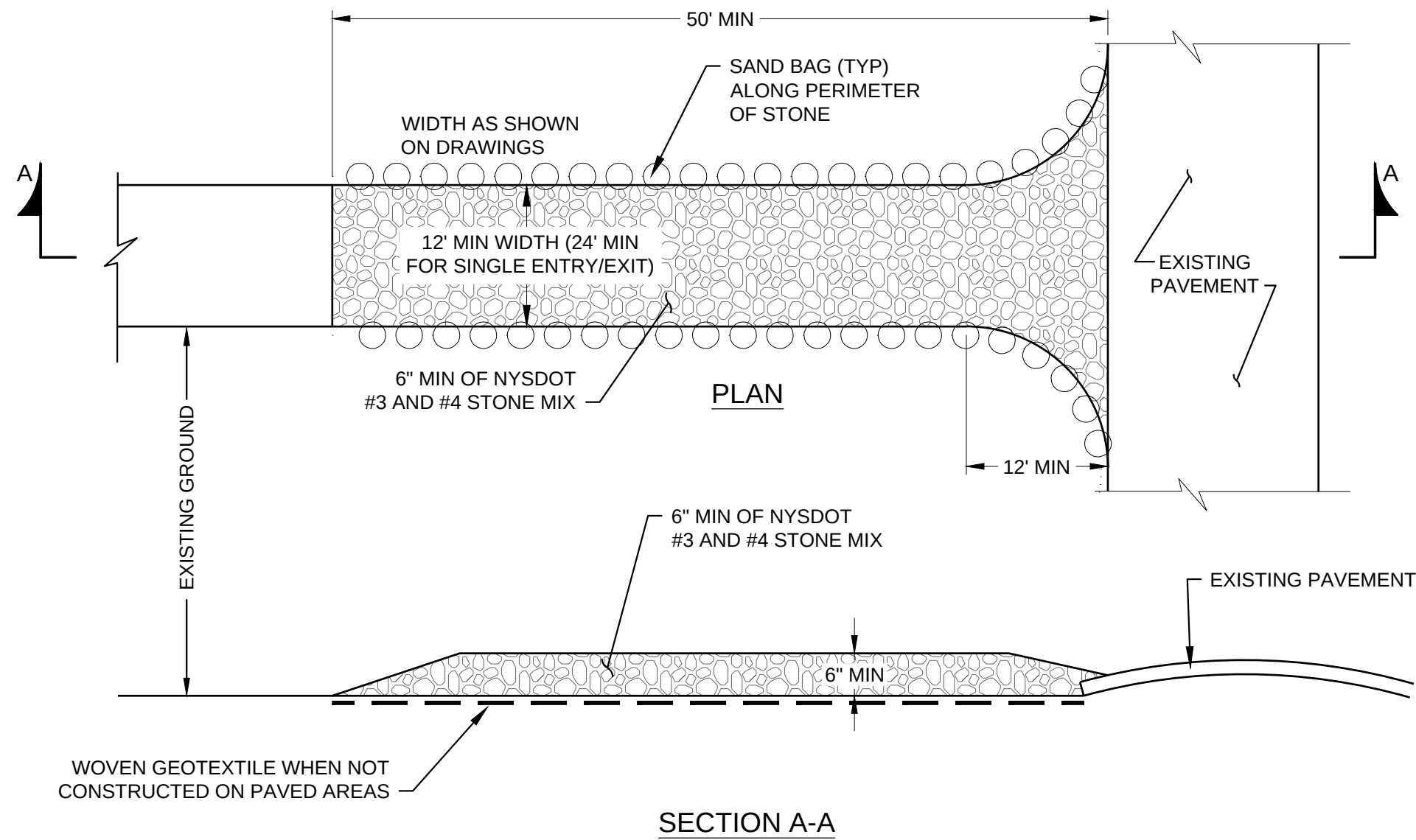
SENECA CANAL  
RESTORATION  
PLAN

**C-501**

Sheet: 18 of 25



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SENeca FALLS600-DESIGN004-DESIGN PLANS\34507-027 C-700.DWG



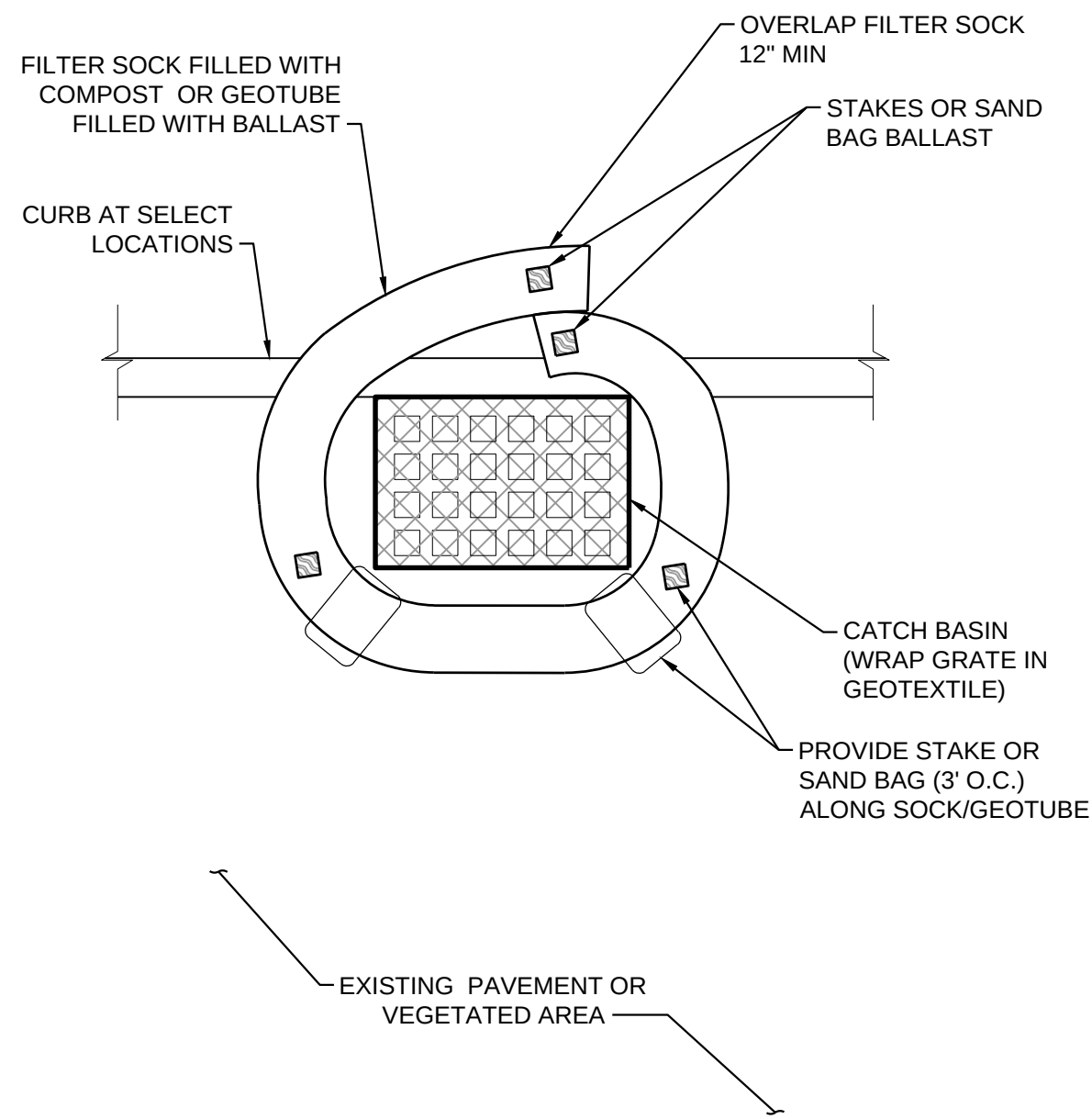
NOTES:

1. STONE SIZE - USE NYSDOT #3 AND #4 STONE MIX, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6") INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM. BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. WOVEN GEOTEXTILE - TO BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL. A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. 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 TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

1

STABILIZED CONSTRUCTION ACCESS

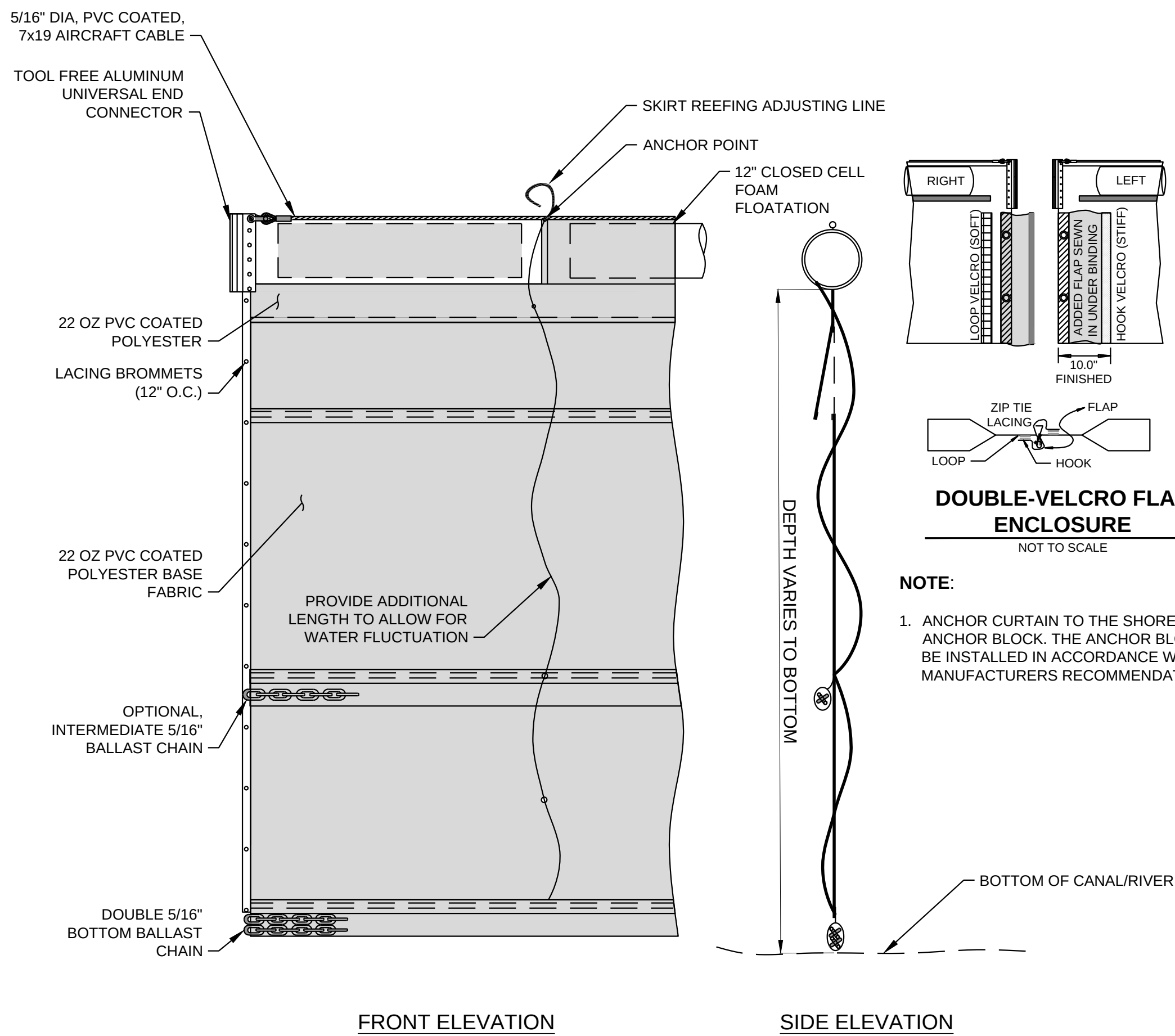
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2

STORM DRAIN INLET PROTECTION

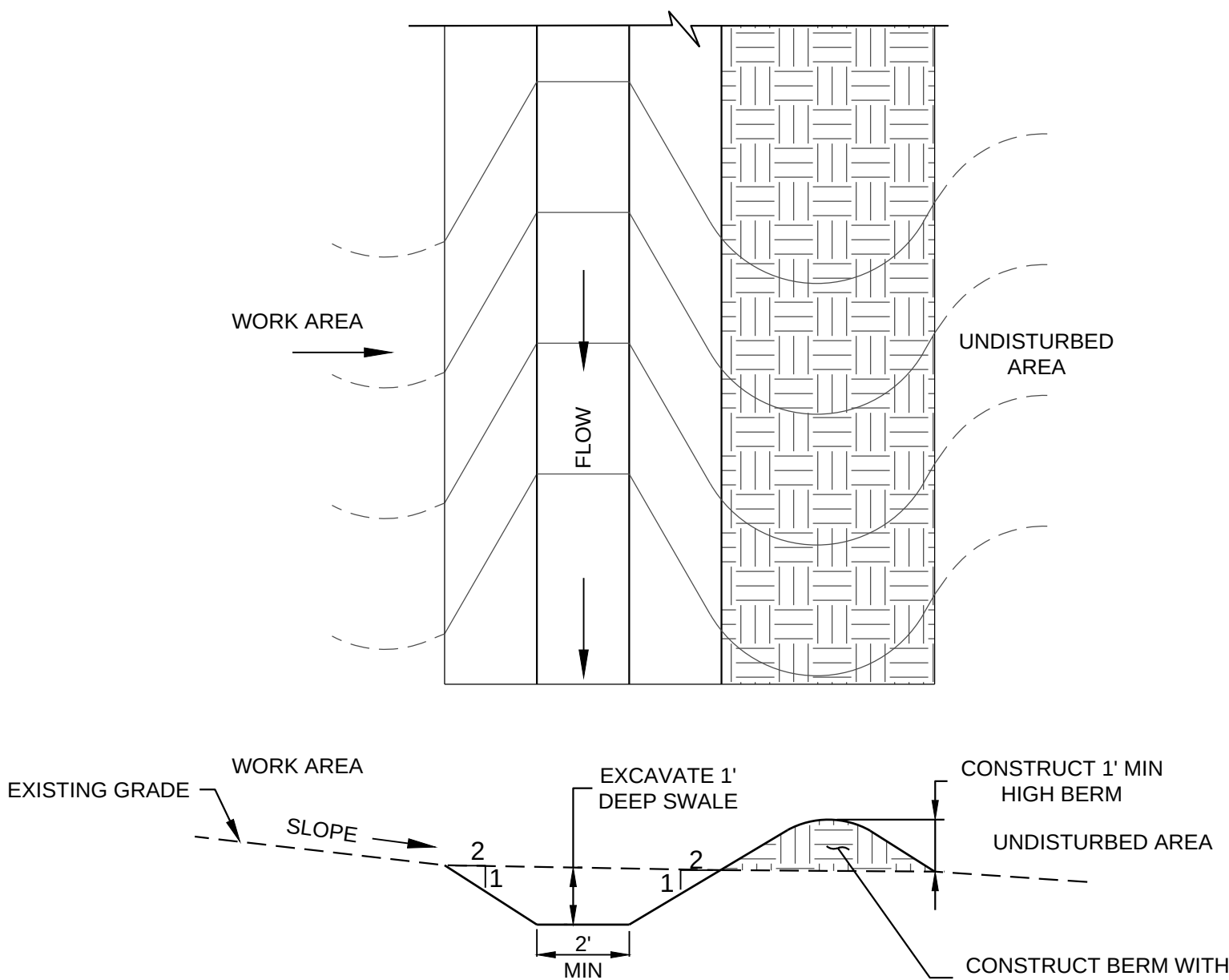
SCALE: NTS



3

TURBIDITY CURTAIN

SCALE: NTS



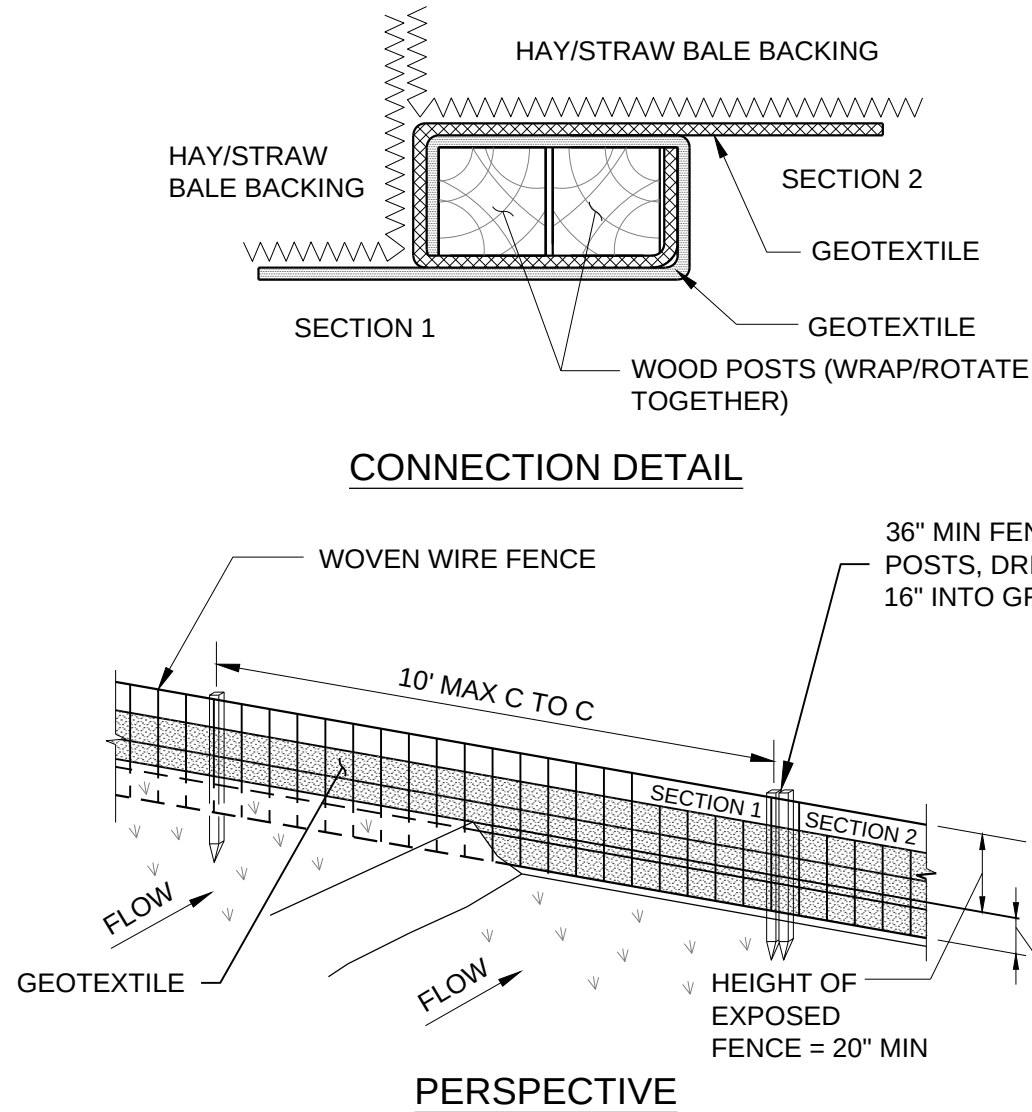
NOTES:

1. OUTLET TO UNDISTURBED AREAS OR INSTALL CULVERT ACROSS THE R.O.W. TO MAINTAIN CLEAN WATER.
2. DIVERSION DITCHES ARE INTENDED TO COLLECT AND CONVEY CLEAN SURFACE WATER, SPRINGS, ETC. AWAY FROM THE WORK AREA.
3. SWALE DIMENSIONS AND DEPTH TO BE ADJUSTED ACCORDINGLY BASED ON CONTRIBUTING DRAINAGE AREA.
4. STABILIZE DIVERESION SWALE WITH TEMPORARY SEED MIX AND MULCH.

4

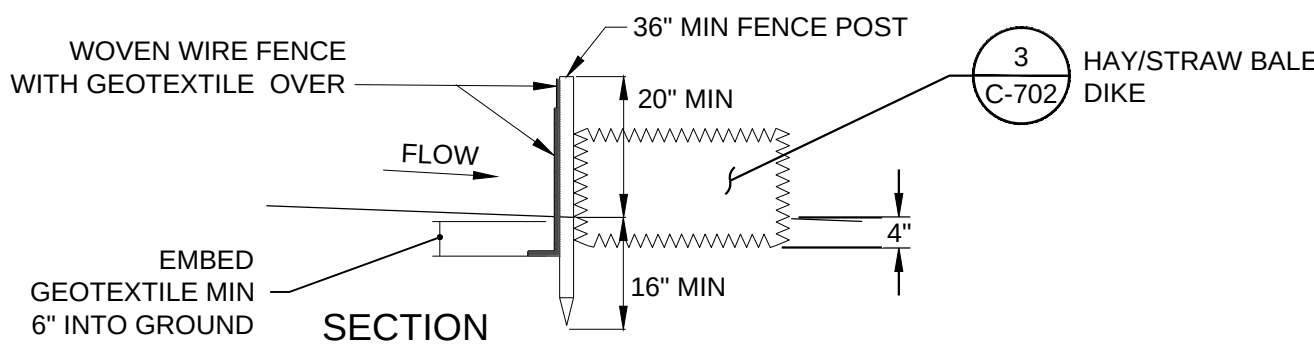
TEMPORARY DIVERSION SWALE

SCALE: NTS



NOTES:

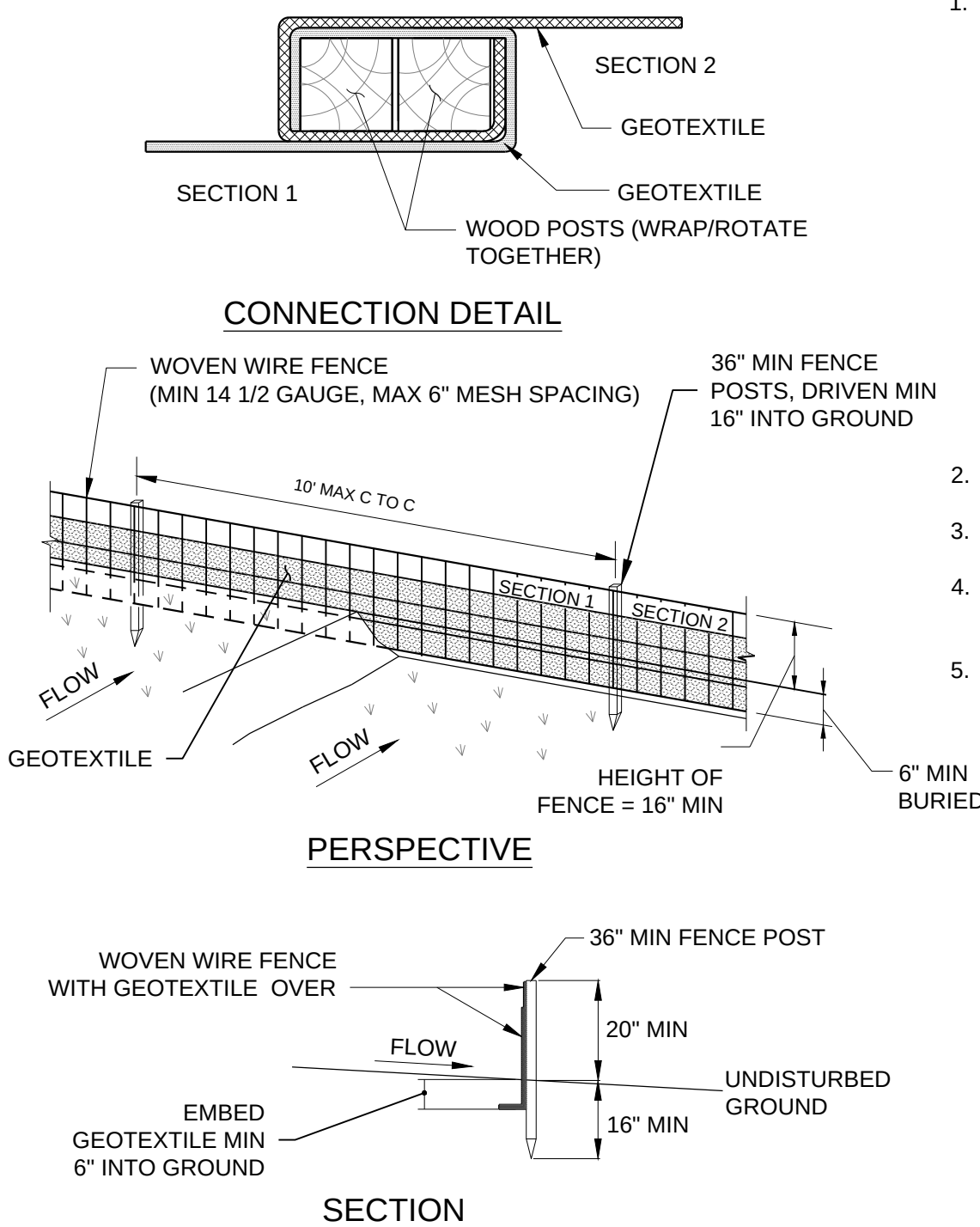
1. CONSTRUCTION NOTES FOR FABRICATED SILT FENCE.
  - A. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
  - B. GEOTEXTILE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
  - C. WHEN TWO SECTIONS OF GEOTEXTILE ADJOIN EACH OTHER, OVERLAP BY SIX INCHES AND FOLD (SEE CONNECTION DETAIL).
  - D. MAINTAIN AS NEEDED AND REMOVE MATERIAL WHEN "BULGES" DEVELOP IN THE SILT FENCE.
2. POSTS: STEEL EITHER "T" OR "U" TYPE OR 2" HARDWOOD
3. FENCE: WOVEN WIRE, 14 1/2 GA. 6" MAX MESH OPENING.
4. GEOTEXTILE: FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUAL.
5. PREFABRICATED UNIT: ENVIROFENCE, OR APPROVED EQUAL.
6. PLACE HAY/STRAW BALES AS BACKING BEHIND SILT FENCE.



5

AUGMENTED SILT FENCE

SCALE: NTS



NOTES:

1. CONSTRUCTION NOTES FOR FABRICATED SILT FENCE.
  - A. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
  - B. GEOTEXTILE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
  - C. WHEN TWO SECTIONS OF GEOTEXTILE ADJOIN EACH OTHER, OVERLAP BY SIX INCHES AND FOLD (SEE CONNECTION DETAIL).
  - D. MAINTAIN AS NEEDED AND REMOVE MATERIAL WHEN "BULGES" DEVELOP IN THE SILT FENCE.
2. POSTS: STEEL EITHER "T" OR "U" TYPE OR 2" HARDWOOD
3. FENCE: WOVEN WIRE, 14 1/2 GA. 6" MAX MESH OPENING.
4. GEOTEXTILE: FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUAL.
5. PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL

6

SILT FENCE

SCALE: NTS

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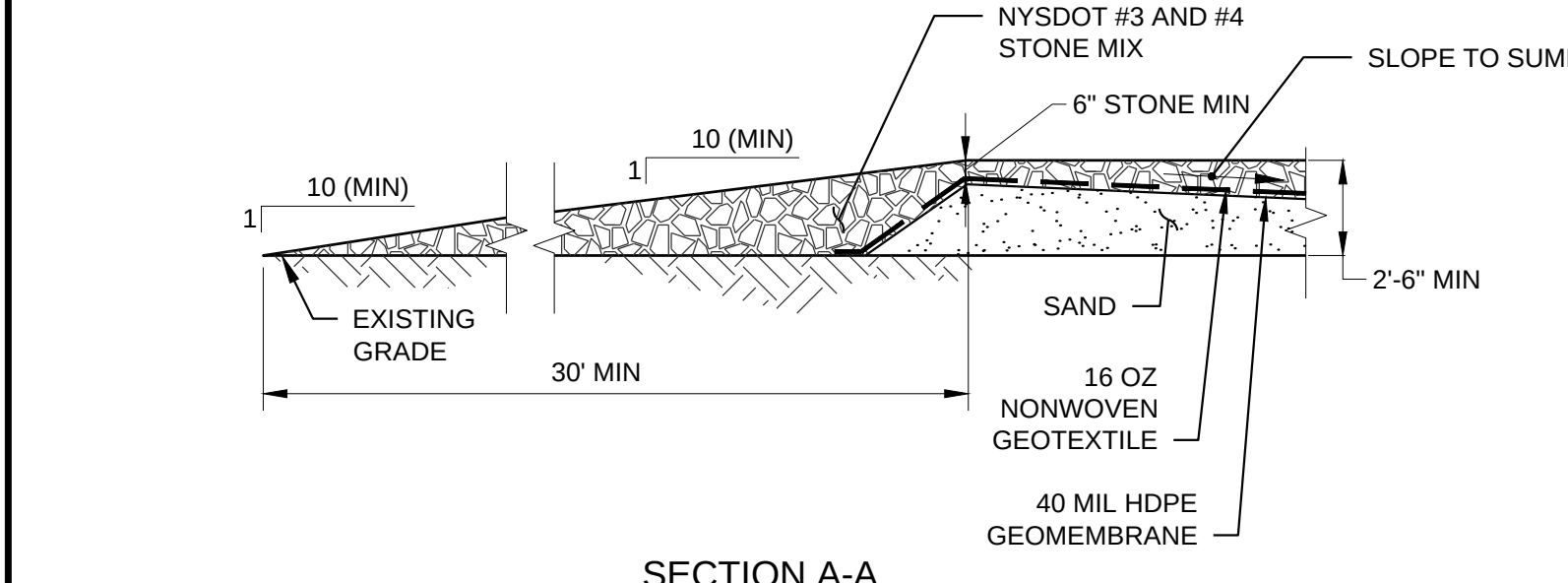
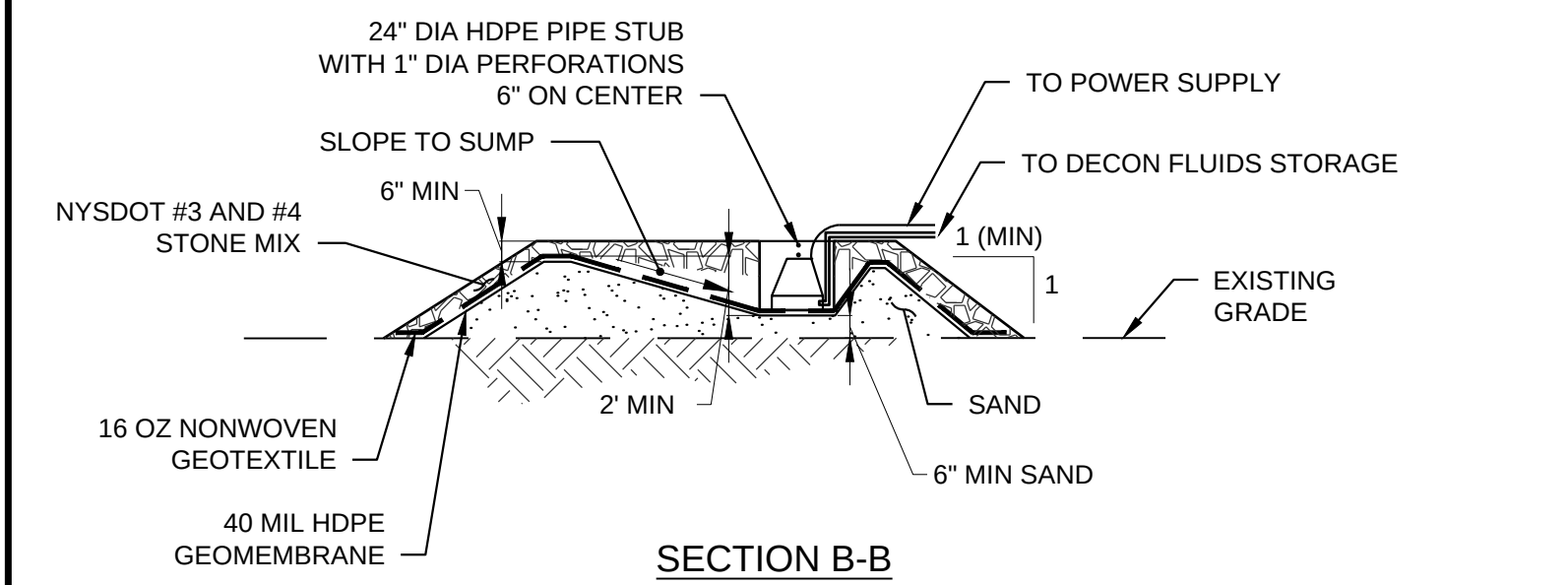
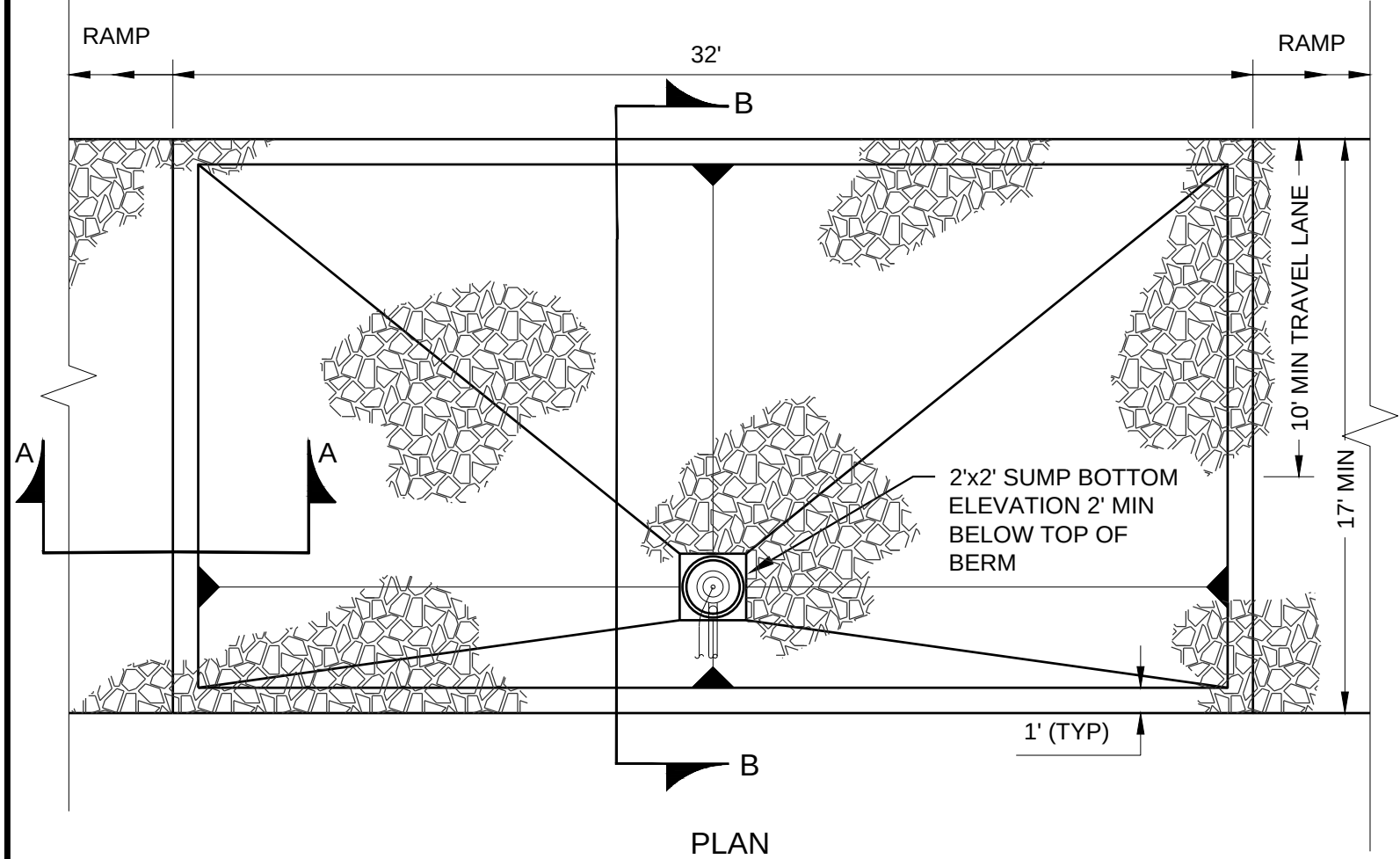
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1 OF 5

C-700

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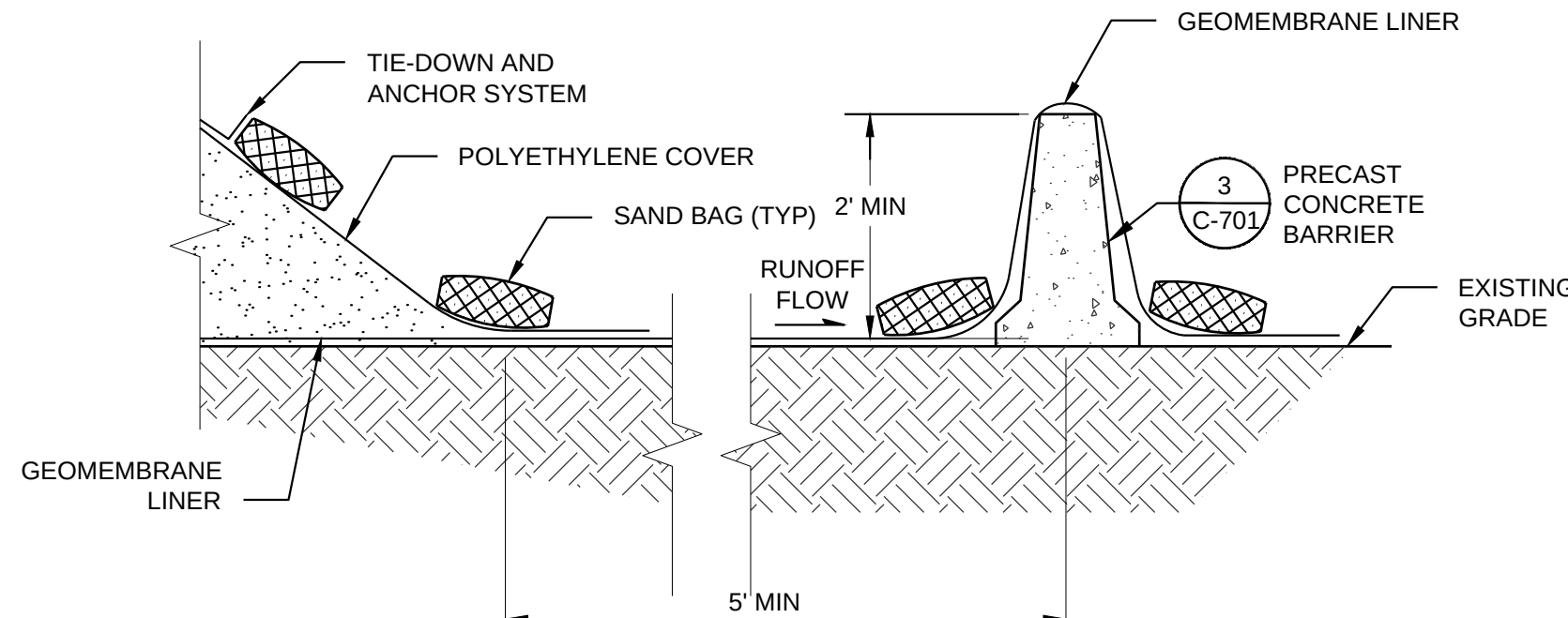
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- NOTES:
1. THIS DETAIL IS FOR ILLUSTRATIVE PURPOSES ONLY AND DEPICTS THE TYPICAL COMPONENTS INSTALLED TO ACCOMMODATE THE REQUIRED DECONTAMINATION PROCEDURES.

## 1 DECONTAMINATION PAD

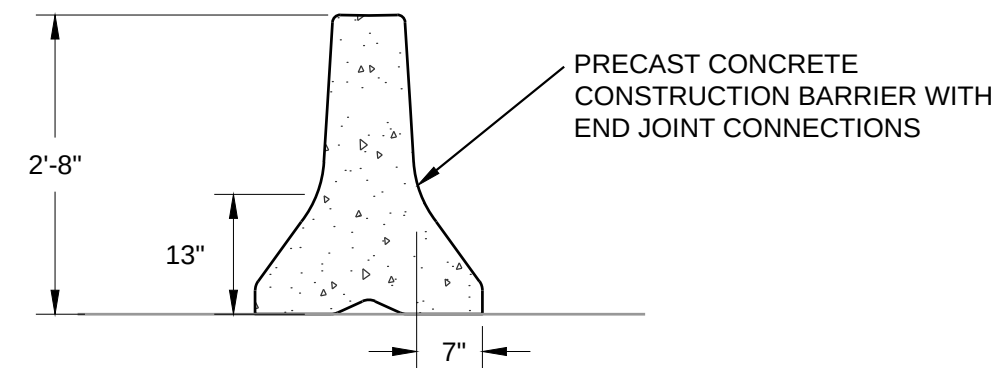
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## 2 CONTAMINATED MATERIAL STOCKPILE CONTAINMENT

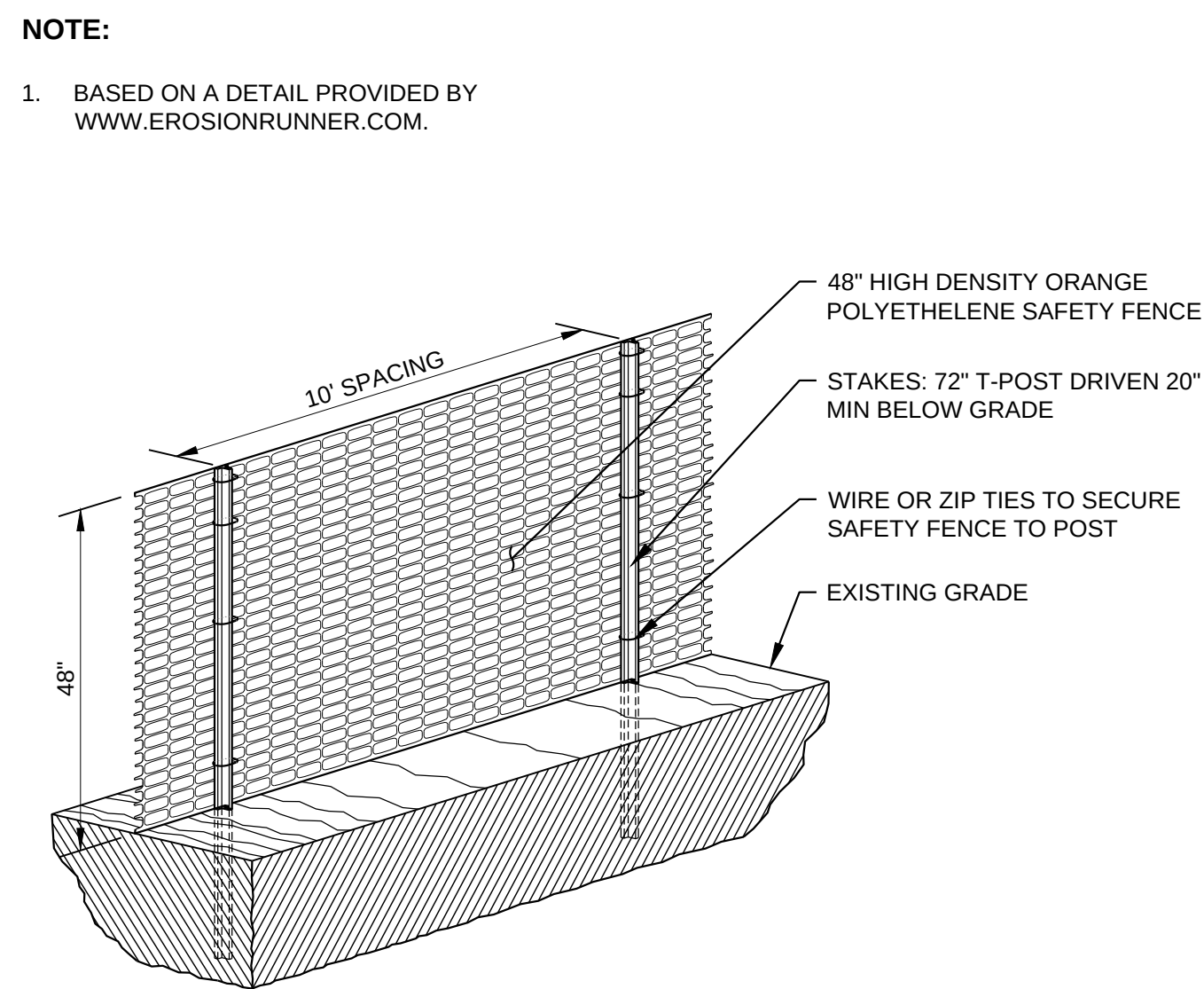
SCALE: NTS

- NOTES:
1. POLYETHYLENE COVER IS NOT REQUIRED FOR STOCKPILES OF CERTIFIED CLEAN MATERIAL; IT MAY BE USED AS A DUST CONTROL MEASURE.
  2. CONTAMINATED MATERIAL STOCKPILE SHALL BE COVERED TO THE EXTENT PRACTICABLE.
  3. CONTAMINATED MATERIAL STOCKPILES SHALL BE LOCATED WITHIN DEFINED AREAS NOTED ON C-300 OR AT ALTERNATE LOCATIONS APPROVED BY THE REMEDIAL ENGINEER.
  4. ENTRANCE TO CONTAINMENT AREA SHALL BE CONSTRUCTED WITH A MOUNTABLE BERM OR SIMILAR TO ALLOW ACCESS WHILE CAPTURING STORMWATER RUNOFF OR DEWATERING DRAINAGE WITHIN THE CONTAINMENT AREA.
  5. PROVIDE GEOMEMBRANE LINER PROTECTION AS REQUIRED TO PREVENT DAMAGE DURING VEHICLE ACCESS AND SOIL/MATERIAL PLACEMENT.
  6. STORMWATER RUNOFF CAPTURED WITHIN THE CONTAINMENT AREA SHALL BE MANAGED AS CONSTRUCTION WATER.
  7. IN PLACE OF PRECAST CONCRETE BARRIERS, PERIMETER BERM MAY BE CONSTRUCTED OF HAY BALES OR SAND BAGS PROVIDED THE MINIMUM HEIGHT IS MAINTAINED.



## 3 PRECAST CONCRETE BARRIER

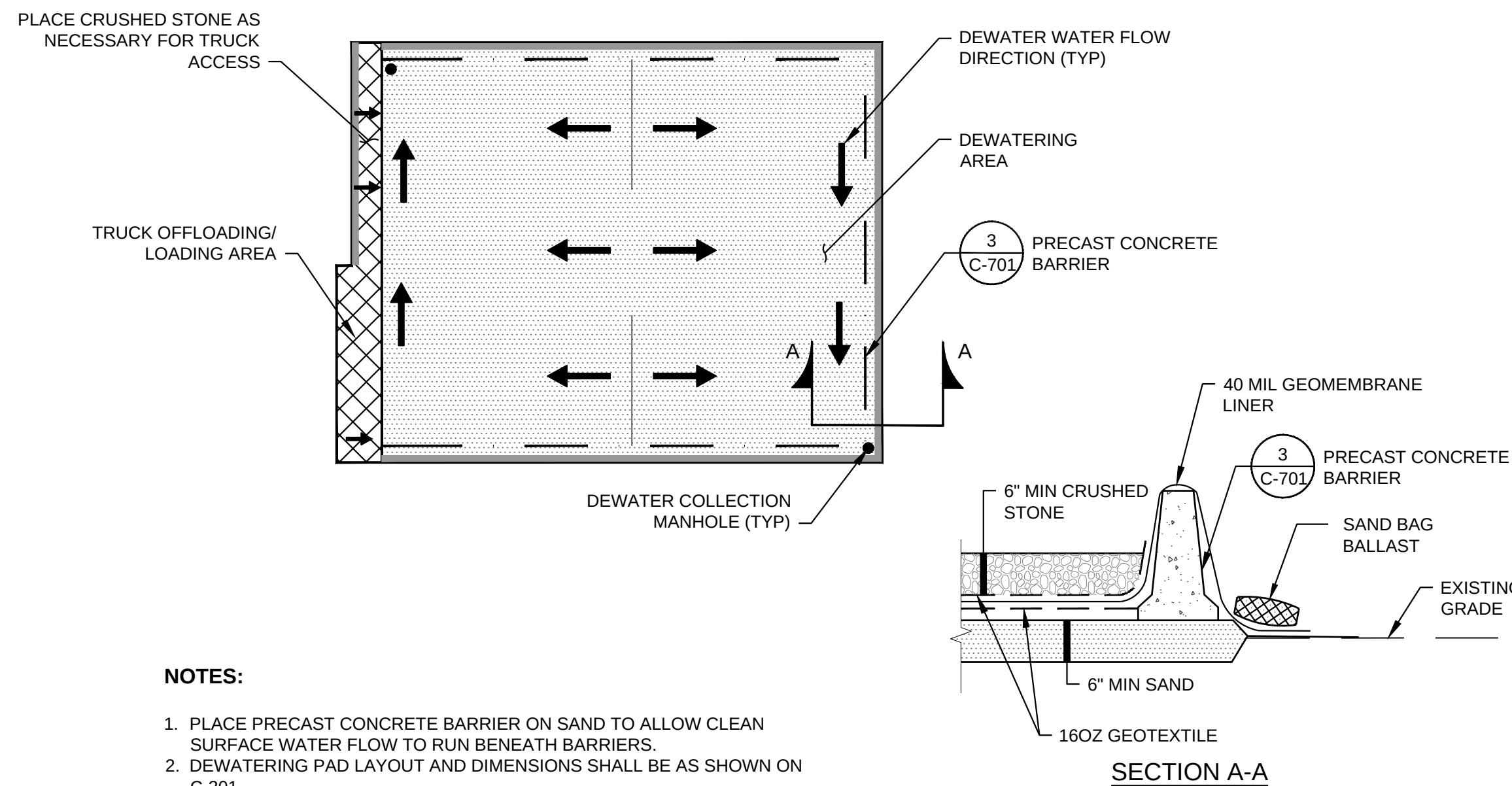
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## 4 TEMPORARY CONSTRUCTION FENCE

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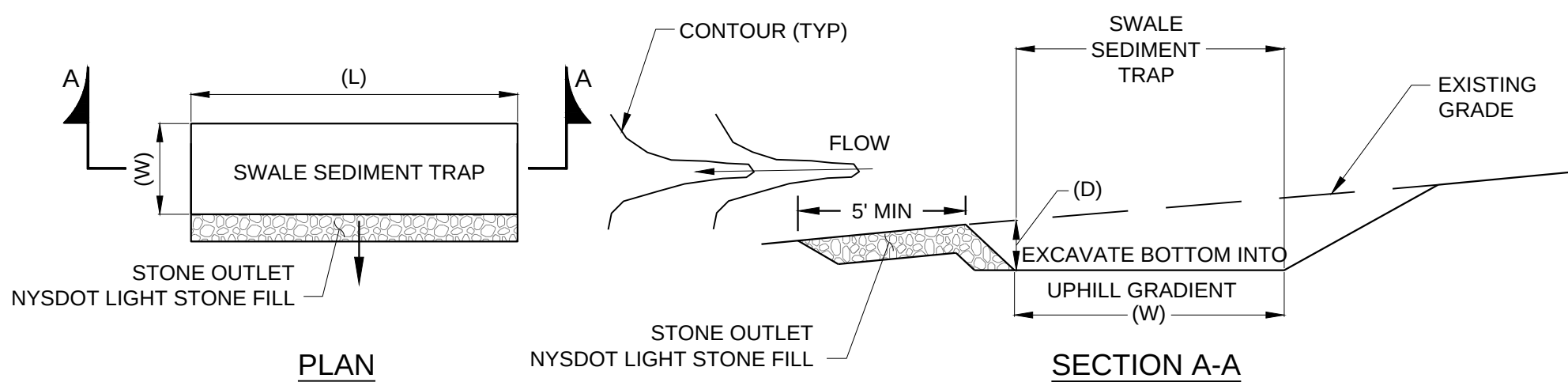
- NOTE:
1. BASED ON A DETAIL PROVIDED BY WWW.EROSIONRUNNER.COM.



- NOTES:
1. PLACE PRECAST CONCRETE BARRIER ON SAND TO ALLOW CLEAN SURFACE WATER FLOW TO RUN BENEATH BARRIERS.
  2. DEWATERING PAD LAYOUT AND DIMENSIONS SHALL BE AS SHOWN ON C-301.

## 5 SEDIMENT DEWATERING AREA

SCALE: NTS



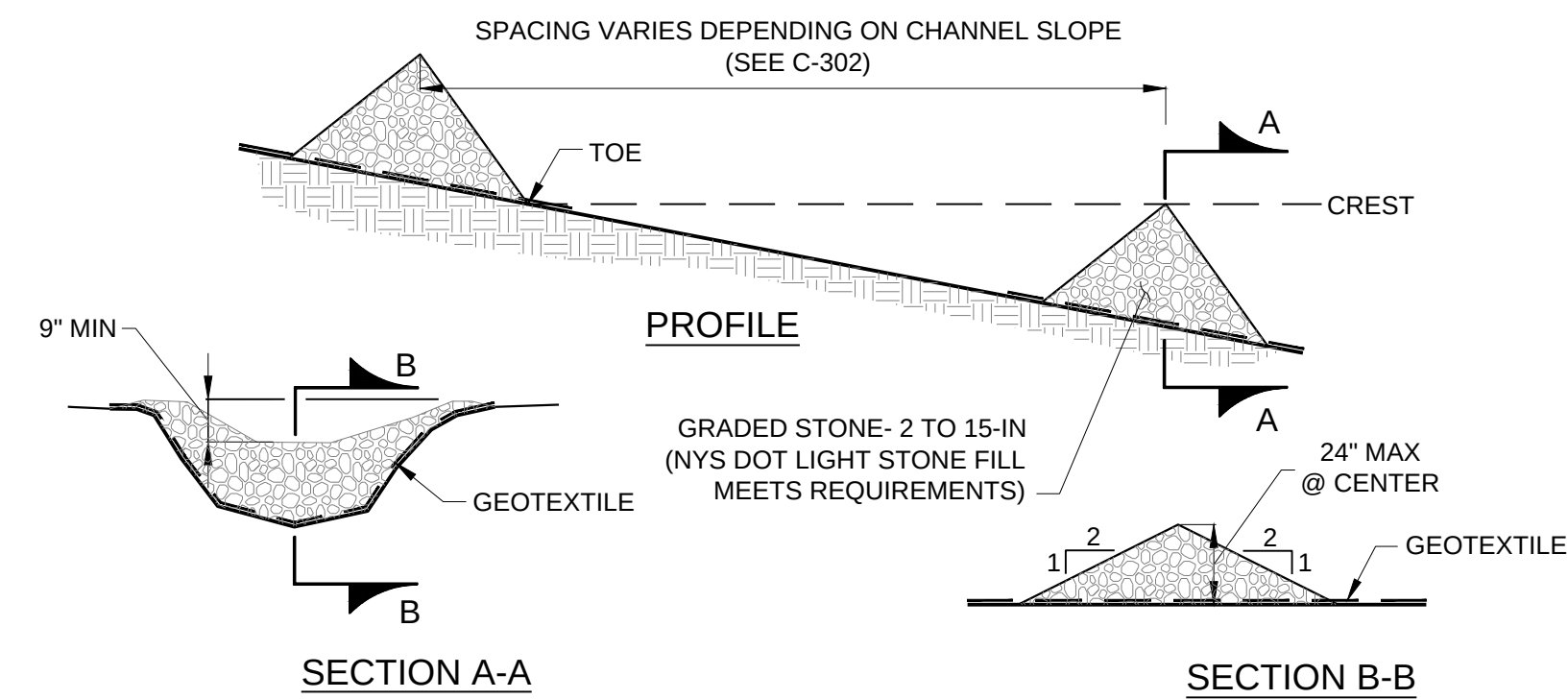
### CONSTRUCTION SPECIFICATIONS FOR ST-II:

1. CONSTRUCT THE SWALE SEDIMENT TRAP IN ACCORDANCE WITH THE DIMENSIONS PROVIDED.
2. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. THE SEDIMENT TRAP SHALL BE INSPECTED AFTER EACH RAIN EVENT AND REPAIRS MADE AS NEEDED.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION SHALL BE MINIMIZED.
5. THE SEDIMENT TRAP SHALL BE REMOVED AND AREA STABILIZED WHEN THE CONTRIBUTORY DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

| SWALE SEDIMENT TRAP DIMENSIONS                 |      |     |     |  |
|------------------------------------------------|------|-----|-----|--|
| TRAP NUMBER:                                   | 1    | 2   | 3   |  |
| DISTURBED AREA (ACRES):                        | 0.06 | 0.2 | 0.3 |  |
| STORAGE REQUIRED AT 1800 CF/AC DISTURBED (CF): | 108  | 360 | 540 |  |
| STORAGE PROVIDED (CF):                         | 200  | 360 | 600 |  |
| STORAGE DEPTH "D" (FT):                        | 2'   | 2'  | 2'  |  |
| STORAGE WIDTH "W" (FT):                        | 10'  | 12' | 15' |  |
| STORAGE LENGTH "L" (FT):                       | 10'  | 15' | 20' |  |

## 6 SWALE SEDIMENT TRAP

SCALE: NTS



### CONSTRUCTION SPECIFICATIONS:

1. STONE SHALL BE PLACED ON A GEOTEXTILE FOUNDATION AS SHOWN ON THE EROSION CONTROL PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5-FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.

## 7 STONE CHECK DAM

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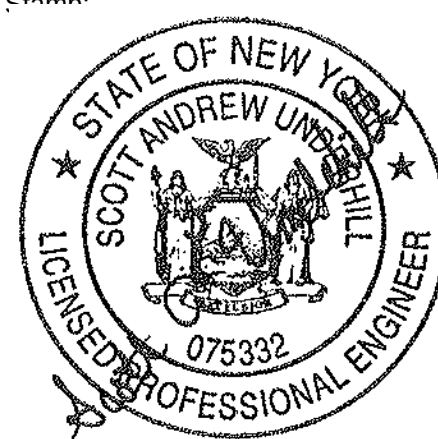
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|------|-----------------|-----|----------|
| 0    | ISSUED FOR BID/ | H&A | 08/10/18 |
|      | CONSTRUCTION    |     |          |

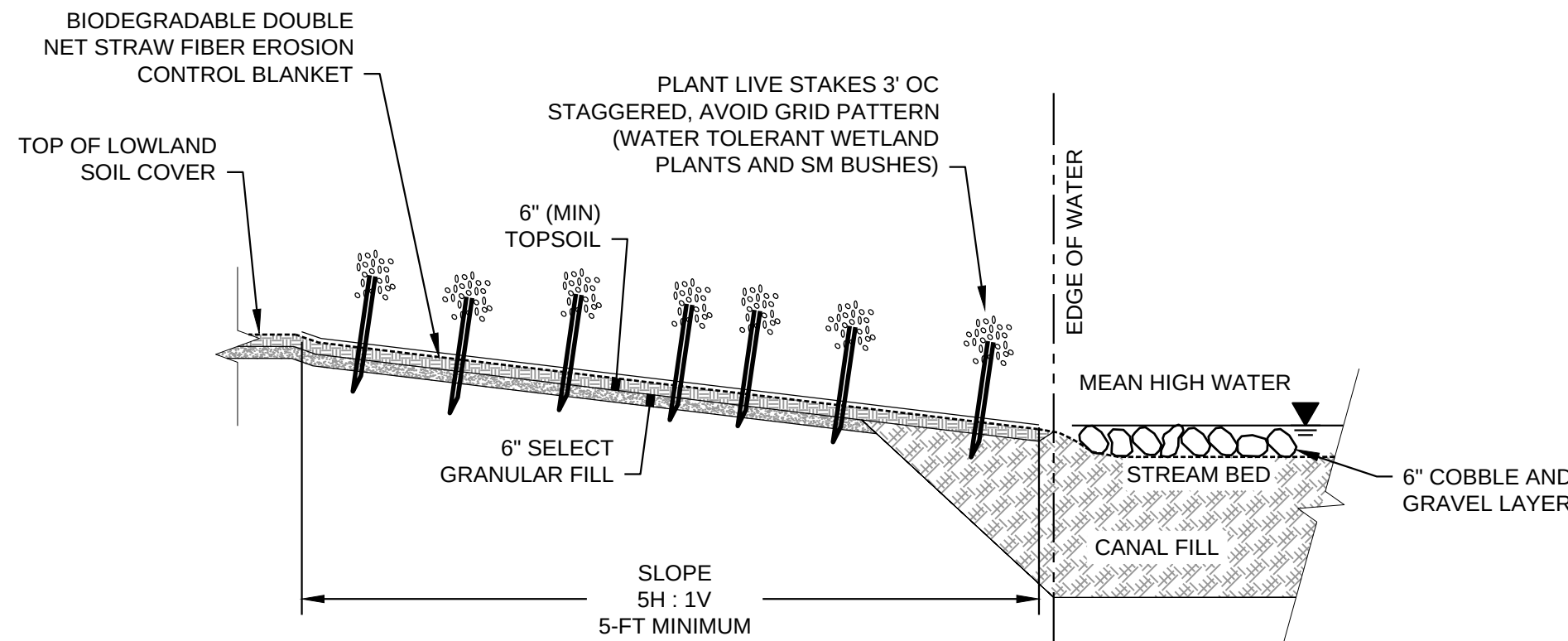
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FORMER MANUFACTURED  
GAS PLANT (MGP) SITE  
SITE NUMBER 850010  
187 FALL STREET  
SENECA FALLS, NEW YORK

CIVIL DETAILS  
2 OF 5

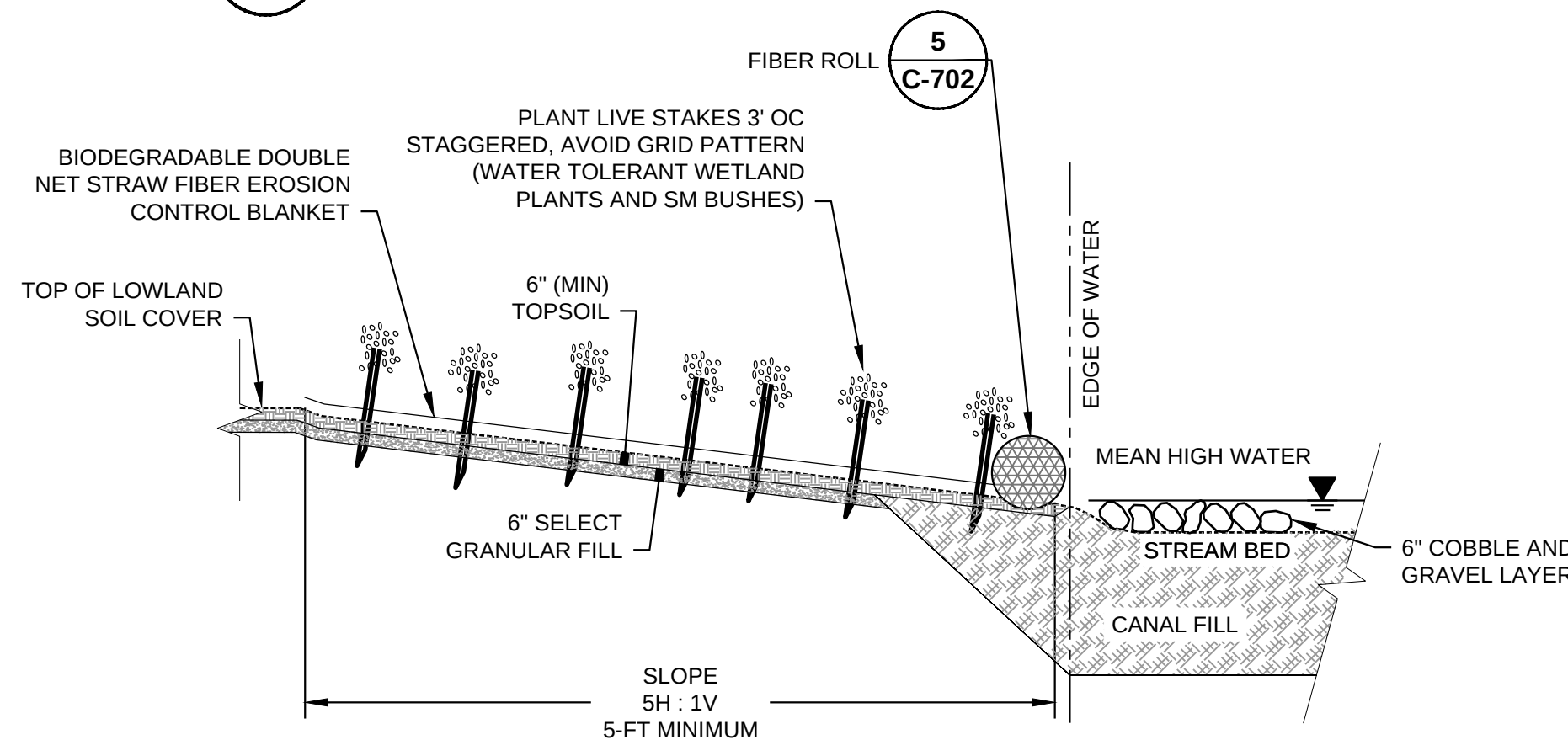
**C-701**

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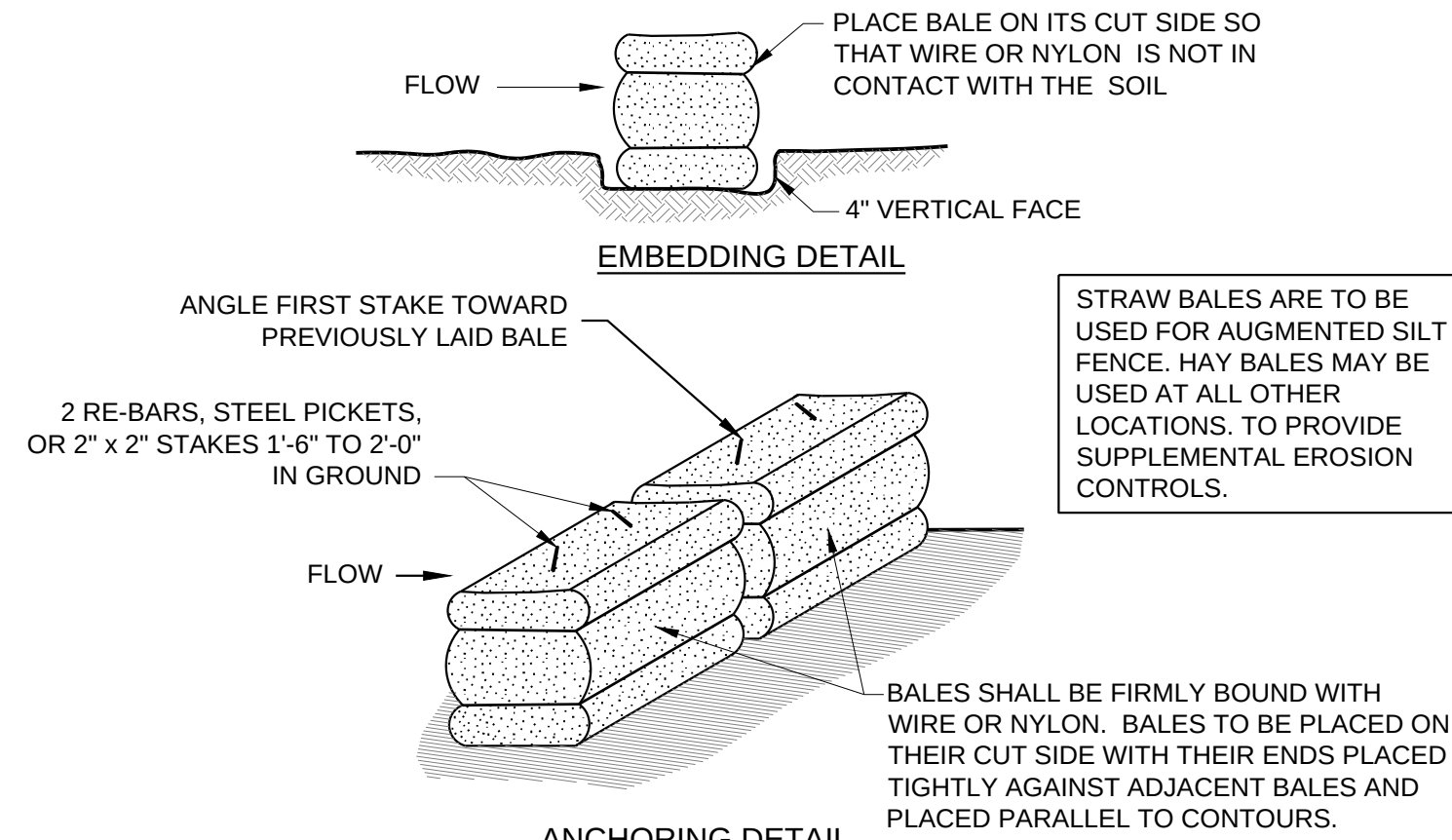




1 CANAL BANK RESTORATION TYPE A  
SCALE: NTS



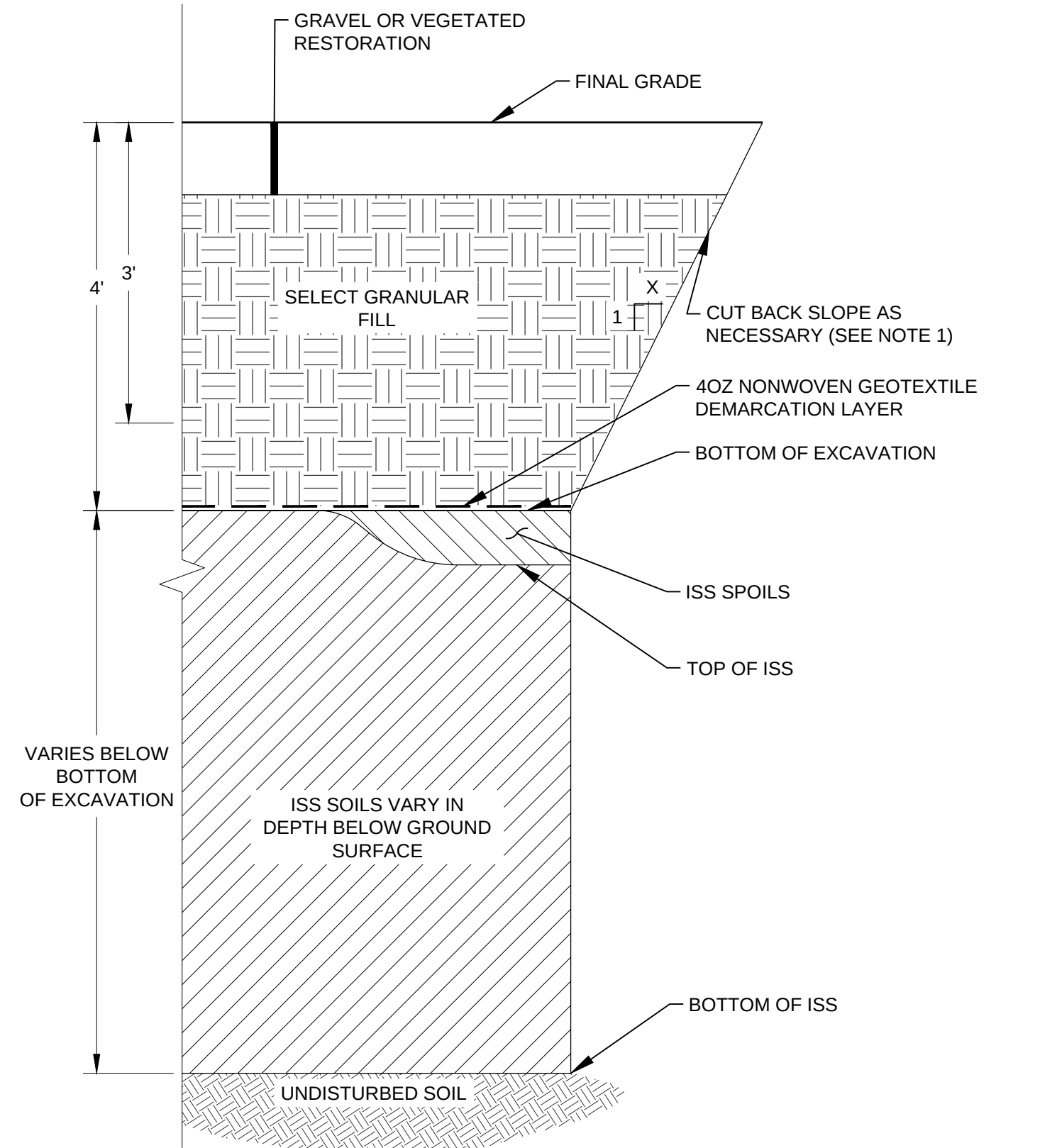
2 CANAL BANK RESTORATION TYPE B  
SCALE: NTS



CONSTRUCTION SPECIFICATIONS:

- BALES SHALL BE PLACED BEHIND SILT FENCE AS A COMPONENT OF AUGMENTED SILT FENCE.
- EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
- BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR REBAR DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARDS THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
- INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
- BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

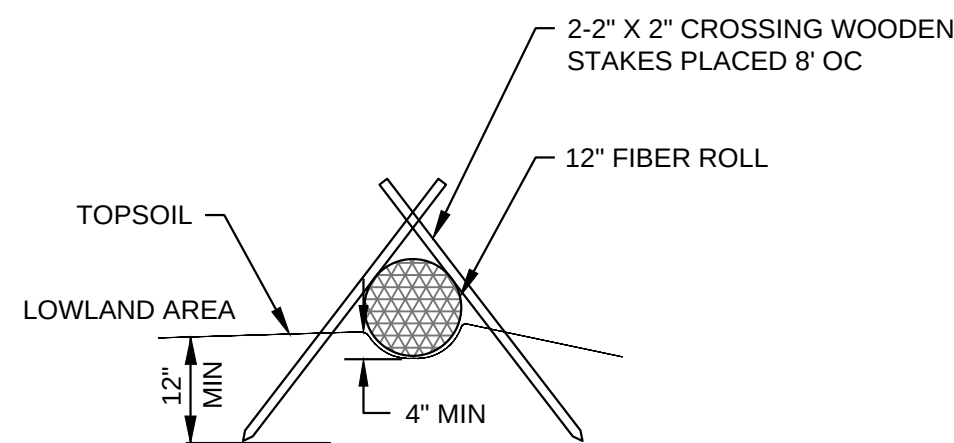
3 HAY/STRAW BALE DIKE  
SCALE: NTS



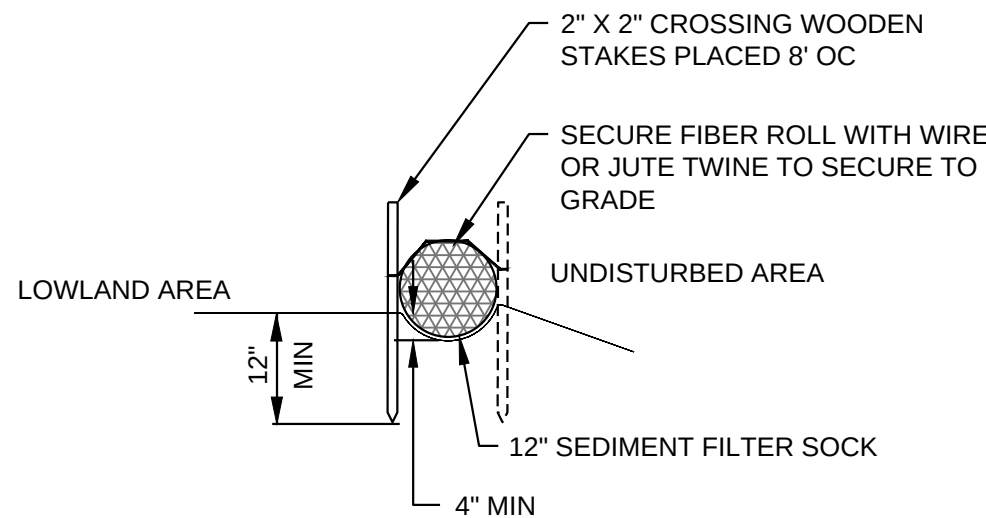
NOTE:

- CUT BACK SLOPE (1:X) SHALL BE EXCAVATED AT LOCATIONS NOTED ON C-702 TO COORDINATE WITH SOIL TYPE, GROUNDWATER CONDITION, AND THE REQUIREMENTS OF OSHA SAFETY STANDARDS.

4 EXCAVATION / ISS  
SCALE: NTS



SECTION VIEW  
CROSSING STAKE OPTION



SECTION VIEW  
ALTERNATING STAKE OPTION

5 FIBER ROLL  
SCALE: NTS

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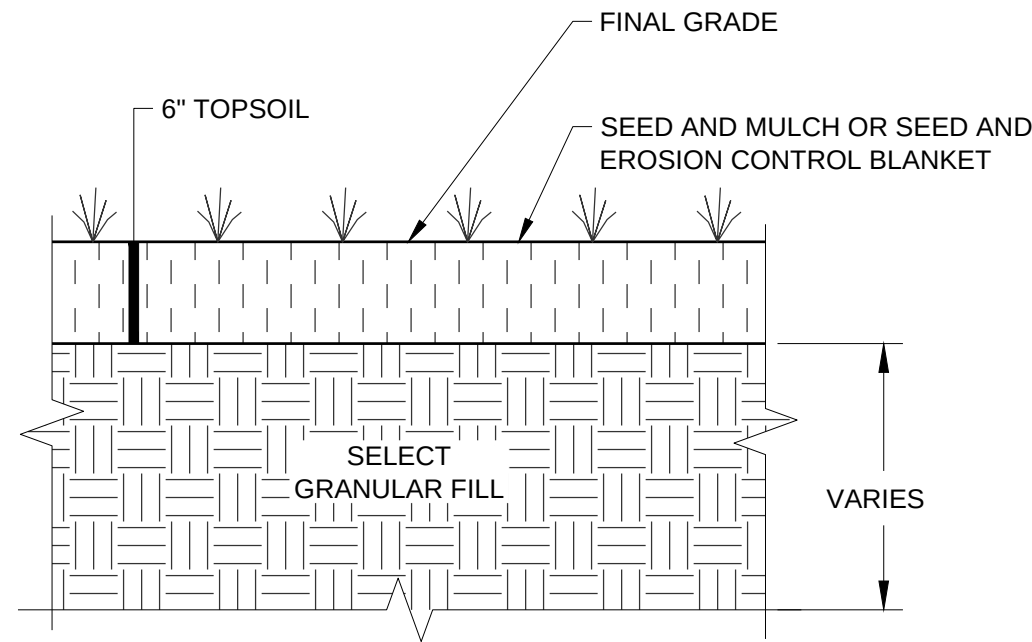
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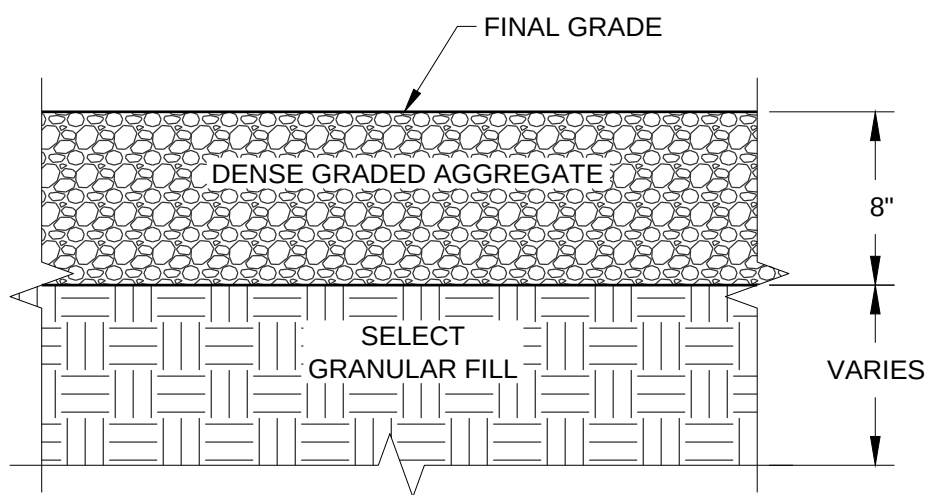
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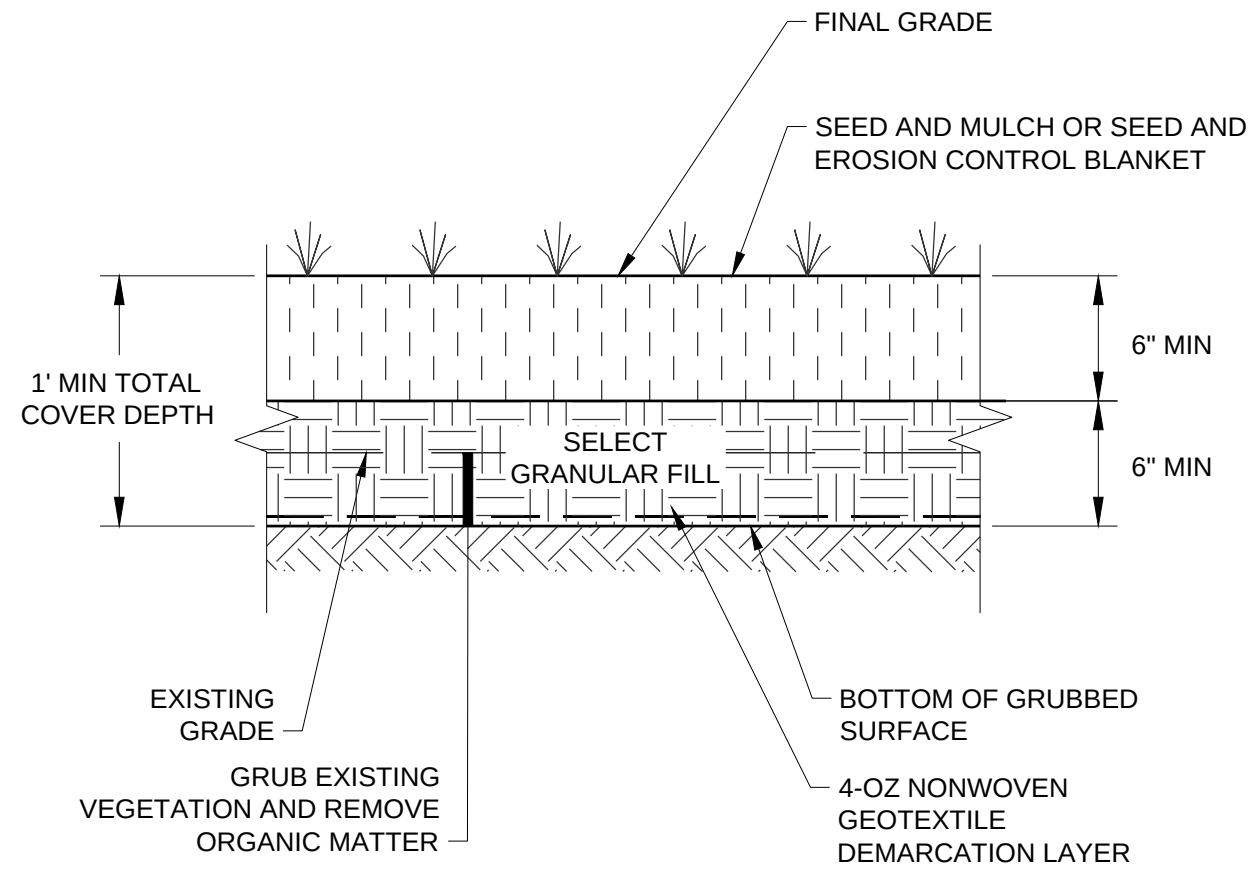




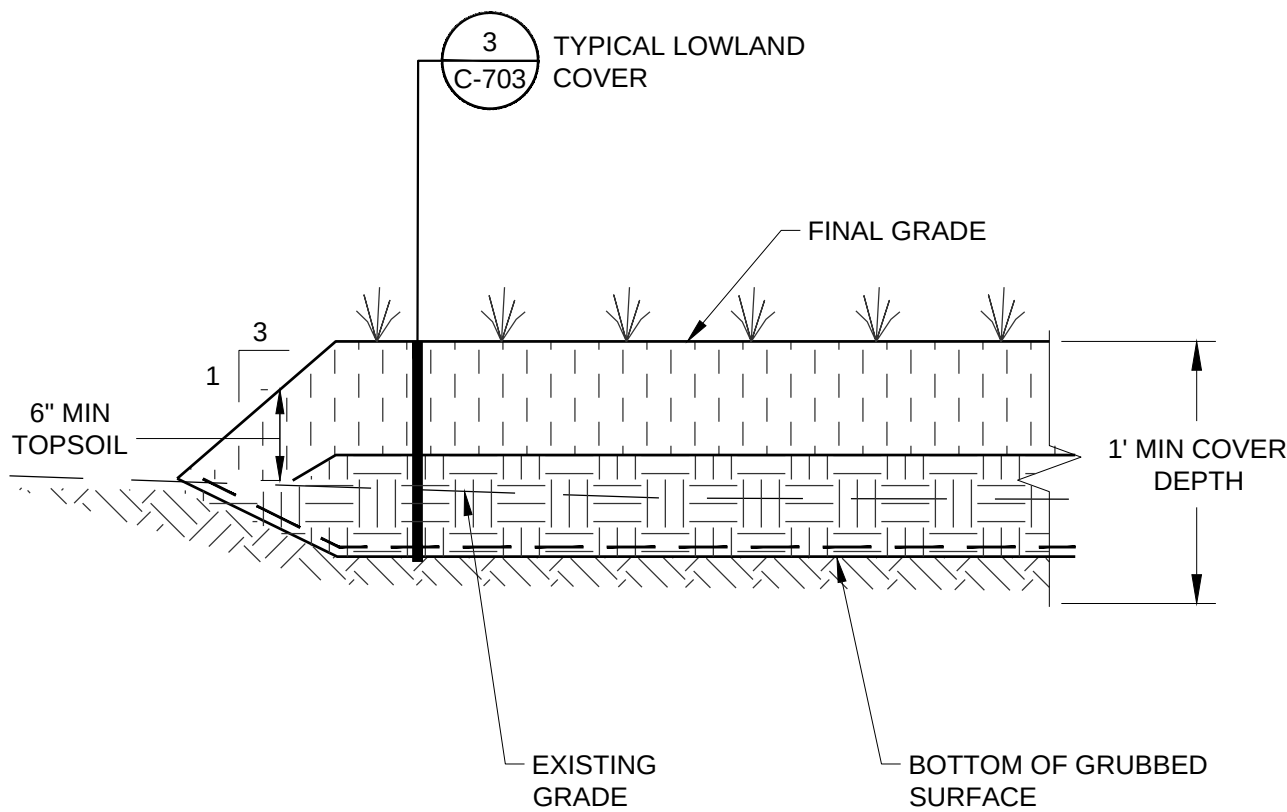
1 **VEGETATED RESTORATION**  
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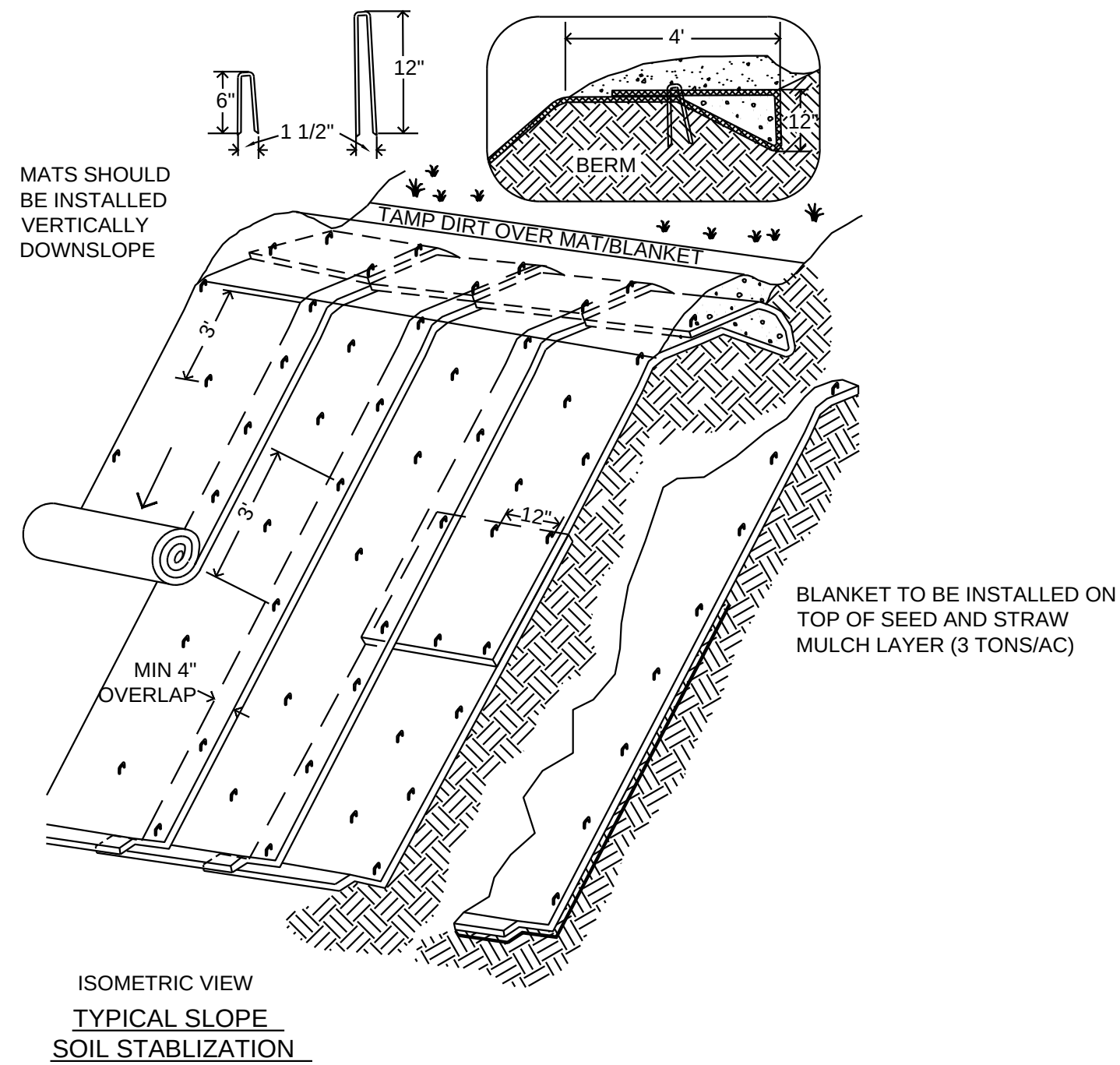
2 **GRAVEL RESTORATION**  
SCALE: NTS



3 **TYPICAL LOWLAND COVER**  
SCALE: NTS



4 **LOWLAND COVER TERMINATION**  
SCALE: NTS



5 **EROSION CONTROL BLANKET**  
NTS

#### INSTALLATION NOTES:

##### SITE PREPARATION

1. PROPER SITE PREPARATION IS ESSENTIAL TO ENSURE COMPLETE CONTACT OF THE PROTECTION MATTING WITH THE SOIL.
2. GRADE AND SHAPE AREA OF INSTALLATION.
3. REMOVE ALL ROCKS, SOIL CLODS, VEGETATIVE OR OTHER OBSTRUCTIONS SO THAT THE INSTALLED MATTING WILL HAVE DIRECT CONTACT WITH THE SOIL.
4. PREPARE SEEDBED BY LOOSENING 2" TO 4" OF TOPSOIL ABOVE FINAL GRADE.
5. INCORPORATE AMENDMENTS, SUCH AS LIME AND FERTILIZER, INTO SOIL ACCORDING TO SOIL TEST AND THE SEEDING PLAN.

##### SEEDING

1. SEED AREA BEFORE MATTING INSTALLATION, FOLLOWING APPROPRIATE APPLICATION RATE (SEE SEEDING SPECIFICATION).

##### MULCHING

1. PLACE STRAW MULCH AT AN APPLICATION RATE OF 3 TONS PER ACRE, PRIOR TO THE INSTALLATION OF THE MATTING.

##### ANCHORING

1. U-SHAPED WIRE STAPLES, METAL GEOTEXTILE STAKE PINS OR TRIANGULAR WOODEN STAKES CAN BE USED TO ANCHOR MATS TO THE GROUND SURFACE. WIRE STAPLES SHOULD BE MINIMUM OF 8 GAUGE. METAL STAKES PINS SHOULD BE 3/8" DIAMETER STEEL WITH 1 1/2" STEEL WASHER AT THE HEAD OF THE PIN. WIRE STAPLES AND METAL STAKE SHOULD BE DRIVEN FLUSH TO THE SOIL SURFACE. WOODEN STAKES SHOULD BE 3" X 1 1/2" TRIANGULAR WOODEN SURVEY STAKES. TWO INCHES OF STAKING SHOULD REMAIN ABOVE SOIL SURFACE. ALL ANCHORS SHOULD BE 8"-18" LONG AND HAVE SUFFICIENT GROUND PENETRATION TO RESIST PULLOUT. LONGER ANCHORS MAY BE REQUIRED FOR LOOSE SOILS.

##### INSPECTION AND MAINTENANCE

1. ALL MATTING SHOULD BE INSPECTED IN ACCORDANCE WITH SWPPP FOLLOWING INSTALLATION UNTIL 80% STABILIZED OR SWPPP N.O.T. HAS BEEN SUBMITTED.
2. INSPECT INSTALLATION AFTER SIGNIFICANT RAINFALL EVENTS TO CHECK FOR EROSION AND UNDERMINING. ANY FAILURE SHOULD BE REPAIRED IMMEDIATELY.
3. IF WASHOUT OR BREAKAGE OCCURS, RE-INSTALL THE MATERIAL AFTER REPAIRING THE DAMAGE TO THE SLOPE OR DRAINAGEWAY.

**HALEY ALDRICH**

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CIVIL DETAILS  
4 OF 5

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WATER TREATMENT NOTES

1. THE CONSTRUCTION WATER TREATMENT SYSTEM SHOWN IN THESE DRAWINGS IS A RECOMMENDED DESIGN ALTERNATIVE AND MAY NOT NECESSARILY REPRESENT THE FINAL WATER TREATMENT SYSTEM THAT WILL BE IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR MAY PROPOSE AN ALTERNATE WATER TREATMENT SYSTEM DESIGN, THAT AT A MINIMUM SHALL MEET THE PERFORMANCE STANDARDS AND DESIGN, CONSTRUCTION AND OPERATIONAL INTENT INDICATED IN THE DRAWINGS.
2. THE CONSTRUCTION WATER TREATMENT SYSTEM SHALL BE CAPABLE OF PROCESSING A FLOW RATE OF AT LEAST 50 GPM DURING ONGOING REMEDIATION ACTIVITIES.
3. HIGH-HIGH LEVEL ALARMS SHALL BE PROVIDED ON ALL TANKS AND SHALL MINIMALLY ACTIVATE VISUAL AND AUDIO ALERTS TO SYSTEM OPERATORS. HIGH-HIGH LEVEL ALARMS SHALL BE INSTALLED TO PROVIDED SUFFICIENT TIME FOR OPERATORS TO SHUT DOWN THE SYSTEM (I.E. INFLUENT AND TREATMENT PUMPS) TO PREVENT OVERFLOW OF TANKS INTO SECONDARY CONTAINMENT. FLOATS SHALL BE USABUEBOOK #47700 NON-MERCURY FLOATS OR APPROVED EQUAL.
4. ALL PIPING SHOWN SHALL BE FABRIC REINFORCED, 150 PSI EPDM OR NITRILE RUBBER HOSES WITH STAINLESS STEEL KAMLOK® CAM & GROOVE COUPLERS OR APPROVED EQUAL UNLESS OTHERWISE SPECIFIED. HOSES AND KAMLOCK® FITTINGS SHALL HAVE A MINIMUM PRESSURE RATING OF 150 PSI.
5. VALVES SHALL BE BRASS OR STAINLESS STEEL BALL VALVES UNLESS OTHERWISE NOTED.
6. THE CONTRACTOR SHALL PROVIDE SECONDARY CONTAINMENT FOR ALL COMPONENTS AND PIPING OF THE CONSTRUCTION WATER TREATMENT SYSTEM UNLESS OTHERWISE SPECIFIED:

A. PROVIDE 12" HIGH HDPE SPILL GUARD OR APPROVED EQUAL SECONDARY CONTAINMENT FOR INFUENT AND EFFLUENT TANKS.

B. PROVIDE SECONDARY CONTAINMENT FOR ALL OTHER SYSTEM COMPONENTS CAPABLE OF CONTAIN A VOLUME EQUAL TO 110% OF THE LARGEST CONTAINER WITHIN THE CONTAINMENT AREA PLUS THE VOLUME OF A 25-YEAR 24-HOUR RAIN EVENT (5 INCHES).
7. BACKWASHING PIPING FOR GRANULAR ACTIVATED CARBON VESSELS IS NOT SHOWN BUT SHALL BE PROVIDED. BACKWASH WATER SUPPLY SHALL BE FROM TK-112 OR A CLEAN WATER SOURCE. FLOW RATE SHALL BE WITHIN THE MANUFACTURERS RECOMMENDED FLOW RATE OF 40-50 GPM. BACKWASH WASTEWATER SHALL BE FILTERED AND RE-INTRODUCED TO THE SYSTEM FOR TREATMENT.
8. THE DESIGN ENGINEER SHALL OBTAIN THE SPDES PERMIT.
9. THE DESIGN SHOWN INCLUDE MINIMUM REQUIREMENTS FOR TREATMENT. IF NECESSARY, ADDITIONAL TREATMENT COMPONENTS SHALL BE PROVIDED BY THE CONTRACTOR TO ACHIEVE THE SPDES EFFLUENT LIMITS AND REQUIREMENTS.
10. REFER TO CONSTRUCTION WATER TREATMENT SYSTEM SPECIFICATION 02 70 00 FOR ADDITIONAL REQUIREMENTS AND SUBMITTALS.

IDENTIFICATION LETTERS

F BAG FILTER

LAH LEVEL ALARM HIGH

P PUMP

PI PRESSURE INDICATOR

TK TANK

V VESSEL

PIPING AND TUBING MATERIALS

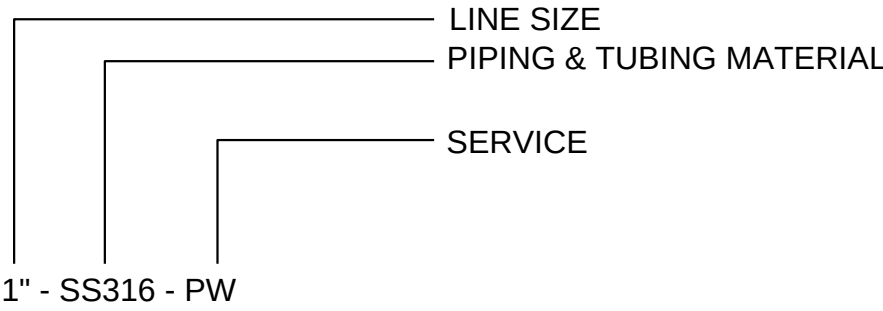
H HOSE

SERVICE & INSULATION ABBREVIATIONS

PW PROCESS WATER

WW WASTE WATER

PIPING IDENTIFICATION



LEGEND

PROCESS LINE

INSTRUMENT LINE

FLANGE

GENERAL INSTRUMENT SYMBOLS

FIELD OR LOCALLY MOUNTED DISCRETE INSTRUMENT

ALARM LIGHT

VALVE SYMBOLS

BALL VALVE

CHECK VALVE

$\frac{1}{2}$ " BALL VALVE (SAMPLE PORT)

EQUIPMENT SYMBOLS

BAG FILTER

CARBON OR ANION RESIN VESSEL

PUMP

TANK

BAFFLED TANK

FLOW FROM OR TO THE REFERENCE LOCATION

HALEY  
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Designed By: BL

Checked By: JPM

Approved By: JES/SAU



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CONSTRUCTION

Rev. Description By Date

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FORMER MANUFACTURED

GAS PLANT (MGP) SITE

SITE NUMBER 850010

187 FALL STREET

SENECA FALLS, NEW YORK

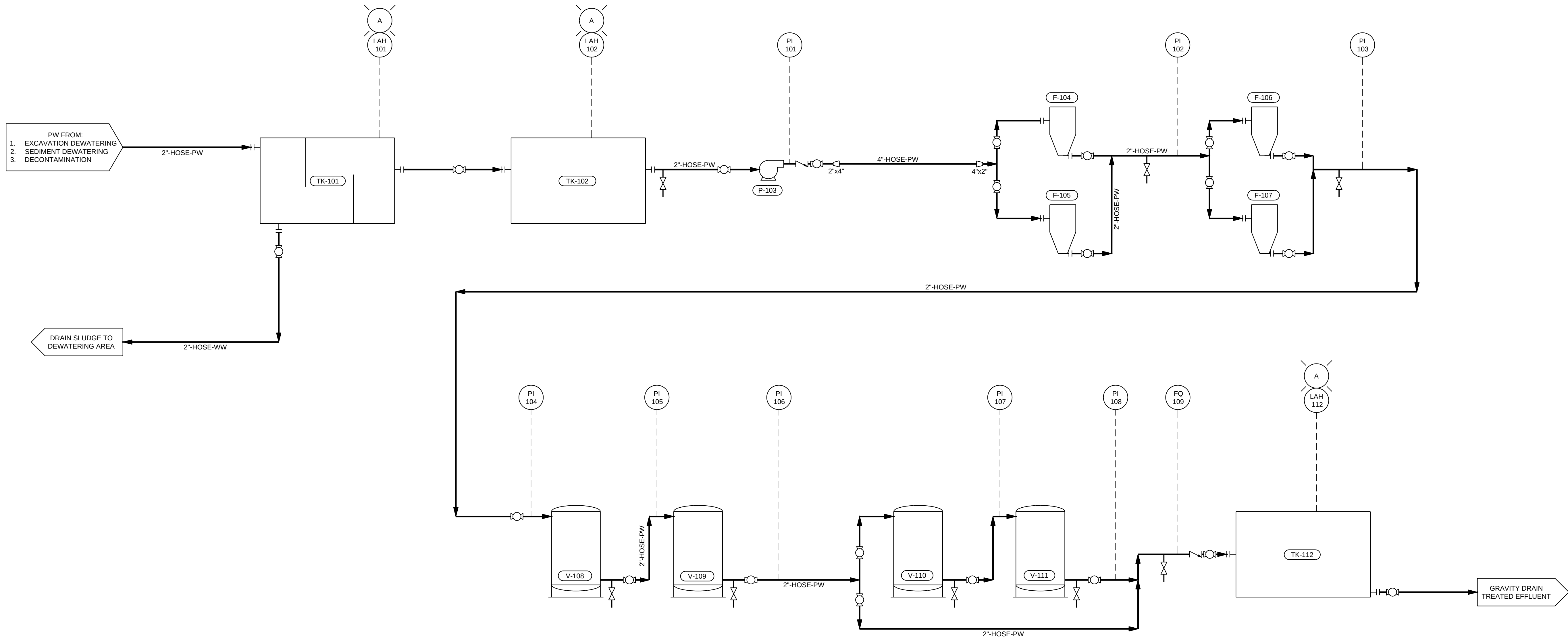
CONSTRUCTION  
WATER TREATMENT  
SYSTEM NOTES AND  
LEGEND

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McCRADY, JEFF      P:\projects\_8/10/2018 2:14 PM      Layout: P-101      SENeca\_FALLS600-DESIGN004-DESIGN PLANS\34507-027\_P-101.DWG



**TK-101**  
BAFFELED TANK  
516" L X 96" W  
18,100 GAL  
WORKSAFE TWO WEIR TANK

**TK-102**  
FRAC TANK  
516" L X 96" W  
21,000 GAL  
WORKSAFE STEEL BI-LEVEL TANK

**P-103**  
DIESEL OPERATED PUMP  
POWER PRIME PUMPS DV-80  
50 GPM @110 FT

**F-104**  
BAG FILTER  
200 GPM CAPACITY  
50 MICRON OIL SORBENT BAG  
RAIN FOR RENT BF200

**F-106**  
BAG FILTERN  
200 GPM CAPACITY  
5 MICRON FELT BAG  
RAIN FOR RENT BF200

**V-108**  
2,000 LB GAC  
100 GPM CAPACITY  
48" DIA X 104" H  
EVOQUA  
PV2000

**V-110**  
ANION RESIN  
75 GPM CAPACITY  
36" DIA X 78" H  
EVOQUA  
SUPER 30 VESSEL

**TK-112**  
FRAC TANK  
516" L X 96" W  
21,000 GAL  
WORKSAFE STEEL BI-LEVEL TANK

**F-105**  
BAG FILTER  
200 GPM CAPACITY  
50 MICRON OIL SORBENT BAG  
RAIN FOR RENT BF200

**F-107**  
BAG FILTER  
200 GPM CAPACITY  
5 MICRON FELT BAG  
RAIN FOR RENT BF200

**V-109**  
2,000 LB GAC  
100 GPM CAPACITY  
48" DIA X 104" H  
EVOQUA  
PV2000

**V-111**  
ANION RESIN  
75 GPM CAPACITY  
36" DIA X 78" H  
EVOQUA  
SUPER 30 VESSEL

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CONSTRUCTION  
WATER TREATMENT  
SYSTEM PROCESS  
FLOW DIAGRAM

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## **APPENDIX B**

### **Technical Specifications**

SECTION 00 01 10

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| SECTION            | TITLE                                           | PREPARED BY                 | REVISION |
|--------------------|-------------------------------------------------|-----------------------------|----------|
| <b>Division 00</b> | <b>Procurement and Contracting Requirements</b> |                             |          |
| 00 01 10           | Table of Contents                               | Haley & Aldrich of New York | 0        |
| <b>Division 01</b> | <b>General Requirements</b>                     |                             |          |
| 01 11 00           | Summary of Work                                 | Haley & Aldrich of New York | 0        |
| 01 20 00           | Price and Payment Procedures                    | Haley & Aldrich of New York | 0        |
| 01 30 00           | Administrative Requirements                     | Haley & Aldrich of New York | 0        |
| 01 33 00           | Submittal Procedures                            | Haley & Aldrich of New York | 0        |
| 01 35 29           | Health and Safety Requirements                  | Haley & Aldrich of New York | 0        |
| 01 40 00           | Quality Requirements                            | Haley & Aldrich of New York | 0        |
| 01 50 00           | Temporary Facilities and Controls               | Haley & Aldrich of New York | 0        |
| 01 57 26           | Dust Control                                    | Haley & Aldrich of New York | 0        |
| 01 58 13           | Temporary Project Signage                       | Haley & Aldrich of New York | 0        |
| 01 60 00           | Product Requirements                            | Haley & Aldrich of New York | 0        |
| 01 70 00           | Execution Requirements                          | Haley & Aldrich of New York | 0        |
| 01 71 23           | Field Engineering                               | Haley & Aldrich of New York | 0        |
| <b>Division 02</b> | <b>Existing Conditions</b>                      |                             |          |
| 02 00 00           | Existing Conditions                             | Haley & Aldrich of New York | 0        |
| 02 41 16           | Structure Demolition and Management             | Haley & Aldrich of New York | 0        |
| 02 51 29           | Decontamination Procedures                      | Haley & Aldrich of New York | 0        |
| 02 53 00           | Waste, Transportation, Treatment, and Disposal  | Haley & Aldrich of New York | 0        |
| 02 61 13           | Piping Removal and Management                   | Haley & Aldrich of New York | 0        |
| 02 61 23           | Excavation and Managment                        | Haley & Aldrich of New York | 0        |
| 02 70 00           | Construction Water Treatment System             | Haley & Aldrich of New York | 0        |
| <b>Division 31</b> | <b>Earthwork</b>                                |                             |          |
| 31 10 00           | Clearing and Grubbing                           | Haley & Aldrich of New York | 0        |
| 31 23 19           | Dewatering                                      | Haley & Aldrich of New York | 0        |
| 31 23 23.13        | Backfill                                        | Haley & Aldrich of New York | 0        |
| 31 23 13           | In-Situ Solidification                          | Haley & Aldrich of New York | 0        |
| <b>Division 32</b> | <b>Exterior Improvements</b>                    |                             |          |
| 32 30 00           | Site Restoration                                | Haley & Aldrich of New York | 0        |
| 32 92 00           | Turf and Grasses                                | Haley & Aldrich of New York | 0        |
| <b>Division 33</b> | <b>Utilities</b>                                |                             |          |
| 33 29 00           | Well Abandonment                                | Haley & Aldrich of New York | 0        |
| <b>Division 35</b> | <b>Waterway and Marine Construction</b>         |                             |          |
| 35 11 00           | Signaling and Control Equipment for Waterways   | Haley & Aldrich of New York | 0        |
| 35 20 23           | Dredging                                        | Haley & Aldrich of New York | 0        |



|                    |                                              |                             |   |
|--------------------|----------------------------------------------|-----------------------------|---|
| <b>Division 44</b> | <b>Pollution and Waste Control Equipment</b> |                             |   |
| 44 32 00           | Vapor and Odor Control                       | Haley & Aldrich of New York | 0 |

END OF SECTION

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\\\\haleyaldrich.com\share\man\_common\34507\_Seneca\_Falls\974 Design\Remedial Design\Final 100% Submission to NYSDEC\Appendix B - Specs\Parts\Section 00  
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## SECTION 01 11 00

### SUMMARY OF WORK

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES

- A. Project Description.
- B. Intent of Documents.
- C. Work Sequence.
- D. Glossary.
- E. Specific Conventions.
- F. Workmanship.
- G. Site Safety & Work Rules.
- H. Permits & Fees.
- I. Taxes.

##### 1.02 PROJECT DESCRIPTION

- A. A brief description of project activities: The Remediation is intended to remove the accessible coal tar impacted materials associated with the former MGP operations at the Former Seneca Falls MGP and intercept potential product migration off site. The Work includes sequenced activities, generally noted as follows:
  - 1. Develop and implement a site-specific Health & Safety Plan (Section 01 35 29) to manage project-related risks to workers, visitors and public, which is consistent with the action levels described in the Site-specific Health and Safety Plan.
  - 2. Complete all required Submittals to facilitate the timely progress of Work.



3. Perform pre-construction utility location work and administrative requirements. Identify overhead or underground utilities that may need to be relocated prior to the start of Work.
4. Obtain all permits required for work not previously obtained by Owner or Design Engineer.
5. Mobilize construction equipment and personnel to the Site.
6. Perform pre-construction inspection and survey, as necessary, of buildings, utilities, and other structures in or adjacent to areas of planned remedial activities that may be impacted by excavation or any other aspect of work.
7. Implement dust, vapor, and odor emissions controls throughout the duration of the work.
8. Install erosion and sediment control measures as shown in the Drawings and described in the Stormwater Pollution Prevention Plan (SWPPP). Maintain measures, supplement, and adjust as required throughout project duration as construction progresses and the active work area changes.
9. Clear and grub Site within the identified limit of work as shown on the Drawings. Grubbing shall be sequenced to coordinate with the active work area to minimize the open area of disturbance.
10. Install and maintain temporary facilities and controls including field offices with utilities, temporary construction access roads, fencing and barricades, decontamination pad, contaminated material containment stockpile area(s), sediment dewatering area, construction water storage facilities, construction water treatment system, and in-situ solidification batch plant.
11. Manage on-site construction water generated from dewatering activities due to excavation dewatering, sediment dewatering and any excess decontamination water requiring treatment. Collect, convey, and store construction water on-site, treat, and discharge to the Seneca River (Seneca-Cayuga Canal) per approved permit. Remediation Engineer will collect required process treatment water samples and provide analytical results to Remediation Contractor upon receipt.
12. Remove MGP-impacted Seneca River (Seneca-Cayuga Canal) sediment within the dredge area limit, process/moisture condition sediment as necessary, and transport to a designated off-site licensed disposal facility.
13. Backfill Seneca River (Seneca-Cayuga Canal) to final elevations and grades shown on the Drawings to provide a stable bank and bottom substrate for restoration of the benthic community.

14. Install bank stabilization measures along the dredge area limit.
15. Install Lowland Cover systems using clean imported soil over two defined areas within the Lowland Area. Seed and install erosion control blanket to restore vegetation.
16. Install and maintain temporary support of excavation systems within the residential property, as necessary.
17. Remove MGP-impacted soil within the residential property excavation limits, moisture condition as necessary, and transport to a designated off-site licensed disposal facility.
18. Backfill residential property to final elevations and grades shown on the Drawings. Seed and mulch to stabilize restoration.
19. Demolish surface structures in the Upland Area, size reduce material, and transport to a designated off-site licensed disposal facility.
20. Install and maintain temporary support of excavation support systems in the Upland Area, as necessary.
21. Remove MGP-impacted soil within the Upland Area excavation/ISS limits, moisture condition as required, and transport to a designated off-site licensed disposal facility. Demolish and remove subsurface piping and remnant MGP structures in preparation for ISS. Size reduce MGP-impacted construction and demolition debris and transport to a designated off-site licensed disposal facility.
22. Solidify MGP-impacted soil in the Upland Area within the excavation/ISS limits to the depths indicated on the Drawings. Perform in-situ solidification by mixing cement with impacted soil to meet the performance requirements of the Specifications. Remove excess ISS spoils and transport to a designated off-site licensed disposal facility.
23. Grade top surface of solidified soil spoils as subgrade in the Upland Area and backfill with clean imported backfill.
24. Construct gravel parking area in Upland Area to the lines and grades shown on the Drawings. Seed and mulch all other areas to restore vegetation.
25. Seed and mulch all disturbed areas within the limit of work. Repair access road to Lowland area as necessary to support future site operation and maintenance activities.
26. Install groundwater monitoring wells as shown on the Drawings (Well installation to be completed by Remediation Engineer).

27. Install chain link fence and gate.
28. Decontaminate equipment and personnel.
29. Provide project documentation including submittals, daily reports, results of quality control testing, as-built survey, etc.
30. Clean site, remove temporary facilities and controls.
31. Perform post-construction inspection and survey, as necessary, of buildings, utilities, and other structures in or adjacent to areas of planned remedial activities that may be impacted by excavation or any other aspect of work.
32. Demobilize.

#### 1.03 INTENT OF DOCUMENTS

- A. Remediation Contractor shall furnish the following:
  1. All labor, tools, materials, equipment, transportation, taxes and related items essential for completion of the Work.
  2. All systems complete and left in good operating condition.
  3. Apparatus, appliance, material or Work not shown on Drawings but mentioned in Specifications, or vice versa.
  4. Accessories, reasonably inferable from Drawings and Specifications, necessary to make work complete and ready for operation.
  5. New equipment and material unless otherwise called for.
- B. Notes or instructions shown on any one Drawing apply, where applicable, to all other Drawings.
- C. References to codes, specifications and standards called for in the Specification Sections and on the Drawings, mean the latest edition, amendment and revision of such referenced standard in effect on the date of these Contract Documents.
- D. Code Compliance: Provide Work in compliance with the following:
  1. Fire Code of New York State.
  2. New York State Labor Laws.



3. Occupational Safety and Health Administration (OSHA) Regulations.
4. National Electric Code.
5. Ordinances and building code of Seneca Falls, New York.
6. All other Codes applicable to Work.
7. Drawings and Specifications in excess of code/regulations requirements and not contrary to the same.

#### 1.04 WORK SEQUENCE

Construct Work in stages as stated in the Specifications and generally indicated in Sub-Part 1.02(A). During construction period, coordinate construction schedule and operations with Owner and Remediation Engineer.

#### 1.05 GLOSSARY

|                   |                                                                                        |
|-------------------|----------------------------------------------------------------------------------------|
| ACI               | American Concrete Institute                                                            |
| AISC              | American Institute of Steel Construction                                               |
| ANSI              | American National Standards Institute                                                  |
| API               | American Petroleum Institute                                                           |
| USACE             | U.S. Army Corps of Engineers                                                           |
| ASSE              | American Society of Safety Engineers                                                   |
| ASTM              | American Society for Testing Materials                                                 |
| AWSC              | American Welding Society                                                               |
| IEE               | Institute of Electrical and Electronics Engineers                                      |
| IRI               | Industrial Risk Institute                                                              |
| NEC               | National Electrical Code                                                               |
| NEMA              | National Electrical Manufacturers' Association                                         |
| NESC              | National Electrical Safety Code                                                        |
| NFPA              | National Fire Protection Association                                                   |
| NYSDEC            | New York State Department of Environmental Conservation                                |
| UFPO              | Underground Facilities Protective Organization                                         |
| UL                | Underwriters' Laboratories, Inc.                                                       |
| OSHA              | Occupational Safety and Health Administration                                          |
| USACE             | U.S. Army Corp of Engineers                                                            |
| USCG              | U.S. Coast Guard                                                                       |
| As Called For     | Material, equipment including the execution specified/shown in the Contract Documents. |
| Code Requirements | Minimum requirements.                                                                  |
| Design Engineer   | Haley & Aldrich of New York                                                            |

|                        |                                                                                                                     |
|------------------------|---------------------------------------------------------------------------------------------------------------------|
| Remediation Engineer   | TBD                                                                                                                 |
| Equal or Equivalent    | Equally acceptable as determined by the Engineer.                                                                   |
| Final Acceptance       | Owner acceptance of the project from Remediation Contractor upon certification by the Remediation Engineer.         |
| Furnish                | Supply and deliver to installed location.                                                                           |
| Inspection             | Visual observations by Remediation Engineer or Owner's Site Representative.                                         |
| Install                | Mount and connect equipment and associated materials ready for use.                                                 |
| Or Approved Equal      | Approved equal or equivalent as determined by Remediation Engineer.                                                 |
| Owner                  | New York State Electric & Gas.                                                                                      |
| Provide                | Furnish, install and connect ready for use.                                                                         |
| Relocate               | Disassemble, disconnect and transport equipment to new location, then clean, test and install ready for use.        |
| Replace                | Remove and provide new item.                                                                                        |
| Satisfactory           | As specified in Contract Documents.                                                                                 |
| Remediation Contractor | Bidder receiving the Award of Contract.                                                                             |
| Substantial Completion | Remediation Contractor's completion of specified work ready for final inspection by Owner and Remediation Engineer. |
| Subcontractor          | Any Firm Contracted Directly by Remediation Contractor to complete Contract work at Site.                           |

#### 1.06 SPECIFICATION CONVENTIONS

- A. For convenience, these specifications are divided into various sections. Such division is not intended to limit or define subcontractors. The complete performance of the Work will be the responsibility of the Remediation Contractor.

- B. These specifications are written in the imperative mood and streamlined form. This imperative language is directed to the Remediation Contractor, unless specifically noted otherwise.

#### 1.07 WORKMANSHIP

- A. All workers employed on this project shall be persons skilled in that work which they are to perform. Work will not be approved if it does not meet the quality of workmanship called for in these specifications. If this quality of workmanship is not exactly defined herein, it shall be assumed to be the best standards of workmanship for that trade. The Remediation Engineer shall determine whether or not the quality of workmanship is acceptable.
- B. If workmanship for a portion of this Work is not acceptable, same shall be removed and replaced at the Remediation Contractor's expense.

#### 1.08 SITE SAFETY & WORK RULES

- A. Remediation Contractor and Subcontractors shall be responsible for strict adherence to the Site-specific Health and Safety Plan. Adherence shall be applied continuously and not be limited to normal working hours.
- B. Remediation Contractor and Subcontractors shall take all necessary precautions to provide safety provisions to adequately protect the public, the personnel and property of the Owner, Remediation Engineer, and all other persons, property and equipment, involving his work at the job site. Remediation Contractor and its subcontractors shall take provisions, based on applicable laws, building and construction codes, whether required by the following mentioned laws and codes or not, and completely responsible for conditions.
- C. Remediation Contractor and Subcontractors shall protect the Work from theft, vandalism and unauthorized entry. The Remediation Contractor shall maintain responsibility for security of the Work throughout the construction period until the Owner acceptance precludes the need for Remediation Contractor security. The Remediation Contractor shall maintain a list of authorized personnel and visitors and submit a copy to the Remediation Engineer on request.
- D. Remediation Contractor's equipment shall be managed in such a way as not to inhibit activity at adjacent properties or other onsite activities.
- E. Remediation Contractor's personnel shall sign in and out daily on the daily sign-in log.

#### 1.09 PERMITS AND FEES

- A. The Remediation Contractor shall give all required notices relative to the Work when inspections are required, obtain and pay for all permits and necessary approvals, and make all deposits necessary for the completion of the remediation as herein specified.



- B. The Owner and/or Design Engineer will obtain the permits/approvals required for the Work as identified in Section 01 70 00 – Execution Requirements.
- C. Remediation Contractor shall obtain the permits/approvals required for the Work as identified in Section 01 70 00 – Execution Requirements.

#### 1.10 TAXES

- A. The project is New York State sales and use tax exempt as described in the Direct Payment Permit issued to NYSEG, effective January 1, 2004 and included as Attachment 01 11 00 – 1. The Remediation Contractor shall not include exempted taxes in their bids or payment requisitions.

END OF SECTION

Printed on: 10 August 2018  
\\haleyaldrich.com\share\man\_common\34507\_Seneca\_Falls\974 Design\Remedial Design\Final 100% Submission to NYSDEC\Appendix B - Specs\Section 011100 Summary of Work-Rev0.docx



an Energy East company

Re: New York State Sales and Use Tax

**Please Forward to your Billing Department**

TO NYSEG SUPPLIERS:

Effective January 1, 2004, NYSEG extended the application of its' New York State Direct Pay Permit (DPP) to all NY taxable purchases. This now includes purchases paid for through Corporate Purchase Cards.

This Direct Pay Permit does not apply to the following:

- Telephone and telecommunication equipment & service charges (including paging and other wireless services)
- Hotel, restaurant, and catering charges
- Utilities (gas & electric) and other heating fuels purchased for office & building use (not to include bulk purchases for resale)
- Motor fuels

NYSEG will self assess and remit the tax under New York Direct Pay Permit Number DP 000007.

New York State requires that you retain this permit copy in your files. It does not expire and does not have to be periodically renewed.

Sincerely,

Gerard Morin  
Manager Local Taxes

Utility Shared Services 70 Farm View Drive New Gloucester, ME 04260

**utility shared  
services**



New York State Department of Taxation and Finance - Audit Division  
New York State and Local Sales and Use Tax

**DIRECT PAYMENT PERMIT**

This permit constitutes authority to make direct payment of sales and use tax to the  
**DEPARTMENT OF TAXATION AND FINANCE** in lieu of payment to the vendor.

This permit may be revoked for failure to comply with conditions under which it is issued or for  
other reasons constituting misuse of the authority granted under the permit.

New York State Electric & Gas Corp.  
P. O. Box 3287  
Ithaca, NY 14852-3287

|                       |
|-----------------------|
| Identification Number |
| 75-0398550C           |
| Permit Number         |
| DP 000007             |
| Effective Date        |
| 8/1/65                |

AU-297 (4/63)

NOT TRANSFERABLE

*William Riddervold*  
Authorizing signature



## SECTION 01 20 00

### PRICE AND PAYMENT PROCEDURES

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections of Division I - GENERAL REQUIREMENTS, which are hereby made a part of the Specifications.
- B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the Work of this Section.
- C. 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.
- D. Provide all facilities, labor, materials, tools, equipment, appliances, transportation, supervision, and related work necessary to complete the Work specified in this Section, and as shown on the Drawings.
- E. The Remediation Contractor shall at all times be solely responsible for exercising reasonable precaution to protect the health, safety, public welfare, and all on-site personnel, and the environment during performance of the Work described in these Contract Documents. The Remediation Contractor shall comply with all applicable provisions of federal, state, and local health and safety and occupational health and safety statutes and codes.
- F. The provisions specified in this Section may be subject to alterations by the Remediation Engineer or Owner's Representative based on actual field conditions encountered during the Work.

##### 1.02 SECTION INCLUDES

- A. Schedule of Values
- B. Applications for payment.
- C. Change procedures.
- D. Defect assessment.
- E. Unit prices.

- F. Basis of Payment.
- G. Additional Payment.

#### 1.03 SCHEDULE OF VALUES

- A. Prepare and submit to the Remediation Engineer and/or Owner for review and approval a Schedule of Values for the Work. The Schedule of Values shall indicate the proposed payment schedule based on Remediation Contractor's anticipated work completion rate. The Schedule of Values shall be broken down by lump sum and unit price pay items. Sufficient detail shall be provided in the Schedule of Values for lump sum pay items so that completion percentages can be agreed upon as the Work progresses. Remediation Contractor shall provide sufficient documentation with each invoice such that percentage complete on lump sum pay items and quantities for unit price items can be compared with the approved Schedule of Values.
- B. Schedule of Values shall be submitted to the Remediation Engineer and/or Owner for review at least two weeks prior to the first pay application.

#### 1.04 WEEKLY VARIANCE REPORT

- A. Prepare and submit to the Remediation Engineer and/or Owner a copy of the bid form with number of updated number of units completed to date at the end of each week.

#### 1.05 APPLICATIONS FOR PAYMENT

- A. Submit 1 electronic copy of each Application for Payment.
- B. Submit updated construction schedule with each Application for Payment, if required by Remediation Engineer and/or Owner.
- C. Payment Period: Monthly
- D. Substantiating Data: When Remediation Engineer and/or Owner requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
  - 1. Record documents as specified in Section 01 70 00 – Execution and Closeout Requirements, for review by Remediation Engineer and/or Owner, which will be returned to Remediation Contractor.
  - 2. Construction progress schedules, revised and current as specified in Section 01 33 00 – Submittal Procedures.
  - 3. Other documents required by the Contract Compliance Requirements.

## 1.06 CHANGE PROCEDURES

- A. Submittals: Submit name of individual authorized to receive change documents and be responsible for informing others in Remediation Contractor's employ or subcontractors of changes to the Work.
- B. The Remediation Engineer will advise of minor changes in the Work not involving adjustments to Contract Price or Contract Time by issuing supplemental instructions in a Field Order.
- C. The Remediation Engineer may issue a Notice of Change including a detailed description of proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change and the period of time during which the requested price will be considered valid. Remediation Contractor will prepare and submit estimate within 10 days.
- D. Work Change Directive: Remediation Engineer and/or Owner may issue a directive, instructing Remediation Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Price or Contract Time. Promptly execute change.
- E. Remediation Contractor may propose changes by submitting a change order request to Remediation Engineer and/or Owner, describing proposed change and its full effect on the Work. Include a statement describing reason for the change, and effect on Contract Price and Contract Time with full documentation and a statement describing effect on Work by separate or sub Remediation Contractors.
- F. Stipulated Price Change Order: Based on Notice of Change and Remediation Contractor's fixed price quotation or Remediation Contractor's Change Order Request as approved by Remediation Engineer and/or Owner.
- G. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on fixed unit price basis. Changes in Contract Price or Contract Time will be computed as specified for Time and Material Change Order.
- H. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Remediation Engineer and/or Owner will determine change allowable in Contract Price and Contract Time as provided in Contract Documents.
- I. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.



- J. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.
- K. Execution of Change Orders: Remediation Engineer and/or Owner will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
- L. Correlation of Remediation Contractor Submittals:
  - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Price.
  - 2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
  - 3. Promptly enter changes in Project Record Documents.
- M. Remediation Contractor shall notify Remediation Engineer and/or Owner promptly within 10 days of discovery of conditions or changes in the Work that Remediation Contractor believes warrant a change in price or schedule. Failure of Remediation Contractor to promptly notify Remediation Engineer and/or Owner of such conditions shall result in Remediation Engineer and/or Owner's rejection of any subsequent claims related to said conditions or scope changes.

#### 1.07 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Remediation Engineer, it is not practical to remove and replace the Work, the Remediation Engineer will direct appropriate remedy or adjust payment.
- C. If Engineer determines the defective Work will remain, the unit price will be reduced 50 percent at discretion of the Remediation Engineer and/or Owner.
- D. If defective Work will be partially repaired to instructions of Engineer, unit price will be reduced by a percentage at discretion of Remediation Engineer and/or Owner.
- E. Individual specification sections may modify these options or may identify specific formula or percentage price reduction.
- F. Authority of Remediation Engineer and/or Owner to assess defects and identify payment adjustments is final.

- G. Non-Payment for Rejected Products: Payment will not be made for rejected products for any of the following:
  - 1. Products wasted or disposed of in a manner that is unacceptable.
  - 2. Products determined as unacceptable before or after placement.
  - 3. Products not completely unloaded from transporting vehicle.
  - 4. Products placed beyond lines and levels of required Work.
  - 5. Products remaining on hand after completion of the Work and associated costs for removal.
  - 6. Loading, hauling, and disposing of rejected products.

#### 1.08 UNIT PRICES

- A. Take measurements and compute quantities of Work installed and successfully completed in accordance with these specifications and drawings. Remediation Engineer will verify measurements and quantities.
- B. Unit Quantities: Quantities and measurements indicated in Bid Form are for contract purposes only. Actual quantities provided shall determine payment.
  - 1. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at unit prices contracted.
- C. Payment Includes: Full compensation for all required labor, management, protection, storage, handling, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application or installation of item of the Work; overhead and profit.
- D. Final payment for Work governed by unit prices will be made on the basis of actual measurements and quantities accepted by Remediation Engineer multiplied by unit price for Work incorporated in or made necessary by the Work.
- E. Measurement of Quantities:
  - 1. Weigh Scales: Inspected, tested and certified by the applicable program administered by New York State Bureau of Weights and Measures within past year.

2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
3. Metering Devices: Inspected, tested and certified the applicable program administered by New York State Bureau of Weights and Measures within past year.
4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
5. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness in accordance with Section 01 33 00 – Submittal Procedures.
6. Measurement by Area: Measured by square dimension using mean length and width or radius in accordance with Section 01 33 00 – Submittal Procedures.
7. Linear Measurement: Measured by linear dimension, at item centerline or mean chord in accordance with Section 01 33 00 – Submittal Procedures.
8. Stipulated Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.
9. Payment will not be made for materials delivered to the Site but not yet incorporated into the Work, unless specifically approved by the Remediation Engineer and/or Owner.
10. No compensation shall be made for excess materials delivered to the Site that are not used to complete remedial construction.

#### 1.09 BASIS OF PAYMENT

- A. Refer to the Payment Items document provided separate from this Section.

#### 1.10 TAXES

Remediation Contractor shall include such local, state and federal taxes as may be applicable to the work of this Contract.



#### 1.11 ADDITIONAL PAYMENT

- A. The Remediation Contractor shall not be entitled to additional payment to fulfill its obligations under the following sections which are considered incidental to the Work:
1. Coordination of Work.
  2. Attendance at meetings.
  3. Required plans, submittals, and daily field reports.
  4. Health and safety monitoring.
  5. Emission controls that are not a specific pay item.
  6. Health and safety personnel protective equipment.
  7. Decontamination.
  8. Closeout procedures.
  9. Construction surveying.
  10. Abandon monitoring wells during construction.
  11. Measures, in addition to those shown on Drawings, necessary to maintain water quality in the river at pre-construction levels, shall be installed, maintained, removed and cleaned-up as required by the Remediation Engineer at the expense of the Remediation Contractor.
- B. Remediation Contractor shall provide unit prices for equipment and operators which shall be used as the basis for requested time and materials work during the project. Unit prices shall be submitted with Remediation Contractor's bid proposal.

END OF SECTION

Printed on: 15 August 2018

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## SECTION 01 30 00

### ADMINISTRATIVE REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. This Section contains general information that applies to all Work performed under the Contract and is inherently made a part of each Specification Section.
- B. Attention is directed to the CONTRACT AND GENERAL REQUIREMENTS and all other sections of Division 1 – GENERAL REQUIREMENTS, which are hereby made a part of the Specifications.
- C. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section.
- D. Coordinate Work with that of all other trades affecting or effected by the Work of this Section. Cooperate with such trades to assure the steady progress of Work under the Contract.
- E. Provide all facilities, labor, materials, tools, equipment, appliances, transportation, supervision, and related work necessary to complete the Work specified in this Section, and as shown on the Drawings.
- F. The Remediation Contractor shall at all times be solely responsible for exercising reasonable precaution to protect the health, safety, public welfare, and all on-site personnel, and the environment during performance of the Work described in these Contract Documents. The Remediation Contractor shall comply with all applicable provisions of federal, state, and local health and safety and occupational health and safety statutes and codes.

##### 1.02 DESCRIPTION OF WORK

- A. This section includes procedures for the preparation and submittal of the Remediation Contractor's Technical Execution Plan (TEP) and Progress Schedule, weekly updates to the Remediation Contractor's Progress Schedule and Weekly Progress Reports. A preliminary TEP and Progress Schedule shall be included as a part of the Remediation Contractor's proposal. The Remediation Contractor's Progress Schedule shall be prepared using a computer system that produces legible, easily updated schedules such as Microsoft Project or approved equivalent.
- B. This section contains general information that applies to all Work performed under the Contract and is inherently made a part of each specification section.

- C. All submittals will be accompanied by the coversheet provided in attachment A of Section 01 33 00 – Submittal Procedures.

#### 1.03 RELATED SECTIONS

- A. SECTION 00 70 00 – General Conditions of the Contract
- B. SECTION 01 11 00 – Summary of Work
- C. SECTION 01 33 00 – Submittal Procedures
- D. Drawings
- E. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### 1.04 DEFINITIONS AND REFERENCE STANDARDS

- A. See Specification Section 01 42 00 – References for acronyms and definitions applicable to this Section.

#### 1.05 EXISTING CONDITIONS

- A. See Specification Section 02 00 00 – Existing Conditions for information regarding site conditions.

#### 1.06 QUALITY ASSURANCE

- A. See Specification Section 01 40 00 – Quality Requirements for information regarding Quality Assurance.

#### 1.07 SUBMITTALS

- A. Requested information shall be submitted to the Remediation Engineer in accordance with the information outlined in Specification Section 01 33 00 – Submittal Procedures.
- B. A Technical Execution Plan (TEP) (i.e., preliminary TEP) and Progress Schedule shall be included in Remediation Contractor's Proposal/Bid Submission
- C. A revised TEP and Progress Schedule shall be submitted to the Owner and Remediation Engineer for review. The Remediation Contractor's Progress Schedule will be discussed at the Pre-Construction Meeting as such may need to be updated based on the actual date of the Notice to Proceed. Update and submit Progress Schedule at a minimum with each Weekly Progress Report. For purposes of this work the baseline schedule shall start with the actual date from the Notice to Proceed.



D. Format Submittal as Follows

1. The Progress Schedule shall be presented in the form of a Gantt (bar) chart that identifies critical path items and task relationships.
2. The project name (NYSEG – SENECA FALLS FORMER MGP REMEDIAL CONSTRUCTION) shall be identified at the top of the Technical Execution Plan and Progress Schedule.
3. Organize the Technical Execution Plan and Progress Schedule according to components of the Work identified in the construction sequence included on Drawing G-201.
4. Represent each major work task or segment of work by one horizontal bar.
5. Indicate milestone dates for the completion of each phase of the Work.
6. Sequence of Listings: The chronological order of the start of each major operation or segment of work shall determine the vertical location of its bar on the chart.
7. Horizontal Time Scale: Bold Vertical Lines for weeks with the date given for the beginning of each week.
8. Scale and Spacing: The scale and spacing shall allow space for notations and future revisions. The minimum sheet size shall be 11 inches by 17 inches.

E. Content of Submittal as Follows

1. The complete sequence of work by activity shall be shown, with dates for the beginning and completion of each major work segment.
2. The bar representing each major operation or segment of the work shall be identified by Specification number(s) and/or Contract Drawing number(s) coinciding with the described item.
3. A sub schedule bar chart shall be prepared to define critical portions of the major tasks, especially items that require coordination among subcontractors or coordination with the Remediation Engineer, Owner Representative, or Owner.
4. Estimated percentage of completion of each work item and estimated total percentage of work complete as of the last day of each week shall be noted at appropriate points on the chart.

F. Revisions to Schedule

1. The progress of each activity to the date of revision submittal, shall be indicated and an estimate given for completion date.
2. Changes that occur since the previous schedule submittal shall be shown and identified as: Changes in scope or quantity, activities modified, revised estimates of progress and completion, or other changes.
3. A narrative report shall be prepared at the Remediation Engineer or Owner's Representative's request to define:
  - a. New problem areas, expected delays, and their impact on the schedule;
  - b. Corrective action taken or proposed, and their effects;
  - c. The effects of changes made or proposed on the functioning of the subcontractors; and
  - d. Schedule revisions and date revisions shall be consecutively numbered and dated.

G. Daily Progress Reports

1. Daily Reports: Prepare daily reports recording all important information concerning events at the site. Submit daily reports to the Owner's Representative and the Remediation Engineer on the following day. Daily Reports shall include at a minimum.
  - a. Date
  - b. List of Name of all workers on site.
  - c. Total Hours Worked for each on site employee.
  - d. Description of Work completed.
  - e. List type and quantity of material received including equipment deliveries.
  - f. List type and quantity of material sent off-site including equipment.
  - g. List of Equipment or Systems operating/in use on site.

H. Weekly Progress Reports

1. Prepare and distribute on Monday of each week, or prior to any scheduled weekly construction progress meeting, a Weekly Progress Report for submittal to the Remediation Engineer, Owner's Representative, New York State Department of Environmental Conservation and New York State Department of Health which shall include:
  - a. A description of all portions of the work completed and other appropriate supporting documentation including photographs, videos, etc.
  - b. A description of all work in progress, including all necessary supporting documentation.
  - c. Descriptions of all actions, data, and plans that are scheduled for the next week, including information relating to the progress of construction.
  - d. General construction photographs of work at various stages of construction. Provide a brief description of each photograph including date, time, description of subject, relevant information, and direction photo faces.
  - e. Information regarding the percentage of completion, anticipated delays, and unresolved issues.

I. Weekly Quantity Summary Report

1. Prepare and distribute to the Remediation Engineer and Owner's Representative at least 24-hours before the weekly construction progress meeting, an updated Payment Bid Form that shall include the following:
  - a. Updated unit quantities for Work completed to date (unit price items).
  - b. Percent complete for Work completed to date (lump sum items).
  - c. Added pay items or revised contract pay quantities associated with Field Directives, Change Orders, or other approved contract changes.

J. Special Reports

1. Special Reports: Prepare detailed, written reports recording all information concerning unusual and significant events at the site. Submit to Owner's Representative within 24 hours after the event. The written report shall include, without limitation:
  - a. A summary of the event.



- b. A chronological list of the chain of events.
  - c. Names of all persons involved in the event.
  - d. The Remediation Contractor's actions and response to the event.
  - e. The actions and response to the event by affected subcontractors
  - f. The Remediation Contractor's evaluation of the results or effects of the event.
  - g. Other important and relevant information
- 2. Project Photographs: Provide digital photographs. Photographs should be clear and legible.
  - a. Preconstruction Photographs: (Submittal Group 2) Before beginning work, take sufficient photographs of the existing conditions and the site from different viewpoints to show all significant existing conditions.
  - b. Restoration Photographs: (Submittal Group 4) In addition to the General Construction Photographs, provide photographs representative of the restoration areas taken at the same location at the following stages of construction:
    - 1) Existing pre-excavation conditions;
    - 2) Completion of installation of Remediation Contractor-designed and contract-required erosion controls;
    - 3) Completion of final grades; and
    - 4) Completion of planting.
  - c. Digital Files: All digital photos shall become the property of the Owner. At the completion of the Contract and before final payment, deliver the digital files to the Owner's Representative in a properly labeled CD or other approved media. Organize and label digital photo files by date photo taken and image summary.
- K. Schedule, Distribution and Review:
  - 1. Updated schedules and weekly reports shall be distributed in an electronic format to the Owner's Representative and Remediation Engineer on Monday of each week, or prior to any scheduled weekly construction progress meeting.
  - 2. The latest schedule will also be posted at the job site.
  - 3. Resubmit the schedule and/or report within three working days of receipt of the review copy, if required.

#### 1.08 PROJECT MEETINGS

- A. Project meetings will be held to accomplish the following:
  - 1. Coordinate the work of the project
  - 2. Establish a sound working relationship between the Remediation Contractor, the Owner, and the Remediation Engineer.
  - 3. Establish sound working procedures
  - 4. Review job progress, quality of work, and approval and delivery of materials.
  - 5. Expedite the work to completion within the scheduled time limit.
  - 6. Establish a working relationship with other active users on Site.
  - 7. Establish Health and Safety protocols.
- B. Project meetings shall include the following:
  - 1. Preconstruction Conference
  - 2. Weekly Project Meetings
  - 3. QA/QC Deficiency Meeting

#### 1.09 PRECONSTRUCTION CONFERENCE

- A. The Remediation Engineer shall schedule a Preconstruction Conference. The Remediation Contractor shall be notified as to the time and place of the meeting. The Remediation Contractor's major subcontractors shall attend the meeting. Attendance at the meeting shall include:
  - 1. Owner
  - 2. Design Engineer
  - 3. Remediation Engineer
  - 4. Remediation Contractor's Superintendent
  - 5. Remediation Contractor's Quality Control Site Manager
  - 6. Remediation Contractor's Health and Safety Officer
  - 7. New York State Department of Environmental Conservation

8. New York State Department of Health
- B. Items to be addressed at the Preconstruction Meeting shall include, but not necessarily be limited to:
1. Distribution of Drawings and Specifications
  2. Lines of communication
  3. Correspondence
  4. Submittals
  5. Deliverables
  6. Scheduling
  7. Suppliers/vendors/subcontractors
  8. Health and safety requirements
  9. Organization and responsibilities
  10. Quality assurance/quality control
  11. Payments
    - a. Remediation Contractor shall submit monthly draft invoices to Owner and Remediation Engineer for review prior to submittal of final invoices.
  12. Record documents and as-builts
- 1.10 WEEKLY PROJECT MEETINGS
- A. Weekly Project Meetings shall be conducted at the site of the Work at a time and day mutually agreed upon by the Owner, Remediation Engineer, and Remediation Contractor. At a minimum, attendance by the Remediation Contractor's Superintendent and Healthy and Safety Officer, Subcontractors (as appropriate), New York State Department of Environmental Conservation and New York State Department of Health shall be required. Items to be addressed shall include, but not be limited to, the following:
1. Project scheduling
  2. Weekly progress updates
  3. Identification of problems



4. Maintenance of quality and work standards
  5. Coordination
  6. Status of submittals and materials
  7. Conflicts and disputes
  8. Quality assurance/quality control
  9. Health and Safety updates
  10. Maintain and provide a weekly report to the Owner and Remediation Engineer, for the duration of the project, to track unit quantities and percent complete (actuals to date) on each payment item using the Payment Bid Form as the template. Provide this report by-email 24-hours prior to the weekly construction meeting.
  11. Other agenda items as required
- B. The specific purpose of the Weekly Project Meetings is to coordinate the efforts of all concerned so that the project progresses without delay to “on-time” completion in a high-quality manner with the least inconvenience. The Remediation Contractor shall record, prepare, and distribute the meeting minutes for the Weekly Progress Meetings for the Owner or Remediation Engineer review and input/clarification as needed.

#### 1.11 QA/QC DEFICIENCY MEETINGS

- A. Quality Assurance/Quality Control (QA/QC) Deficiency Meetings shall be held at the project site as required and as precipitated by project conditions. The Remediation Engineer shall request the Deficiency Meeting and the meeting shall be conducted within 24 hours of the Remediation Engineer’s request. At a minimum, the meeting shall be attended by the Remediation Contractor’s Superintendent and/or Remediation Contractor’s Quality Control Site Manager, and subcontractors as appropriate. The purpose of the meetings shall be to identify, address, and rectify any deficiencies in the Work which may be detected, observed, or perceived. Attendance by the Remediation Contractor’s personnel is mandatory and the failure of the appropriate personnel to attend may result in rejection of the Work.
- B. All meeting minutes shall be recorded by the Owner/ Remediation Engineer and copies submitted to the Remediation Contractor. All approved and rejected changes to project conditions shall be documented in writing by the Remediation Engineer.

#### PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

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## SECTION 01 33 00

### SUBMITTAL PROCEDURES

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. Submittal Procedures.
- B. List of Required Submittals.
- C. Technical Execution Plan.
- D. Remediation Contractor Data and Documentation.
- E. Proposed Product List.
- F. Substitutions.
- G. Shop Drawings.
- H. Certificates.
- I. Regulatory Submittals.
- J. Project Record Documents.
- K. Record Drawings.

##### 1.02 SUBMITTAL PROCEDURES

- A. Unless otherwise noted, transmit electronic submittals by email to recipients identified by the Remediation Engineer for review. Include the approved Transmittal Form with each submittal along with all related attachments.
- B. Use the transmittal number sequence described herein. All correspondence with the Owner and Remediation Engineer shall be submitted with a sequentially numbered transmittal. Revise submittals, if necessary, with original number and a sequential, alphabetic suffix.
- C. Identify Project, Remediation Contractor, Subcontractor, and supplier; pertinent drawing and detail number, and specification section number as appropriate to submittal.
- D. Apply Remediation Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction



work, and coordination of information is in accordance with requirements of the Work and Contract Documents.

- E. Schedule submittals to expedite Work, and deliver to the Owner and Remediation Engineer as established in the submittal schedule. Coordinate submission of related items.
- F. For each submittal for review, allow a minimum of 10 days excluding delivery time to and from Remediation Contractor, for Owner and Remediation Engineer review. Provide additional review time where specified. All submittal shall be routed to the Remediation Engineer, Design Engineer, and then Owner for review.
- G. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.
- H. The Remediation Engineer will provide a submittal response to each reviewed submittal. Each submittal response will be returned to the Remediation Contractor with comments as required and marked with one of the following responses:
  - 1. “Reviewed”: The Remediation Contractor is advised that this means that fabrication, manufacture and/or construction may proceed providing the Work is in compliance with the Contract Documents.
  - 2. “Reviewed As Noted”: The Remediation Contractor is advised that this means that fabrication, manufacture and/or construction may proceed providing the Work is in compliance with the marked notations and the Contract Documents.
  - 3. “Reviewed As Noted Resubmission Requested”: The Remediation Contractor is advised that this means that fabrication, manufacture and/or construction may proceed providing the Work is in compliance with the marked notations and the Contract Documents. The submittal should be corrected and resubmitted for final distribution.
  - 4. “Revise and Resubmit”: The Remediation Contractor is advised that this means no Work shall be fabricated, manufactured and/or constructed and that the Remediation Engineer shall make a new submittal for the project. Product submissions marked with this action or notation will not be permitted on the Site.
  - 5. In the case of Shop Drawings, returned in the form of manufacturer’s descriptive literature, catalog cuts and brochures stamped “reviewed” or “reviewed as noted”, the Remediation Contractor shall be responsible for distributing them in the field and to the subcontractors. If the returned Shop Drawings are stamped “reviewed as noted resubmission requested” or “revise and resubmit”, the Remediation Contractor shall submit new copies of the Shop Drawings revised to show compliance with the Contract Documents.

- I. When revised for resubmission, identify changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- K. Submittals not requested will not be recognized or processed.

### 1.03 LIST OF REQUIRED SUBMITTALS

Refer to Attachment 01 33 00 – 1, Submittal Schedule for a list of the minimum required submittals. Additional submittals may be required.

The Technical Execution Plan shall contain the following information:

- A. A description of the proposed key staff and responsibilities. An organizational chart shall also be included.
- B. Identify construction project manager and site superintendent who must be actively be involved in day to day site supervision, implementation of work of site, and must attend weekly site meetings. Substitution or replacement of the project manager or site supervisor is not allowed without approval of Owner and Remediation Engineer.
- C. A complete project directory by organization with name, title, address, telephone number(s), cell phone numbers, fax number and internet address.
- D. The Remediation Contractor's alternate proposed approach to the Work, if it differs from the means and methods outlined in the Design Documents, including but not limited to dredging approach, support of excavation, stabilization material placement, surveying, dewatering, and construction sequencing. Note: Bidders must provide a base bid in accordance with the payment items, bid sheet and Contract Documents provided with the AVANGRID RFP. Value added alternatives may be presented as an alternative bid in addition to the base bid.
- E. A construction project schedule.
- F. The Remediation Contractor's proposed schedule to provide submittals to the Owner and Remediation Engineer.
- G. A discussion of the Remediation Contractor's procedures for dust, odor, vapor emissions control to prevent nuisance conditions.
- H. Material handling procedures.
- I. Impacted material loading and haul vehicle decontamination procedures to prevent off-site tracking.
- J. Construction Quality Control.

- K. Spill Response and Control Plan (Section 01 50 00 – Temporary Facilities and Controls).

#### 1.04 REMEDIATION CONTRACTOR DATA AND DOCUMENTATION

Remediation Contractor data and documentation shall include the following:

- A. Manifests/Bills of Lading with corrected weights and certificates of disposal (or certified weight slips from landfill).
- B. Results of work zone air monitoring performed by the Remediation Contractor.
- C. Weights or other slips for all materials hauled off-site or on-site.
- D. All other analytical data collected during the performance of the work.
- E. All survey data.

#### 1.05 PROPOSED PRODUCT LIST

- A. Within 10 days of Notice of Award, submit list of major products proposed for use, with name, manufacturer, trade name and model number of each product.
- B. For products specified by reference standards or by description only, give manufacturer, trade name, model or catalog designation and reference standard.
- C. For products specified by naming one or more manufacturers, products of manufacturers named and meeting specifications, no options or substitutions are allowed.
- D. For products specified by naming one or more manufacturers with a provision for substitutions, submit a request for substitution for any manufacturer not named in accordance with the following article.

#### 1.06 SUBSTITUTIONS

- A. Remediation Engineer will consider requests for Substitutions only within 10 days after date of Notice of Award.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Remediation Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

- D. A request constitutes a representation that the Remediation Contractor:
  - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
  - 2. Will provide the same warranty for the Substitution as for the specified Product.
  - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner or Remediation Engineer.
  - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
  - 5. Will reimburse Remediation Engineer for review or redesign services associated with the re-approval by authorities or incorporation of substitute product.
- E. Substitutions will not be considered when they are indicated or implied in shop drawings or other submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
  - 1. Submit one electronic copy of request for Substitution for consideration. Limit each request to one proposed Substitution.
  - 2. Submit shop drawings indicating proposed installation of equipment, maintenance/removal space required, and other pertinent revisions to the design arrangement, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
  - 3. The Remediation Engineer will notify Remediation Contractor in writing of decision to accept or reject request.

#### 1.07 SHOP DRAWINGS

- A. Submit shop drawings on all items of equipment and materials to be furnished and installed with adequate time for at least 10 days for Owner and Remediation Engineer review and well in advance of product ordering, delivery, or use.
- B. Submit number of reproductions Remediation Contractor requires, plus two copies each for Owner and Remediation Engineer retention.
- C. Shop drawings will be given a general review only. Corrections or comments made on the Shop drawings during the review do not relieve Remediation Contractor from compliance with requirements of the Drawings and Specifications. Shop drawing check is intended solely for review of general conformance with the design concept of the



project and general compliance with the information given in the Contract Documents. The Remediation Contractor is responsible for:

1. Confirming and correcting all quantities,
  2. Checking dimensions;
  3. Selecting fabrication processes and techniques of construction;
  4. Coordinating his Work with that of all other trades; and
  5. Performing his Work in a safe and satisfactory manner.
- D. After review, produce duplicates and distribute in accordance with Submittal Procedures and for Record Documents.

#### 1.08 CERTIFICATES

- A. When specified in individual specification sections, submit certification by manufacturer to Owner and Remediation Engineer, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Owner and Remediation Engineer.

#### 1.09 REGULATORY SUBMITTALS

All documentation required to be submitted to a regulatory agency or office, shall first be submitted in draft form to the Owner and Remediation Engineer for review at least 10 days before required regulatory agency due date. After approval by the Owner and Remediation Engineer, submit copies of all permit compliance reports to Owner and Remediation Engineer simultaneously with submittal to permitting agency.

#### 1.10 PROJECT RECORD DOCUMENTS

- A. Maintain one set of the following record documents; record daily actual deviations, modifications or revisions to the Work:
  1. Limits (vertical and horizontal) of excavation, dredging, and ISS areas shown on a Drawing.
  2. Change Orders and other modifications to the Contract.
  3. Reviewed Shop Drawings, Product Data and Samples.
  4. Manufacturer's instruction for assembly, installation and adjusting.

5. Permits obtained.
  6. Borrow source soil analytical data (samples to be collected by Remediation Engineer).
  7. Results of Health & Safety monitoring conducted during the work.
  8. Weight tickets, bills of lading and other transportation documentation.
  9. Running list and total of quantities of materials removed from the site.
  10. Permit compliance reports.
  11. Other progress and monitoring reports prepared during the course of the Work.
  12. Updated schedules.
  13. Invoices from Subcontractors.
  14. Correct and approvable invoices.
- B. Ensure entries are complete and accurate, enabling future reference by Owner and/or Remediation Engineer.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with work progress, not less than weekly. Changes to drawings shall be annotated in red.
- E. Specifications: Legibly mark and record at each product section a description of actual products installed, including the following:
1. Manufacturer's name and product model and number.
  2. Product substitutions or alternates used.
  3. Changes made by Addenda and modifications.
- F. Record documents and Shop Drawings: Legibly mark each item to record the actual construction of the Work, including:
1. Measured horizontal and vertical locations of existing encountered underground utilities and other constructed features, referenced to permanent surface improvements.
  2. Field changes of dimension and detail.

- 3. Details not on original Contract Drawings.
- 4. Field summary documents.
- G. Submit two electronic copies on CD or other applicable device of project record documents to each the Owner and Remediation Engineer.

1.11 RECORD DRAWINGS

- A. Refer to Section 01 71 23 – Field Engineering for survey plan requirements.

END OF SECTION

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**ATTACHMENT 01 33 00 - 1 SUBMITTAL SCHEDULE**

| Specification Division Number           | Specification Section Number and Sub-part     |                | Specification Section Title             | Submittal Due Date                                                         |
|-----------------------------------------|-----------------------------------------------|----------------|-----------------------------------------|----------------------------------------------------------------------------|
| DIVISION 01<br><br>GENERAL REQUIREMENTS | 01 11 00                                      |                | Summary of Work                         | Per general conditions of contract                                         |
|                                         | 01 20 00<br>PRICE AND PAYMENT                 | 1.03 (A) & (B) | Schedule of Values                      | Two weeks prior to first pay application                                   |
|                                         |                                               | 1.04           | Weekly Variance Report                  | Weekly                                                                     |
|                                         |                                               | 1.05 (A) & (B) | Applications for Payment                | 10 days prior to required approval date                                    |
|                                         | 01 30 00 ADMINISTRATIVE REQUIREMENTS          | 1.07 (B)       | Priliminary TEP Plan                    | Within 10 days of Notice of Award                                          |
|                                         |                                               | 1.07 (C)       | Work plan and Initial Progress Schedule | Within 10 days of Notice of Award                                          |
|                                         |                                               | 1.07 (C)       | Progress Schedule                       | Weekly                                                                     |
|                                         |                                               | 1.07 (G)       | Daily Progress Reports                  | Daily                                                                      |
|                                         |                                               | 1.07 (H)       | Weekly Progress Reports                 | Weekly                                                                     |
|                                         |                                               | 1.07 (I)       | Weekly Quantity Summary Report          | Weekly                                                                     |
|                                         |                                               | 1.07 (J)       | Special Reports                         | As required                                                                |
|                                         |                                               | 1.07 (J) 2c    | Digital Files                           | Project Completion                                                         |
|                                         | 01 33 00<br>SUBMITTAL PROCEDURES              | 1.03           | Construction Work Plan                  | Within 10 days of Notice of Award                                          |
|                                         |                                               | 1.05           | Product List                            | Within 10 days of Notice of Award                                          |
|                                         |                                               | 1.06           | Substitutions                           | Within 10 days of Notice of Award                                          |
|                                         |                                               | 1.07           | Shop Drawings                           | 10 days prior to delivery, use, installation, or commencement of work task |
|                                         |                                               | 1.09           | Regulatory Submittals                   | 10 days prior to required regulatory agency due date                       |
|                                         |                                               | 1.10 (G)       | Record Drawings                         | Within 45 days After Completion                                            |
|                                         | 01 35 29<br>HEALTH & SAFETY REQUIREMENTS      | 1.07 (B)       | Safety Personnel Qualifications         | Within 10 days of Notice of Award                                          |
|                                         |                                               | 1.07 (C)       | HASP                                    | 10 days prior to site mobilization                                         |
|                                         |                                               | 1.07 (D)       | Training Certificate                    | 10 days prior to site mobilization                                         |
|                                         | 01 40 00<br>QUALITY REQUIREMENTS              | 1.07 (C)       | Testing reports                         | Within 10 days of Notice of Award                                          |
|                                         |                                               | 1.07 (F)       | Lab Results                             | Within 10 days of Notice of Award                                          |
|                                         |                                               | 1.08 (A) 1     | Baseline Survey                         | Within 10 days of Notice of Award                                          |
|                                         |                                               | 1.08 (A) 3     | Weekly Benchmark Readings               | Weekly                                                                     |
|                                         |                                               | 1.09 (B)       | Observer Qualifications                 | 30 days in advance of observation                                          |
|                                         | 01 50 00<br>TEMPORARY FACILITIES AND CONTROLS | 3.02           | SPCC Plan                               | Within 10 days of Notice of Award                                          |



**ATTACHMENT 01 33 00 - 1 SUBMITTAL SCHEDULE**

| Specification Division Number                            | Specification Section Number and Sub-part                 |            | Specification Section Title                        | Submittal Due Date                              |
|----------------------------------------------------------|-----------------------------------------------------------|------------|----------------------------------------------------|-------------------------------------------------|
| DIVISION 01<br><br>GENERAL REQUIREMENTS<br><br>CONTINUED | 01 57 26<br>DUST CONTORL                                  | 1.05       | Dust Control Plan                                  | Within 10 days of Notice of Award               |
|                                                          | 01 60 00<br>PRODUCT REQUIREMENTS                          | 1.07 (B)   | Product List Schedule                              | Within 10 days of Notice of Award               |
|                                                          |                                                           | 1.07 (C)   | Substitution Request                               | As required                                     |
|                                                          | 01 70 00<br>EXECUTION AND CLOSEOUT REQUIREMENTS           | 1.06       | Work Hours                                         | Within 10 days of Notice of Award               |
|                                                          | 01 71 23<br>FIELD ENGINEERING                             | 1.04 (E)   | Survey Data                                        | As required                                     |
|                                                          |                                                           | 1.04 (F)   | Point File with Survey Data                        | As required                                     |
|                                                          |                                                           | 1.05 (A)   | Surveyor's Experience                              | 10 days prior to site mobilization              |
|                                                          |                                                           | 1.05 (B)   | Surveyor's Professional Liability insurance        | 10 days prior to site mobilization              |
|                                                          |                                                           | 1.05 ( C ) | Surveyor's means,methods, and equipment            | 10 days prior to site mobilization              |
|                                                          |                                                           | 1.05 (D)   | Layout of the Dredge Area                          | 10 days prior to dredging                       |
|                                                          |                                                           | 1.05 (E)   | Excavation / Dredge Area                           | Within 2 days of completing an area             |
|                                                          |                                                           | 1.05 (F)   | As-built Survey                                    | Within 45 days After Completion                 |
| DIVISION 02<br><br>EXISTING CONDITIONS                   | 02 41 16<br>STRUCTURE DEMOLITION AND MANAGEMENT           | 1.05 (B)   | Qualifications                                     | Due with Bid                                    |
|                                                          |                                                           | 1.05 ( C ) | Demolition Plan                                    | Due 6 Weeks After NOA                           |
|                                                          |                                                           | 1.05 (D)   | Record Documents                                   | Within 45 Days After Completion                 |
|                                                          | 02 51 29<br>DECONTAMINATION PROCEDURES                    | 1.05 (B)   | Decontamination Plan                               | Within 10 days of Notice of Award               |
|                                                          |                                                           | 1.05 ( C ) | Shop Drawings of decontamination pad               | Two weeks prior to mobilization                 |
|                                                          |                                                           | 1.05 (D)   | Product Dates                                      | Two weeks prior to mobilization                 |
|                                                          | 02 53 00<br>WASTE TRANSPORTATION, TREATMENT, AND DISPOSAL | 1.06 (B)   | Waste Delivery Summary                             | With Daily Field Reports                        |
|                                                          |                                                           | 1.06 ( C ) | Weight Slips                                       | With Daily Field Reports                        |
|                                                          |                                                           | 1.06 (D)   | Certificates of Treatment, Disposal or Destruction | Within 2 days of reciept from Disposal Facility |

**ATTACHMENT 01 33 00 - 1 SUBMITTAL SCHEDULE**

| Specification Division Number          | Specification Section Number and Sub-part       |            | Specification Section Title                                                                                                                                                                                                                                       | Submittal Due Date                       |
|----------------------------------------|-------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| DIVISION 02<br><br>EXISTING CONDITIONS | 02 61 13<br>PIPING REMOVAL AND MANAGEMENT       | 1.06 (B)   | Weight Slips                                                                                                                                                                                                                                                      | With Daily Field Reports                 |
| DIVISION 02<br><br>EXISTING CONDITIONS | 02 61 23<br>EXCAVATION AND MANAGEMENT           | 1.04 (A)   | Confirmation and reconfirmation notices from DigSafe                                                                                                                                                                                                              | Immediately following receipt of notices |
|                                        | 02 70 00<br>CONSTRUCTION WATER TREATMENT SYSTEM | 1.04 (B)   | TEP Plan                                                                                                                                                                                                                                                          | Within 10 days of Notice of Award        |
|                                        |                                                 | 1.04 ( C ) | Permit applications, permits obtained, equipment documentation, proposed secondary containment, inspection checklist                                                                                                                                              | Prior to execution of work               |
|                                        |                                                 | 1.05 (D)   | Daily Discharge volume and inspection logs                                                                                                                                                                                                                        | With Daily Field Reports                 |
| DIVISION 31<br><br>EARTHWORK           | 31 23 19<br>DEWATERING                          | 1.03 (B)   | Daily inspection logs of stockpiles and frac tanks                                                                                                                                                                                                                | With Daily Field Reports                 |
|                                        |                                                 | 1.03 ( C ) | Product Data for drying/bulking agents                                                                                                                                                                                                                            | 14 days prior to use                     |
|                                        | 31 23 23.13<br>BACKFILL                         | 1.04       | Material Sources                                                                                                                                                                                                                                                  | 14 days prior to use                     |
|                                        | 31 23 13<br>IN-SITU SOLIDIFICATION              | 1.05 (A)   | ISS layout, Mix Design, Key Personnel, Reagents, Qualifications of Lab, ISS Work Plan                                                                                                                                                                             | 21 Days prior to initiating ISS          |
|                                        |                                                 | 1.05 (B)   | Quantity of ISS mixed, summary of ISS areas completed, Quantities of Reagents used, Quantities of Reagents delivered to the site, Soil Disposal/handling Methods, Daily Batch proportions, Results of quality control testing, Summary of Quality Control Samples | 21 Days prior to initiating ISS          |

**ATTACHMENT 01 33 00 - 1 SUBMITTAL SCHEDULE**

| Specification Division Number                            | Specification Section Number and Sub-part                     |            | Specification Section Title                                                   | Submittal Due Date                  |
|----------------------------------------------------------|---------------------------------------------------------------|------------|-------------------------------------------------------------------------------|-------------------------------------|
| DIVISION 32<br><br>EXTERIOR IMPROVEMENT                  | 32 92 00<br><br>TURF AND GRASSES                              | 1.04 (A)   | Product data for seed mixes                                                   | 14 days prior to use                |
|                                                          |                                                               | 1.04 (B)   | Product data for fertilizer                                                   | 14 days prior to use                |
|                                                          |                                                               | 1.04 (C)   | Product data for live stakes                                                  | 14 days prior to use                |
|                                                          |                                                               | 1.04 (D)   | Seeding and mulching means and methods                                        | 14 days prior to use                |
|                                                          |                                                               | 1.04 (E)   | Manufacturer's Certificates of Compliance for each seed bag delivered to site | 14 days prior to use                |
| DIVISION 33<br><br>UTILITIES                             | 33 29 00<br><br>WELL ADANDONMENT                              | 1.05 (A)   | Qualification of well abandonment subcontractor                               | Due 6 Weeks After NOA               |
|                                                          |                                                               | 1.05 (B)   | Purchase Records for cement, bentonite, admixtures                            | Due 6 Weeks After NOA               |
|                                                          |                                                               | 1.05 ( C ) | Records of decommissioning                                                    | Due Within 45 Days After Completion |
| DIVISION 35<br><br>WATERWAY AND MARINE CONSTRUCTION      | 35 11 00<br><br>SIGNALING AND CONTROL EQUIPMENT FOR WATERWAYS | 1.05 (A)   | Construction-Phase surface water quality control plan                         | Within 10 days of Notice of Award   |
|                                                          |                                                               | 1.05 (B)   | Shop Drawing of silt/turbidity/sheen control devices                          | Within 10 days of Notice of Award   |
|                                                          |                                                               | 1.05 ( C ) | Temporary Control Plan for Canal                                              | Within 10 days of Notice of Award   |
|                                                          |                                                               | 1.05 (D)   | Surface water and control requirement inspection and monitoring logs          | With Daily Field Reports            |
|                                                          | 35 20 23<br>DREDGING                                          | 1.04 (A)   | Type of equipment to be used                                                  | Within 10 days of Notice of Award   |
| DIVISION 44<br><br>POLLUTION AND WASTE CONTROL EQUIPMENT | 44 32 00<br><br>VAPOR AND ODOR CONTROL                        | 1.05 (A)   | Odor and Vapor Control Plan                                                   | Within 10 days of Notice of Award   |

NOTES:

1. The information contained in the Submittal Summary Schedule is intended as a summary of the submittals specified throughout the Contract Documents. Omission of a submittal item in this summary does not alleviate the CONTRACTOR of their responsibility to provide it as specified in the Contract or other individual specification section.

## SECTION 01 35 29

### HEALTH AND SAFETY REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Preparation of a Health and Safety Plan (HASP) for all workers engaged in work at the Site. The HASP shall be prepared by a Certified Industrial Hygienist, Certified Safety Professional or equal environmental health professional that is qualified by training and experience to perform this work.
- B. The Remediation Contractor may review the Remediation Engineer's Site-Specific HASP in advance of preparing their HASP.
- C. The Remediation Contractor's HASP shall include any additional health and safety requirements described in the NYSEG Request for Proposal (RFP).
- D. All employees who will be working in or near potentially contaminated soil, sediment, water or air shall have successfully completed an OSHA 40-hour Health and Safety training course and be current in OSHA training certifications through annual 8-hour refresher training in compliance with the OSHA hazardous waste operations and emergency response codified at 29 CFR 1910.120, and specific training for site activities.
- E. Provide health and safety equipment including protective clothing, respiratory equipment and monitoring instruments.
- F. Decontamination of construction equipment, tools and other non-disposable items that may have been in contact with site pollutants prior to removal of such equipment from the site.

##### 1.02 SPECIAL SITE CONDITIONS

- A. Levels of personal protection are established in reference standards. It is anticipated that most of the work at the Site may be conducted using typical construction health and safety practices as described in OSHA safety and health regulations for construction codified at 29 CFR 1926. The work to be conducted at the Site is not anticipated to require personal protection above that provided by Level D except for workers directly in the vicinity of excavated coal-tar impacted soils that may require upgrade to Level C. Remediation Contractor shall be prepared to upgrade to Level C, which requires the use of a respirator, if required.
- B. Personal floatation devices (PFDs) will be required for work over water.
- C. The work will involve handling of non-aqueous phase liquid (NAPL) impacted soil and sediment and potentially other MGP-related contaminants. Handling of the impacted material is anticipated to result in the emission of gases, vapors, dust and odors. The Remediation Contractor is required to mitigate such emissions within the work area and

### HEALTH AND SAFETY REQUIREMENTS



to prevent the emission of hazardous gases, vapors, dust and odors that may cause risk to the public or cause nuisance conditions. The HASP prepared for the site must include a description of the Remediation Contractor's proposed methods and materials, such as chemical vapor/odor suppression agents, for mitigation of such emissions.

- D. The Remediation Contractor shall implement and adhere to the Dust, Odor, and Vapor Emissions Control Plan prepared for the project. Minimum requirements are outlined in Section 44 32 00 – Vapor and Odor Control.
- E. A Community Air Monitoring Plan (CAMP) has been prepared and will be implemented by the Remediation Engineer. Remediation Contractor shall implement emissions controls sufficient to maintain conditions below perimeter air monitoring action levels.
- F. The Remediation Engineer and/or Owner will conduct periodic health and safety audits. If audits discover discrepancies or issues, the Remediation Contractor shall promptly address all issues to the Owner's satisfaction at no additional cost to the Owner or Remediation Engineer for labor, equipment, materials or lost time rectifying issues identified.

#### 1.03 RELATED SECTIONS

- A. SECTION 01 50 00 – Temporary Facilities and Controls
- B. SECTION 01 57 26 – Dust Control
- C. SECTION 02 00 00 – Existing Conditions
- D. SECTION 44 32 00 – Vapor and Odor Control
- E. Drawings
- F. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### 1.04 REFERENCE STANDARDS

- A. NIOSH/OSHA/USCG/EPA: "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," October 1985.
- B. OSHA: 29 CFR Parts 1910 and 1926

#### 1.05 EXISTING CONDITIONS

- A. Refer to Section 02 00 00 – Existing Conditions for information regarding site conditions.
- B. Available groundwater, surface water, soil, sediment and other chemical test data proximate to the Work Area are provided in the documents listed in specification Section 02 00 00 – Existing Conditions.

#### 1.06 HEALTH & SAFETY OVERSIGHT

- A. Remediation Contractor shall have sole responsibility for implementation of the HASP. Remediation Contractor shall also be responsible for implementation of the HASP by all subcontractors. The Remediation Contractor shall provide a Site Safety Officer (SSO) who shall be assigned to the site at all times during the project. The SSO shall be responsible for ensuring that the HASP is properly implemented. The SSO will be charged with: overseeing site health and safety; monitoring and protection of public health and safety as it is related to the Work; instrument monitoring; personnel and equipment decontamination; control of equipment check-out; site traffic control; and emergency response. Other responsibilities include monitoring workers for weather-related exposures or stresses.
- B. The SSO shall have a working knowledge of State and Federal occupational safety and health regulations and formal training in occupational safety and health. Prior to commencement of any site activities, the SSO shall review the HASP and provide training on PPE use to all on-site employees who will be working in or near contaminated materials. New employees or visitors to these areas shall be informed of the site conditions by the SSO. If visitors enter those areas, PPE and training required at that time within that area by the Remediation Contractor's personnel shall be required. The SSO shall provide a pre-work safety training to all site workers and all site workers shall sign the HASP log acknowledging they have read and understand the HASP.
- C. Pre-work training on the site Health and Safety program shall be provided and documented to all site workers at the start of the project, and before each major phase of remedial activity commences to review job hazard analyses, and site risks. All personnel working at the site must attend the training prior to being allowed to work on the site. Workers found to be blatantly disobeying health and safety requirements will be permanently removed from the Site at the discretion of the Remediation Engineer or Owner.

#### 1.07 SUBMITTALS

- A. Requested information shall be submitted to the Remediation Engineer in accordance with the information outlined in Specification Section 01 33 00 – Submittal Procedures.
- B. Safety Personnel Qualifications: Prior to submittal of the HASP, submit the names, qualifications, and experience of the Certified Industrial Hygienist, Certified Safety Professional or environmental health professional responsible for the preparation of the HASP and the Site Safety Officer.
- C. HASP: HASP which includes levels of protection and a schedule for training of Remediation Contractor's and subcontractor's workers in the use of respiratory equipment and use of protective clothing. Training will not be provided by the Owner or Remediation Engineer.
- D. Training Certification: A list of all personnel who will enter the Site, copies of certification of training and certification of compliance with medical monitoring requirements.

This documentation must be submitted and reviewed by the Owner/ Remediation Contractor prior to personnel performing on-site work. Documentation must be maintained on-site for the duration of the project.

## PART 2 - PRODUCTS

### 2.01 NEW MATERIALS AND PRODUCTS

- A. Follow safety data sheets and the manufacturer's recommendations for worker protection, use, storage and disposal of products used on-site.

### 2.02 EQUIPMENT

- A. Provide personnel with personal protective equipment and clothing as described in the Remediation Contractor's Health and Safety Plan.

## PART 3 - EXECUTION

### 3.01 HEALTH AND SAFETY PLANNING AND IMPLEMENTATION

- A. Prepare a HASP which will ensure the health and safety of all workers at the Site at all times. The HASP shall be prepared by a Certified Industrial Hygienist or a Certified Safety Professional. HASP shall comply with the action levels contained in Remediation Engineer's Site-specific HASP. Implement the plan throughout the execution of the work. The plan shall include, but not be limited to, the following information:
  - 1. Compounds of Concern and signs/symptoms of exposure.
  - 2. Potential for worker exposure to the compounds of concern for each work task.
  - 3. Safety issues related to operation of heavy equipment, excavation safety, and work near water bodies.
  - 4. Provisions for work zone security and protection of the public.
  - 5. Requirements for OSHA training for each work task and a record, or schedule for training, of workers in the use of personal protective equipment. Please note that training will not be provided by the Owner or Remediation Engineer.
  - 6. Work task specific levels of protection and a description of health and safety equipment including protective clothing, respiratory equipment and monitoring instruments.
  - 7. Procedures for monitoring of hazardous gases or vapors for each work task and action levels for donning personal protective equipment; description of monitoring instruments.
  - 8. Procedures for decontamination of heavy equipment and tools.

9. Emergency Response Plan, including the names and phone numbers of individuals or agencies who shall be contacted in the event of on-site injury or release of oil or hazardous material.
  10. Spill response/cleanup procedures.
  11. Identification and qualifications of Remediation Contractor's SSO.
  12. Management of subcontractors.
  13. Identify compliance with NYSEG/Avangrid policies and procedures including but not limited to; No Smoking on NYSEG/Avangrid Property, River Communication Protocol, Procedure for Handling Asbestos Coal Tar Wrapped Natural Gas Pipe, Lock Out / Tag Out procedures for active utilities, and Use of Bee Spray. Additional AVANGRID H&S requirements (if any) are identified in the RFP, which shall be considered part of the Contract/Contract Documents.
- B. The Remediation Contractor shall be responsible for monitoring ambient air in the breathing zone of the respective work area(s) in accordance with the Remediation Contractor's Health and Safety Plan for the protection of the Remediation Contractor's workers. The Remediation Contractor shall provide the Remediation Engineer with monitoring results relevant to the selection of levels of personnel protective equipment.
- C. Require all workers who will engage in work at the site which might result in exposure to contaminated materials attend a pre-work health and safety briefing and daily tail-gate safety briefings.
- D. Provide adequate health and safety training for all personnel who will be engaged in work at the site that might result in exposure to contaminated air, soil, sediment or water.
- E. Conduct health and safety meetings at the beginning of each work day, in concert with the Remediation Engineer, to review specific hazards associated with the work planned for that day, PPE and operational controls to mitigate those hazards, and contingency plans and emergency procedures to respond to potential problems.
- F. Personnel who have not received training or who are not equipped with the required protective clothing and equipment shall not be permitted access to the site during execution of work which may result in exposure to contaminated soil or water or other materials.
- G. Air monitoring will be performed in the breathing zone of the work area at the following minimum frequencies: at the start of work each day, at the beginning of any new work task, at the completion of work each day and at least every two hours during the work day.
- H. Air monitoring data will be recorded for each monitoring event. Provide the Remediation Engineer with all air monitoring data at the completion of each work day.



- I. A Job Hazard Analysis (JHA) must be prepared for each major work task. JHA's must be reviewed prior to the start of each task and updated whenever a change in site conditions or work procedures occurs, or upon discovery of additional hazards.

### 3.02 DECONTAMINATION

- A. Decontaminate all equipment and tools which have contacted contaminated soil, groundwater and other materials to prevent the spread of contamination within the site and outside the site limits.
- B. Gross contamination shall be removed in the Exclusion Zone. Equipment decontamination shall occur on the designated decontamination pad where decontamination solids and water can be contained for appropriate disposal.
- C. Dispose of all decontamination by-products in accordance with Local, State and Federal regulations.
- D. At a minimum, decontamination of construction equipment shall include high pressure water spraying all equipment which contacts contaminated soil or sediment prior to leaving the job site. Soap and water decontamination of non-disposable worker protective equipment shall be performed. Decontamination water shall be contained for appropriate off-site disposal if needed and/or treated through the on-site temporary wastewater treatment system.
- E. Provide on-site facilities for personnel to decontaminate their protective clothing or other equipment.

### 3.03 ACCIDENT REPORTING REQUIREMENTS

- A. The Remediation Contractor shall comply with the following accident and/or incident reporting requirements.
  - 1. Should any unforeseen safety-related factor, hazard, or condition become evident during the performance of the work, the Remediation Contractor shall immediately take prudent action to establish, maintain, and secure the site and working conditions. This shall be followed by immediate notice to the Remediation Engineer's Field Construction Manager (FCM) and the Owner.
  - 2. If a serious injury (requiring medical attention) to a person or damage to property, environment, or natural resources result from an incident, the Remediation Contractor shall immediately report the incident to the Remediation Engineer's FCM, the Owner, and New York State Department of Environmental Controls. The report shall be followed by a written document describing the incident, what hazards were created by it, and a detailed statement of what actions were taken to correct the problem. The Remediation Contractor will also include a description of why the actions taken were prudent.

3. Should any sudden, continuous, or intermittent release of oil or hazardous material occur during work, the Remediation Contractor shall notify the Remediation Engineer's FCM and the Owner immediately and shall immediately begin actions to contain or abate the release. The Remediation Contractor shall immediately arrange for clean-up activities. The Remediation Contractor Owner shall make necessary notifications to the New York State Department of Environmental Conservation (NYSDEC) when required. Remediation Contractor shall maintain a sufficiently stocked spill kit on-site to immediately respond to an oil or hazardous material release.

END OF SECTION

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## SECTION 01 40 00

### QUALITY REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

A. This Section includes information on the following items:

1. Quality control and control of installation.
2. Tolerances.
3. References.
4. Labeling.
5. Testing and inspection services.
6. Examination.
7. Preparation.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 30 00 – Administrative Requirements
- B. SECTION 01 33 00 – Submittal Procedures
- C. SECTION 01 60 00 – Product Requirements
- D. Drawings
- E. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

##### 1.03 EXISTING CONDITIONS

- A. See Specification Section 02 00 00 – Existing Conditions for information regarding site conditions.

##### 1.04 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.

- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Remediation Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

#### 1.05 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Remediation Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.
- D. Conform to tolerances specified in individual specification sections for earthwork, site restoration, and other specification Sections as appropriate.

#### 1.06 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue. Reference standards shall be most current version with respect to date on Contract Documents.
- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from Remediation Engineer before proceeding.
- E. Neither contractual relationships, duties, nor responsibilities of parties in Contract nor those of Remediation Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.



#### 1.07 TESTING AND INSPECTION SERVICES

- A. General requirements for laboratories performing tests as required by the Owner's Representative and/or Remediation Engineer are as follows:
  - 1. Laboratory: Authorized to operate in State of New York.
  - 2. Laboratory Staff: Maintain full time registered Engineer specialist on staff to review services. Staff working on site shall be trained in accordance with applicable OSHA/MSHA and related requirements, adhere to the requirements of Section 01 35 29 - Health and Safety, and follow the Health and Safety Plan.
  - 3. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- B. Testing and inspections may occur on or off project site. Perform off-site testing as required by Design Engineer, Remediation Engineer or Owner.
- C. Reports will be submitted by independent firm to Remediation Engineer and Remediation Contractor in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
  - 1. Submit final report indicating correction of Work previously reported as non-compliant.
- D. Testing and employment of testing agency or laboratory shall not relieve Remediation Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- E. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Remediation Engineer. Payment for re-testing or re-inspection will be at the Remediation Contractor's expense and no additional cost will be incurred by the Owner.
- F. Laboratory Reports: After each test, promptly submit two copies of report to Remediation Engineer and Remediation Contractor. Provide interpretation of test results and include the following information:
  - 1. Date issued.
  - 2. Project title and number.
  - 3. Name of inspector.
  - 4. Date and time of sampling or inspection.
  - 5. Identification of product and specifications section.

6. Location in Project.
7. Type of inspection or test.
8. Date of test.
9. Results of tests.
10. Conformance with Contract Documents.

G. Limits on Testing Authority:

1. Testing laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Laboratory may not approve or accept any portion of the Work.
3. Laboratory may not assume duties of Remediation Contractor.
4. Laboratory has no authority to stop the Work.

1.08 MONITORING

A. Baseline Survey

1. Prior to the start of construction, a baseline survey consisting of 6 benchmarks shall be established on the residential property structure at 185 West Fall Street by the Remediation Contractor.
2. The Remediation Contractor shall obtain baseline horizontal and vertical locations of each benchmark before proceeding with any site work.
3. The Remediation Contractor shall obtain benchmark readings on a weekly basis during construction and submit to the Engineer for review.
4. When there is construction activity within 100 ft of the residential property structure, the Remediation Contractor shall obtain benchmark readings on a daily basis and submit to the Remediation Engineer for review.
5. If benchmark readings indicate movements of greater than ¼ inch either in the horizontal or vertical, the Remediation Contractor shall stop work in the vicinity of the residential property structure and review the readings with the Remediation Engineer for future action.

B. Vibration Monitoring

1. Vibration monitoring shall take place continuously during any construction activities within 100 ft of the residential property structure at 185 Fall Street.

2. Vibration monitoring shall take place on a weekly basis during any construction activities beyond 100 ft from the residential property structure at 185 Fall Street.
3. Vibration monitoring shall be performed by the Remediation Contractor [using a three-dimensional seismograph. The seismograph shall be positioned on the western side of the residential property structure at 185 Fall Street.
4. The vibrations at the residential property structure at 185 Fall Street shall not exceed those outlined in the Town of Seneca Falls, New York Code, Chapter 300: Zoning, Article V: Supplementary Regulations, 300-26 Performance Standards, Part E.

#### 1.09 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Remediation Engineer 30 days in advance of required observations. Observer subject to Remediation Engineer's acceptance.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

#### 1.10 SUBMITTALS

Not Used.

#### PART 2 - PRODUCTS

Not Used.

#### PART 3 - EXECUTION

##### 3.01 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing subgrade is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.

### 3.02 REMEDIATION CONTRACTOR'S RESPONSIBILITIES

- A. Remediation Contractor shall supply materials and equipment that meet the requirements and standards set forth in the Specifications.
- B. Where specific certificates concerning materials and/or equipment are required, Remediation Contractor shall secure payment for and prompt delivery of such certificates to the Owner. Such certificates shall be executed by qualified firms acceptable to the Owner, shall include all information required by the Specifications, and shall refer specifically to materials to be used in the project.
- C. The Remediation Contractor shall provide the Owner with samples of materials, design mix, and assistance as requested in the performance of QA observations and testing.
- D. The Remediation Contractor shall notify Owner as indicated in specific Specification sections prior to expected time for Work requiring testing or observation.
- E. The Remediation Contractor shall not be relieved from his obligation to supply materials and perform the Work in accordance with the Contract Documents, by the observations of the Owner in his administration of the Contract, nor by observations, tests, or approvals.
- F. Observation or testing performed exclusively for the Remediation Contractor's convenience shall be the sole responsibility of the Remediation Contractor. Remediation Contractor shall make arrangements and pay for additional observations and tests required for Remediation Contractor's use.
- G. Retesting required because of non-conformance to Specification requirements may be performed by the Owner. Payment for retesting will be charged to the Remediation Contractor by deducting inspection or testing charges from the Base Contract Sum/Price.

### 3.03 ACCESS

- A. The Owner and Remediation Engineer shall at all times have access to the Work wherever it is in preparation or progress, and the Remediation Contractor shall provide proper facilities for such access and inspection.
- B. The Remediation Contractor shall assist the Remediation Engineer in material sampling and testing with available on-site equipment, as appropriate.

END OF SECTION



## SECTION 01 50 00

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. Procure, install, and maintain all necessary temporary facilities and controls, including those listed below.
  - 1. Temporary Utilities including: lighting for construction purposes (as needed), water service to work areas, and sanitary facilities.
  - 2. Construction Facilities including: field offices, access roads, parking, progress cleaning and waste removal, and project identification.
  - 3. Temporary Controls including: barriers, fencing, erosion and sedimentation control, stormwater control.
- B. Remove temporary utilities, facilities, and controls at the completion of work.

#### PART 2 – RELATED SECTIONS

- A. SECTION 01 40 00 – Quality Requirements
- B. SECTION 01 57 26 – Dust Control
- C. SECTION 01 60 00 – Product Requirements
- D. SECTION 02 00 00 – Existing Conditions
- E. SECTION 02 51 29 – Decontamination Procedures
- F. SECTION 02 70 00 – Construction Water Treatment System
- G. SECTION 31 25 00 – Erosion and Sedimentation Control
- H. SECTION 44 32 00 – Vapor and Odor Control
- I. Drawings
- J. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### PART 3 – EXISTING CONDITIONS

- A. Refer to Section 02 00 00 – Existing Conditions for information regarding site conditions.

- B. Available groundwater, surface water, soil, sediment and other chemical test data proximate to the Work Area are provided in the documents listed in specification Section 02 00 00 – Existing Conditions.

### 3.02 SUBMITTALS

- A. Project specific Spill Prevention, Control, and Counter Measure (SPCC) Plan: Prior to beginning work in the Exclusion Zone at the site, develop, implement, maintain, supervise, and be responsible for a SPCC Plan. General guidelines for SPCC measures provided on the Contract Drawings shall be supplemented with those described herein. The plan shall be included as a section in the Technical Execution Plan. The SPCC Plan shall be submitted to the Remediation Engineer for review. The SPCC Plan shall provide contingency measures for potential spills of oil and hazardous materials and construction-related materials including, but not limited to fuels, hydraulic fluids, lubricants, and construction water.
  - 1. The plan shall, at a minimum, contain the following:
  - 2. Procedures for Containing Dry and Liquid Spills.
  - 3. Absorbent Material available on-site.
  - 4. Procedures for storage of Spilled Materials.
  - 5. Decontamination Procedures. Decontamination procedures may be required after cleanup to eliminate traces of the substance spilled or reduce it to an acceptable level. The Remediation Contractor shall provide methods, means equipment facilities and personnel to perform decontamination measures that may be required to remove contaminants or spillage from haul trucks, previously uncontaminated structures, equipment, or material. Acceptable level shall be in accordance with all applicable local, state, and federal laws and regulations. Complete cleanup may require removal of contaminated soils. All contaminated materials that cannot be decontaminated must be properly containerized, labeled, and properly disposed of within 30 days. Any and all testing and disposal costs related to the cleanup of a spill caused by the Contractor's activities shall be borne by the Contractor.
  - 6. Spill Incident Report Format. A written report detailing the spill or discharge shall include, at a minimum, the cause and resolution of the incident, outside agencies involved, and date the incident occurred. The report shall be submitted to the Remediation Engineer and the Owner within 24 hours of the incident, or earlier if necessary to comply with local, state, or federal regulations. The Remediation Contractor shall document the location of all spills on the site Drawings and submit the Drawings to the Remediation Engineer at project completion.

### 3.03 TEMPORARY UTILITIES

- A. Provide electricity to the temporary office facilities established on-site (described below).
- B. Provide electricity for heating elements on the water treatment system. Refer to section 02700.
- C. Provide and maintain temporary lighting for construction operations, if needed, and construction is permitted beyond normal daylight hours.
- D. Provide a temporary water source for the in-situ solidification batch plant, dust control, and equipment and personnel decontamination.
- E. Provide and maintain DSL or cable internet service and wireless network in the field office for use by the Remediation Engineer, New York State Department of Environmental Conservation (NYSDEC), and Remediation Contractor for the duration of the Work.

### 3.04 TEMPORARY SANITARY FACILITIES

- A. Remediation Contractor to provide up to one sanitary facilities (Porta-Johns) for on-site personnel use for the duration of Work.

### 3.05 TEMPORARY OFFICE FACILITIES

- A. The Remediation Contractor will provide temporary field offices and meeting space for the Remediation Engineer, NYSDEC, and Contractor.
- B. Provide a wireless printer/scanner for exclusive use by the Remediation Engineer to be in the Remediation Engineer's office. Separate printer/scanners to be used by the Remediation Contractor shall be provided as required for Remediation Contractor use in the Contractor's office
- C. Provide office furniture for each office space including at a minimum 1 desk, 1 desk chair, and 1 file cabinet for each office.
- D. Provide meeting space furniture including a folding table and chairs to accommodate 8 people.

### 3.06 ACCESS ROADS

- A. Provide means of removing mud from vehicle wheels before entering streets. Install stabilized construction entrance as indicated on Drawings.
- B. Conduct or arrange for street cleaning of Fall Street and any other streets affected by Site activities. Street cleaning shall be conducted at any time sediment or mud is

tracked onto a public street because of active hauling operations and materials delivery when trucks or equipment are leaving the Site. At no time is sediment or mud allowed to remain on public streets.

- C. Delivery and/or transport vehicles will not be permitted to park or queue on any public roads. Remediation Contractor shall be responsible for traffic flow in and out of the project site as required.
- D. Provide sufficient personnel to direct traffic as necessary to facilitate the smooth flow of traffic and not impede public ways, including pedestrian traffic.

### 3.07 DREDGE WORKING PADS

- A. Install temporary working pads as indicated on Drawings to facilitate dredging operations in the Canal.

### 3.08 PARKING

- A. Remediation Contractor and subcontractor personnel may park personal vehicles and non-construction related company vehicles in parking areas approved by the Remediation Engineer and the Owner. Options include the driveway of 185 Fall Street, a portion of the Fall Street right-of-way outside the travel lane and shoulder of the road as shown on the Drawing, and at approved locations on the adjacent 193 Fall Street property.
- B. Heavy equipment, trucks and other construction related vehicles shall be parked in the active Work Zone.

### 3.09 PROGRESS CLEANING AND WASTE REMOVAL

- A. Provide one sufficient size dumpster (e.g., 8 cubic yard) for typical construction and office waste for all on-site operations. No contaminated materials shall be placed in this roll-off. Waste should be picked up weekly and disposed off-site at a sanitary landfill.
- B. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.
- C. Conduct vehicle, personnel, and equipment decontamination as required by the Contract Documents.

### 3.10 PROJECT IDENTIFICATION

- A. No signs, other than those required by law, may be posted without Owner/Remediation Engineer's permission.
- B. Remediation Contractor shall provide the project sign that meets the requirements of NYSDEC signage and attach to the site fence along Fall Street.



### 3.11 BARRIERS

- A. Provide and install barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide and install barriers and demarcation of work zones in accordance with the Drawings and the Health & Safety Plan.

### 3.12 FENCING

- A. Install temporary chain link fencing and construction fencing at the perimeter of the Site, as shown on the Drawings.
- B. All impacted materials handled at the Site shall be secured inside the work area fence at all times. Areas outside the site limits are not available to the Contractor.
- C. Site security and control of access to the construction area shall be maintained by the Remediation Contractor to protect Work and existing facilities from unauthorized entry, injury, vandalism and theft. All authorized personnel visiting, working and/or observing Work at the site should report to the Contractor's trailer immediately. Visitor procedures defined in the Project HASP shall be adhered to.
- D. Access gates to the Work area shall be closed and locked at the end of each Work day for security purposes. All site gates shall be closed during the workday except during active vehicle traffic in and out of the site.
- E. Provide large sign at construction entrance to direct all visitors to Remediation Engineer/Remediation Contractor office. The sign should have the NYSEG's contact number and Remediation Engineer's contact number.

### 3.13 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

- A. Remove temporary utilities, equipment, facilities and materials prior to Final Application for Payment.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

### 3.14 NAVIGATION CONTROLS

- A. Navigations buoys – Remediation Contractor shall supply all navigational aids and buoys to facilitate watercraft navigation around Silt Curtains and Booms. Navigational aids shall comply with all New York State Canal Corporation and Federal Government standards.

### 3.15 SPILL AND DISCHARGE CONTROL

#### A. Spill and Discharge Control

1. The Remediation Contractor shall provide methods, means, equipment, facilities, and personnel required to prevent contamination of soil, water, air, equipment, or materials by the discharge of bulk wastes from spills due to Contractor's operations.
2. The Remediation Contractor shall provide methods, means, equipment, facilities and personnel to perform emergency measures required to contain any spillage and to remove spilled materials and soils or liquids that become contaminated due to spillage. All collected spill material shall be properly disposed of at the Contractor's expense.
3. Remediation Contractor shall maintain adequate spill containment and cleanup equipment on-site.

#### B. General

1. Remediation Contractor shall be responsible for all liabilities related to spills, discharges, leaks, or emissions from equipment, tankage vessels, drums, or any other devices owned, operated, or controlled by the Contractor, subcontractors, vendors, personnel, agents, or assigns.
2. In the case of a spill or discharge, the Remediation Contractor shall follow procedures outlined in the SPCC Plan.

#### C. Notification

1. The Remediation Contractor shall notify the Owner and Remediation Engineer as soon as possible in the event of a spill or discharge.
2. The Remediation Contractor shall report a spill or discharge to regulatory agencies, as necessary to comply with local, state and federal regulations.

END OF SECTION

## SECTION 01 57 26

### DUST CONTROL

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Implement engineering controls and modify work procedures/equipment as necessary to reduce fugitive emissions to concentrations below site action levels described in this Section. Implement work zone air monitoring to ensure health and safety protection of site workers during performance of the Work, and to prevent nuisance conditions. Ambient air monitoring at the perimeter of the Site will be conducted by the Remediation Engineer to ensure protection of the public and the environment.
- B. Emissions from the site remedial construction activities may include dust. Implement adequate controls to minimize these emissions in accordance with the following plans:
  - 1. Community Air Monitoring Plan
  - 2. Site specific Health and Safety Plan prepared by the Remediation Contractor
  - 3. Erosion and Sediment Control Drawings including G-102, C-301, and C-700.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health & Safety Requirements
- B. SECTION 01 40 00 – Quality Requirements
- C. SECTION 01 50 00 – Temporary Facilities and Controls
- D. SECTION 01 60 00 – Product Requirements
- E. SECTION 02 00 00 – Existing Conditions
- F. SECTION 02 41 16 – Structure Demolition and Management
- G. SECTION 02 53 00 – Waste Transport, Treatment, and Disposal
- H. SECTION 02 51 29 – Decontamination Procedures
- I. SECTION 02 61 13 – Piping Removal and Management
- J. SECTION 02 61 23 – Excavation and Management
- K. SECTION 44 32 00 – Vapor and Odor Control
- L. Drawings

### DUST CONTROL

- M. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### 1.03 REGULATIONS

- A. Seneca Falls Code Section 300-26 Performance Standards:
  - 1. Part C: Dirt, dust, heat, toxic emissions and radiation interference. No use within any district shall create or emit dust, heat, dirt or other particulate matter, radiation, toxic emissions or electronic or radio interference which shall adversely affect uses on adjacent or neighboring properties.
  - 2. Part H: Emission of particulate matter. No solid or liquid particles shall be emitted in such quantity as to be readily detectable at any point along lot lines or so as to produce a public nuisance or hazard beyond lot lines.

#### 1.04 PERFORMANCE REQUIREMENTS

- A. The Remediation Engineer will monitor the perimeter site air quality. The Remediation Engineer will notify the Remediation Contractor when there are excursions above the action levels identified in the Community Air Monitoring Plan (CAMP).
- B. Work will be suspended, and appropriate dust control measures employed in accordance with the CAMP if the particulate levels (including levels caused by moisture conditioning) at the perimeter of the work area are exceeded. These work stoppages are the responsibility of the Remediation Contractor and will not be a basis for an extension of time or additional monies for down time.
- C. At the discretion of the Remediation Engineer, work will be suspended if visual dust is observed. These work stoppages are the responsibility of the Remediation Contractor and will not be a basis for an extension of time or additional monies for down time.

#### 1.05 SUBMITTALS

- A. Submit a Dust Control Plan that details the proposed dust control means and methods as part of the Technical Execution Plan.

### PART 2 – PRODUCTS

#### 2.01 DUST CONTROLS

Maintain an adequate supply of the products listed below on-site for daily use. Product submittals to Remediation Engineer are required prior to use and shall include manufacturers' recommended use/installation practices.



- A. Water source
- B. Plastic sheeting or anchored tarps
- C. Soil tackifiers

## 2.02 WATER

- A. Water for Dust Control shall be provided by the Remediation Contractor. No on-site water source is available for Remediation Contractor use.
  - 1. Obtain water from a legal off-site location. Options may include a nearby hydrant.
  - 2. All required permits shall be secured by Remediation Contractor for sourcing off-site water prior to extraction.
- B. Water used for dust control shall be obtained from only potable water supplies and shall be free from oil, acid, and injurious alkali or vegetable matter, and other deleterious material or contaminants.

## 2.03 EQUIPMENT

- A. Equipment for dust control shall include appropriate measures (e.g., heat tape, tank heaters) to prevent freezing or impair operations due to temperatures below freezing.
- B. Spray nozzles for water shall be capable of delivering a light spray to coat ground surfaces evenly without generating excessive runoff.
- C. Water truck or other suitable means to control dust on-site and to keep public access roads clean.

## PART 3 – EXECUTION

### 3.01 GENERAL

- A. The Remediation Contractor shall implement emission control measures to reduce nuisance levels of dust and emissions at all times and perform additional measures as requested by the Remediation Engineer.
- B. Implement strict dust control measures during active construction periods on-site and off-site along haul roads and public roads.
- C. If any of the parameters above action levels in the CAMP or the HASP are exceeded, the Remediation Contractor shall immediately suspend work and implement air emission control measures. Prior to resuming work, the Remediation Contractor shall modify work procedures that will result in reduced air emissions.

- D. Maintain the site in a condition that will not generate dust and airborne particulates during periods of non-work (i.e., evenings, weekends, and holidays).
- E. Utilize plastic sheeting, water application, odor control foam, or other similar means to control fugitive dust during the performance of the Work.
- F. At a minimum, water shall be applied once per day during dry weather or more often as required by the Remediation Engineer. Other dust control methods shall be applied by Remediation Contractor as necessary to maintain dust levels below acceptable thresholds.
- G. The Remediation Engineer will maintain a perimeter air sampling system at the limit of work. The Remediation Contractor will be notified if excursions of air-born particulates (dust) or total volatile compounds occur. The Remediation Contractor will be notified as soon as possible and activities will stop until dust control has been applied.
- H. The Remediation Contractor will be notified of objectionable dust and all activities shall be stopped until dust control has been applied to the Remediation Engineer's satisfaction.

### 3.02 WATER APPLICATION

- A. For water application to soil surfaces:
  - 1. Utilize spraying equipment to provide complete coverage of surfaces with water.
  - 2. Apply water without interfering with earthmoving equipment or on-site operations.
  - 3. Keep surfaces damp without creating nuisance conditions such as ponding, runoff, erosion, or excessively wet and muddy conditions.
  - 4. Apply water spray in a manner to prevent movement of spray beyond site boundaries.

### 3.03 PAVEMENT SWEEPING

- A. Maintain clean pavement surfaces within the designated work area and site egress route, including the public right of ways adjacent to the Site (e.g., Fall Street), to be free of visible gross accumulation of dust and soil. Do not permit construction equipment to track soil outside of the active exclusion zone or the limit of work onto public roads.
- B. Sweep pavement surfaces as required during construction to prevent migration of soil outside the limit of work and the generation of dust.

- C. Sweep all paved surfaces within the limit of work and truck ingress/egress routes at the end of construction as a final cleanup task to remove any residual construction debris and soil.

#### 3.04 STOCKPILE MANAGEMENT

- A. Maintain on-site stockpiles in a manner that prevents wind-blown dust generation.
- B. During active periods, provide periodic water misting/sprinkling.
- C. During inactive periods, cover stockpiles with weighted and anchored tarps/covers.

#### 3.05 TESTING

- A. The Owner or Remediation Engineer, at their discretion, may request that the Remediation Contractor test the water being used for dust control and provide the analytical results for review.

#### 3.06 DISPOSAL

- A. Sweepings collected during pavement sweeping activities shall be managed on-site as waste material to be characterized for off-site disposal during active work.
- B. When the waste removal and handling activities on site are complete, the sweepings shall be properly disposed off-site at a licensed disposal facility.
- C. Transportation and disposal of project related waste streams, with the exception of soil destined for thermal treatment, will be paid by the Remediation Contractor. The Remediation Contractor shall coordinate transportation and disposal with the Owner approved transporter and disposal facility.

END OF SECTION

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## SECTION 01 58 13

### TEMPORARY PROJECT SIGNAGE

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. The sign shall be 4-feet high by 8-feet wide, and constructed of 3/4- to 1-inch medium density overlay plywood, with a resin coating on both sides. The edges shall be framed with a snap trim edge cap consisting of an aluminum channel with a polyvinyl coating. An aluminum sign of equal size may also be used. The sign's background shall be painted with white exterior oil base sign enamel. The second, third, fourth, and eighth lines shall have green letters. The first, fifth, sixth, and seventh lines shall have blue letters. The NYSDEC (Department) logo shall be painted as noted. All adhesives shall be solvent resistant.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 50 00 – Temporary Facilities and Controls
- B. Drawings
- C. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

##### 1.03 REFERENCES

- A. Lumber Standard: American Softwood Lumber Standard; U.S. Department of Commerce Product Standard PS20.
- B. Softwood Plywood Standard: Construction and Industrial; U.S. Department of Commercial Product Standard PS1.

##### 1.04 QUALITY ASSURANCE

- A. Painter's Qualifications: All paint shall be applied by a professional sign painter.

#### PART 2 – PRODUCTS

##### 2.01 MATERIALS

- A. Aluminum blanks shall be covered with vinyl sheeting to achieve background color, logo shall be silk screened on vinyl surface.
- B. Framing: Snap trim edge cap of polyvinyl coated aluminum channel.
- C. Paint

1. Background Enamel: Exterior, alkyd, glass enamel with primer as recommended by finish coat manufacturer.
  2. Lettering and Striping Enamel: Exterior, long oil, alkyd; high gloss enamel manufactured for lettering signs.
- D. Colors
1. Department logo: Pantone® Matching System (PMS) Color Chart 301 Blue PMS 355 Green
  2. Text: PMS 301 Blue  
PMS 355 Green
- E. Type: Caslon 540. Center each line with small caps and initial caps. See Attached Figure 01 58 13-1, Project Sign.

## 2.02 FABRICATION

- A. Paint both sides and all edges of sign with two coats of primer and one coat of background enamel.
- B. Paint lettering and striping with two coats of lettering enamel.
- C. Do not apply succeeding coat until previous coat has completely dried.
- D. Apply even coats of uniform thickness without brush marks, runs, or lap marks.
- E. Lettering and striping shall be uniform with sharp, neat profiles.

## PART 3 – EXECUTION

### 3.01 INSTALLATION

- A. Install sign within two weeks of Notice to Proceed.
- B. Install sign where directed by the Remediation Engineer.
- C. Fasten sign securely in a level position to two posts of sufficient size to adequately support the sign. Posts shall be set plumb. The center of the sign shall be located approximately 6-7 feet from ground level.



3.02 MAINTENANCE AND REMOVAL

- A. Maintain the signs plumb and level for the duration of the Work
- B. When directed, at the completion of the project, remove the signs.

END OF SECTION

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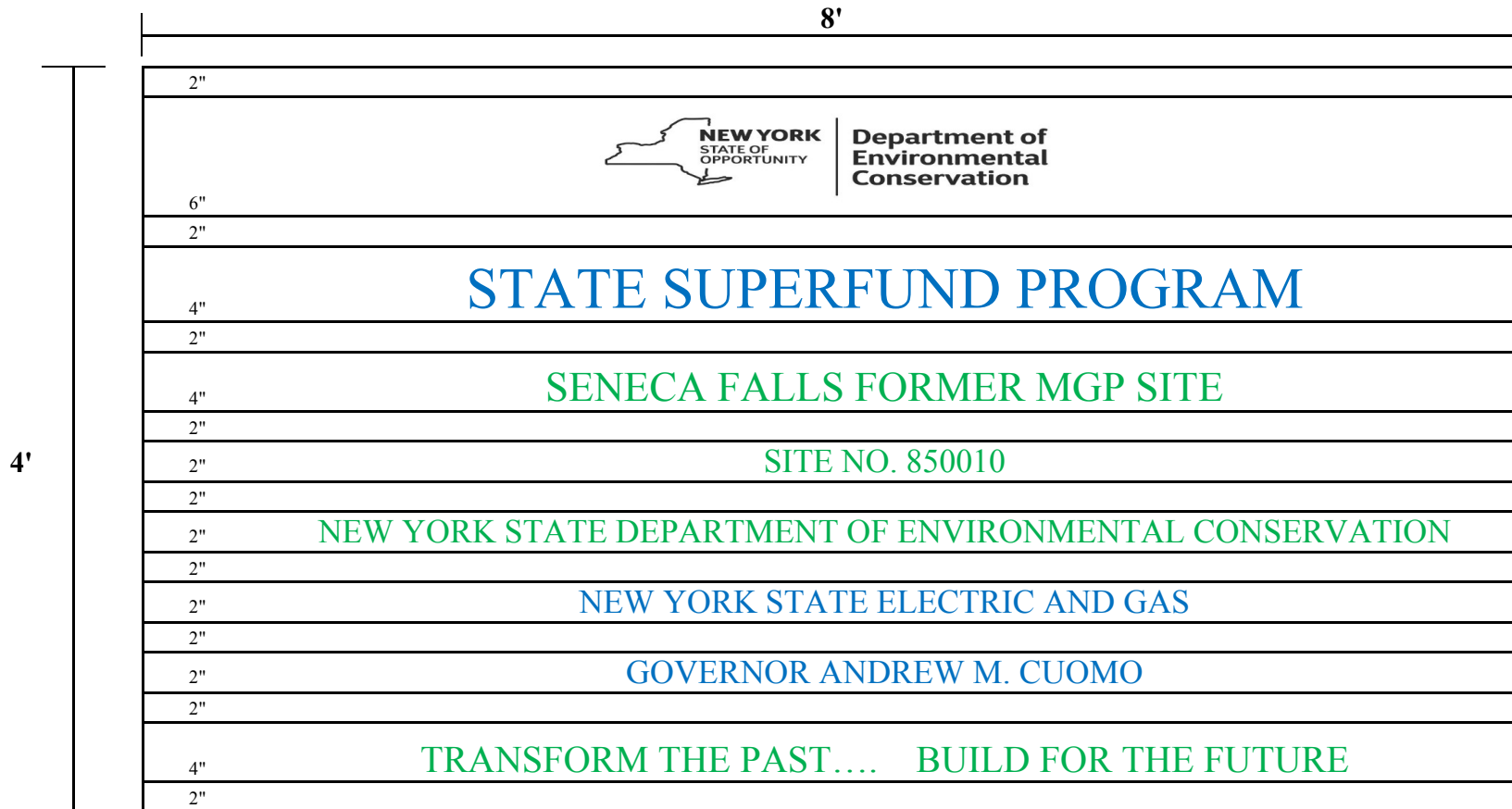


**FIGURE 01 58 13-1**  
**PROJECT SIGN**

## SECTION 01 60 00

### PRODUCT REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. This Section specifies administrative and procedural requirements governing the selection of products for use in the Project, including:
  - 1. Product list schedules.
  - 2. Substitution requests.
  - 3. Product selection.
  - 4. Product delivery, storage, and handling.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 11 00 – Summary of Work
- B. SECTION 01 30 00 – Administrative Requirements
- C. SECTION 01 33 00 – Submittal Procedures
- D. SECTION 01 40 00 – Quality Requirements
- E. Drawings
- F. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

##### 1.03 DEFINITIONS AND REFERENCE STANDARDS

- A. See Specification Section 01 42 00 – References for acronyms and definitions applicable to this Section.
- B. Definitions used in this Section are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.
- C. Products: Items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature that is current as of the date of the Contract Documents.
  2. "Foreign Products", as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside of the United States and its possessions; or produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of nor living within the United States and its possessions.
- D. Materials: Products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
- E. Equipment: A product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.
- F. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Remediation Contractor are considered requests for "substitutions." The following are not considered substitutions:
1. Revisions to Contract Documents requested by the Owner or Remediation Engineer.
  2. Specified options of products and construction methods included in Contract Documents.
  3. The Remediation Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

#### 1.04 EXISTING CONDITIONS

- A. See Specification Section 02 00 00 – Existing Conditions for information regarding site conditions.

#### 1.05 QUALITY ASSURANCE

- A. See Specification Section 01 40 00 – Quality Requirements for information regarding Quality Assurance.
- B. Source Limitations: Provide products of the same kind, from a single source.
1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Remediation Engineer for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.

- C. Compatibility of Options: When the Remediation Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- D. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
  - 1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
  - 2. Equipment Nameplates: Provide a permanent nameplate on each item of service connected or power operated equipment. Locate on an easily accessible surface, which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
    - a. Name of product and manufacturer.
    - b. Model and serial number.
    - c. Capacity.
    - d. Speed.
    - e. Ratings.

#### 1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
  - 1. Schedule delivery to minimize long term storage at the site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
  - 3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
  - 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.



6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
  7. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.
- B. All deliveries of material, equipment, etc., shall be made to the Remediation Contractor and accepted only by the Remediation Contractor during working hours. Owner's Representative or Remediation Engineer personnel will not receive or accept any material or equipment, etc., at any time.

#### 1.07 SUBMITTALS

- A. Requested information shall be submitted to the Remediation Engineer in accordance with the information outlined in Specification Section 01 33 00 – Submittal Procedures.
- B. Product List Schedule: Prepare a schedule ("Bill of Materials") showing products specified in a tabular form acceptable to the Remediation Engineer and Owner. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
1. Coordinate the product list schedule with the Remediation Contractor's Construction Schedule and the Schedule of Submittals.
  2. Form: Prepare the product-listing schedule with information on each item tabulated under the following column headings:
    - a. Related Specification Section number.
    - b. Generic name used in Contract Documents.
    - c. Proprietary name, model number and similar designations.
    - d. Manufacturer's name.
    - e. Installer's name and address.
    - f. Identification of product as one of the following:
      - 1) Product as specified
      - 2) Proposed Substitution
      - 3) Proposed Equal
  3. Submit completed product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.

C. Substitution Request Submittal:

1. Submit requests for substitution in accordance Section 01 33 00 – Submittal Procedures.
2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and/or Drawing Numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
  - a. Product Data, including Drawings and descriptions of products, fabrication, and installation procedures.
  - b. Samples, where applicable or requested.
  - c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance, and visual effect.
  - d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by others that will become necessary to accommodate the proposed substitution.
  - e. A statement indicating the substitution effect on the Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
  - f. Certification by the Remediation Contractor that the substitution proposed is equal to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Remediation Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
3. Remediation Engineer's Action: As defined in the Submittal Specification (Section 01 33 00), the Remediation Contractor shall notify Remediation Engineer of proposed substitution in the submittal. The Remediation Engineer will evaluate the data and send his recommendation of acceptance or rejection of the proposed substitution to the Owner and the Owner will notify the Remediation Contractor. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the original product specified by name.

## PART 2 - PRODUCTS

### 2.01 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
  - 1. Provide products complete with all accessories, trim, and finish, safety guards and other devices and details needed for a complete installation for the intended use and effect.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
  - 1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
  - 2. Semi-proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
    - a. Where products or manufacturers are specified by name, accompanied by the term "or equal" or "or equivalent," comply with the provisions concerning "Substitutions" to obtain approval for use of an unnamed product.
  - 3. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Remediation Contractor to use of these products only, the Remediation Contractor may propose any available product that complies with Contract requirements. Comply with provisions concerning "substitutions" to obtain approval for use of an unnamed product.
  - 4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
  - 5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

- a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
- 6. Compliance with Standards, Codes, and Regulations: Where the Specifications only requires compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
- 7. Visual Matching: Where Specifications require matching an established Sample, the Owner Representative's or Remediation Engineer's decision will be final on whether a proposed product matches satisfactorily.
  - a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.
- 8. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Owner or Owner's Representative's or Remediation Engineer will select the color, pattern, and texture from the product line selected.

## 2.02 SUBSTITUTIONS

- A. Conditions: The Remediation Contractor 's substitution request will be received and considered by the Remediation Engineer when one or more of the following conditions are satisfied, as determined by the Remediation Engineer; otherwise requests will be returned without action except to record noncompliance with these requirements.
  - 1. Extensive revisions to Contract Documents are not required.
  - 2. Proposed changes are in keeping with the general intent of Contract Documents.
  - 3. The request is timely, fully documented, and properly submitted.
  - 4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
  - 5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation, or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Remediation Engineer for redesign and evaluation services, increased cost of other construction by the Owner or subcontractors, and similar considerations.
8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Remediation Contractor certifies that the substitution will overcome the incompatibility.
9. The specified product or method of construction cannot be coordinated with other materials, and where the Remediation Contractor certifies that the proposed substitution can be coordinated.
10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Remediation Contractor certifies that the proposed substitution provide the required warranty.
11. The Remediation Contractor's submittal and Remediation Engineer's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION OF PRODUCTS:

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located, and aligned with other Work.
- B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until time of Substantial Completion.

END OF SECTION

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## SECTION 01 70 00

### EXECUTION REQUIREMENTS

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. Noise Requirements
- B. Dust, Vapor and Odor Requirements
- C. Canal Requirements
- D. Permitting Requirements
- E. Work Hours

##### 1.02 NOISE REQUIREMENTS

Due to the proximity of the Work area to the surrounding neighborhood and businesses, noise levels should be minimized.

Mitigate noise and obtain all permits necessary to facilitate work hours necessary to complete the project within the schedule provided. Coordinate all work hours with the Remediation Engineer.

##### 1.03 DUST, VAPOR AND ODOR REQUIREMENTS

Due to the proximity of the Work area to the surrounding neighborhood and businesses, dust and odors should be minimized. Refer to Section 01 57 26 – Dust Control and Section 44 32 00 – Vapor and Odor Control for requirements.

##### 1.04 CANAL REQUIREMENTS

- A. Portions of the work are in the Seneca River and Canal, which is a navigable Water of the United States operated by the New York State Canal Corporation.
- B. An Occupancy and Work Permit is required for work within the Canal and along the bank.

#### 1.05 PERMITTING REQUIREMENTS

- A. The Design Engineer will obtain the following permits for the completion of Work:
1. New York state Department of Environmental Conservation/ United States Army Corps of Engineers (NYSDEC/USACE) "Joint Permit Application" (JPA), which includes:
    - a. USACE Section 10 Permit;
    - b. USACE Nationwide Permit 38 – Cleanup of Hazardous and Toxic Waste; and
    - c. NYSDEC Protection of Waters Permits.
  2. NYSDEC State Pollutant Discharge Elimination System (SPDES) General Construction Stormwater Permit.
  3. NYSDEC Floating Object Permit for warning signs, if required.
  4. Copies of permits will be provided to Remediation Contractor as they are obtained.
- B. The Remediation Contractor shall obtain the following permits for the completion of the Work
1. New York State Department of Transportation (NYSDOT) Highway Work Permit.
  2. New York State Canal Corporation Canal Occupancy and Work Permit
  3. Permits necessary for all building trades, if necessary (electrical, plumbing, etc.).
  4. Permits for temporary and replacement utilities, if necessary.
  5. Any other permits as required to execute the scope of work.

#### 1.06 WORK HOURS

All work shall be performed between the hours of 7:00 AM and 5:00 PM Monday through Friday, excluding all Federal, State and Local holidays. Saturday work may be permitted with a minimum of seven days advanced permission from the Owner and Remediation Engineer. Work hours for Saturday work shall be from 8:00 AM to 3:30 PM as approved by Remediation Engineer. Remediation Contractor shall submit to Remediation Engineer proposed project work hours. Remediation Contractor may modify the submitted project work hours with seven days advanced permission from the Owner and Remediation Engineer.

END OF SECTION

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## SECTION 01 71 23

### FIELD ENGINEERING

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

The Work to be performed under this Section includes, but is not limited to, the following items including all labor, materials, equipment and services incidental to Site work.

- A. General requirements
- B. Submittals
- C. Quality assurance
- D. Surveying

##### 1.02 RELATED SECTIONS

- A. SECTION 01 30 00 – Administrative Requirements
- B. SECTION 01 33 00 – Submittal Procedures
- C. SECTION 01 70 00 – Execution and Closeout Requirements
- D. Drawings
- E. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

##### 1.03 REFERENCE STANDARDS

- A. New York State Department of Transportation Land Surveying Standards and Procedures Manual, 2009.
- B. OSHA Standard 29 CFR, 1926 and 1918.
- C. USACE EM 1110-1-1000 Photogrammetric Mapping
- D. USACE EM-1110-1-1002 Survey Markers and Monumentation
- E. USACE EM-1110-1-1003 NAVSTAR Global Positioning System Surveying
- F. USACE EM-1110-1-1004 Deformation Monitoring and Control Surveying
- G. USACE EM-1110-1-1005 Topographic Surveying
- H. USACE EM-1110-2-1003 Hydrographic Surveying

- I. USACE EM-1110-1-2909 Geospatial Data and System, Tri-Services A/E/C Cadd Standards, Tri-Services Spatial Data Standards, Related Spatial Data Products

#### 1.04 REQUIREMENTS

- A. Perform all survey work on the corresponding project coordinate system (NAD 83). Elevations shall be based on NAVD 88 datum.
- B. The accuracy of all survey layout data shall be  $\pm 0.02$  foot horizontal and vertical.
- C. Furnish all stakes, templates, platforms, equipment, tools, and materials and labor as may be required in laying out any part of the Work.
- D. Execute the Work to the lines and grades established or indicated and maintain and preserve all stakes and other control points until authorized to remove them by the Remediation Engineer. If such marks are destroyed by or through negligence of the Remediation Contractor prior to their authorized removal, at the discretion of the Remediation Engineer, they shall be replaced by the Remediation Contractor at their expense.
- E. Survey data shall be provided to the Remediation Engineer/Owner in an AutoCAD drawing format:
  - 1. Establish separate layers according to category of data. For example, utilities in a unique layer, fencing on a separate unique layer, topographic contours on another separate unique layer, etc.
  - 2. All survey points and topographic contours should be inserted into the AutoCAD drawing at the correct coordinates and the elevations. For example, the topographic contour polyline for elevation 5 feet should be inserted in the drawing at elevation 5.
  - 3. Referenced AutoCAD drawings (XREFs) shall not be bound nor inserted into the drawing, but shall be left as attached XREFs.
  - 4. Colors for all drawing elements shall be set by layer.
- F. Submit an associated "points text file" in ASCII or xls format containing all survey data with all submittals.
- G. Prepare all topography at a 1.0-foot contour interval.
- H. Site control points/benchmarks have been set by the Remediation Engineer/Owner for Remediation Contractor's use during construction.

#### 1.05 SUBMITTALS

- A. Submit name, address, telephone number, and a brief summary of the hydrographic survey experience of Surveyor to Owner and Remediation Engineer before starting survey work.
- B. Submit evidence of Surveyor's Professional Liability insurance coverage to the Owner and Remediation Engineer before starting survey work.
- C. Submit a detailed plan describing the survey methods to be used during the Work. The plan shall include the equipment to be used, expected horizontal and vertical accuracies, and pertinent information to describe the methods, and results to be obtained. Field surveys shall not begin until these plans are approved.
- D. A complete layout plan of the dredging area showing the horizontal layout of all physical and electronic ranges to be used for horizontal control. Field surveys shall not begin until these plans are approved.
- E. Excavation/Dredge Survey: Topography/Hydrography
  - 1. An unsigned and unsealed draft electronic file shall be submitted for review and approval within two (2) days of "completing" an excavation or dredge area.
  - 2. Submit excavation surveys for individual excavation/dredge area identified on the Drawings.
  - 3. An unsigned and unsealed draft electronic file of all excavation and dredge areas on a consolidated plan shall be submitted for review and approval within two (2) days of "completing" all excavation/dredge areas.
  - 4. A final signed and sealed electronic file (pdf) of all completed excavations on a consolidated plan to be provided upon the approval of the draft submission.
  - 5. Electronic AutoCAD file (AutoCAD Version 2014 or newer).
  - 6. Bottom of excavation survey must be completed immediately upon the completion of each excavation area, to verify that target excavation elevations have been achieved. The Remediation Contractor shall bear the additional cost of water management, dust control, odor controls and any and all costs related to having the excavation open longer than is necessary.
  - 7. Prior to the Remediation Engineer's review and acceptance of the Topographic/Hydrographic Survey of the excavation/dredge areas, the Remediation Contractor will not begin any backfilling activities within the excavation limits. The Remediation Contractor shall not be entitled to recompense (time or money) due to a delay during this period. The survey shall be transmitted to the Remediation Engineer electronically and one full business day will be required to review the survey prior to authorization to backfill.



- F. As-Built Survey: Topography and Location
  - 1. An unsigned and unsealed draft electronic file (pdf) shall be submitted for review and approval.
  - 2. A final signed and sealed electronic file (pdf) to be provided upon the approval of the draft submission.
  - 3. Electronic AutoCAD file (AutoCAD Version 2014 or newer)
  - 4. Perform survey once site restoration is complete.
  - 5. Include locations of the following:
    - a. Horizontal and vertical extents of soil excavation, dredge, and in-situ solidification (ISS, including top and bottom elevation).
    - b. Horizontal extent of installed soil caps with subgrade and final grade elevations to verify cap thickness.
    - c. Elevation of groundwater encountered during the work.
    - d. Location of subsurface features including capped pipes abandoned in place.
    - e. Restoration surface features including, paved parking area, fencing and gates, landscaping specimens, erosion and sediment controls designated to remain and stormwater controls (filter sock, riprap, etc.).
    - f. Topographic survey of final restored site (upland and lowland) and hydrographic survey of final restored canal.
- G. An electronic copy of the Remediation Contractor's field notes, computations, and other survey records for the purposes of documentation and measurement for payment shall be submitted to the Remediation Engineer. This information shall be used in support of quantity measurement for progress and final payments.

#### 1.06 QUALITY ASSURANCE

- A. References shall be set and measurements taken using standard accepted surveying methods and equipment. Use only New York licensed and registered surveyors for the work.
- B. Remediation Contractor shall employ a Land Surveyor registered in the State of New York with at least three years of professional experience with specific experience in performing hydrographic surveys and acceptable to the Owner and Remediation Engineer. Surveyors are required to comply with all applicable health and safety requirements. Surveyor's onsite personnel shall be OSHA 40 hour trained.
- C. Maintain one copy of each document on site, available to Owner and Remediation Engineer for review throughout the Work.

1.07 EXAMINATION

- A. Pre-Construction Inspection.
  - 1. Visually identify existing conditions differing from what is shown on Drawing C-100.
  - 2. Compare utility mark outs to utilities shown on Drawing C-100.
  - 3. Report any discrepancies or differences in writing to the Remediation Engineer.

1.08 SURVEY REFERENCE POINTS

- A. Locate and protect survey control and reference points.
- B. Control datum for survey is noted on Drawing G-201.
- C. Protect survey control points prior to starting site work and preserve permanent reference points during construction, as necessary to complete the Work.
- D. Promptly report to Remediation Engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to the Remediation Engineer.

PART 2 – PRODUCTS

Not applicable.

PART 3 – EXECUTION

3.01 SURVEYING

- A. Prior to starting work on the Site, the Remediation Contractor shall confirm the initial site topography and bathymetry and the locations of primary and ancillary structures, landscaping features, property lines, and any easements in the area to be impacted by the work.
- B. The Remediation Contractor shall offset stake the corners of the area to be excavated or capped.
- C. All hydrographic surveys for this project shall follow the mandatory criteria given in EM 1110-2-1003 for the “Navigation and Dredging Support Surveys” class of survey as a minimum.
- D. Survey lines (ranges) shall be run at appropriate intervals to meet project survey requirements, with all subsequent surveys done on the same spacing, tracks and reference lines. Subcontractor survey will be at least 50 feet beyond the dredging limits.

- E. Survey the bottom of the excavations (not including the dredge areas) to document that the required soil removal depths/elevations were achieved to a tolerance of 0.1 feet. At a minimum, document survey point data at a frequency of one in every 100 square feet (10 feet by 10 feet) of excavation.
- F. Survey the vertical limit of dredge to document that the required sediment removal depths/elevations were achieved to a tolerance of 0.2 feet. At a minimum, document survey point data at a frequency of one in every 100 square feet (10 feet by 10 feet) of excavation.
- G. Additionally, any underground utilities encountered during the excavation work and not removed shall be surveyed and documented for future location. Key utilities include telephone, electrical power, storm and sanitary sewers, water, and gas piping.
- H. As necessary, prepare cross-sections, details, calculations and provide additional survey information as requested by the Remediation Engineer. Such additional information may include the calculation of excavation volumes for the purposes of confirming payment quantities.

### 3.02 STAFF GAUGE

- A. Install one staff gauge within the canal for use during construction.
- B. Staff gauge shall be commercially produced and contain highly visible markings.
- C. Staff gauges shall contain 0.1 foot gradations.
- D. Install the staff gauge so that a foot mark on the staff gauge is at a whole number elevation.
- E. Staff gauge shall be suitable to withstand water, wind and ice forces.

### 3.03 RECORD DRAWINGS

- A. The Remediation Contractor shall provide a complete set of record drawings for all constructed systems. The record drawings shall provide measured coordinates (X, Y and Z) of the systems and work constructed as part of this work. The record drawings shall be prepared and stamped by a Land Surveyor or Professional Engineer licensed in the State of New York. At a minimum, the record drawings shall contain the following:
  - 1. Pre and Post Excavation Limits Drawing:
    - a. Contour elevations for the existing and post excavation bottom of excavation not greater than 1.0 feet apart.
    - b. Elevations at the limits of the disturbance (both top of slope and toe of slope).
    - c. Horizontal excavation limits.

- d. The as-built topographic survey shall confirm that each disturbed area has been restored to pre-construction conditions and the specified requirements.
  - e. At a minimum, the finished surfaces shall be surveyed on a 20-foot by 20-foot grid, at similar locations as the pre-construction topographic survey.
- 2. Pre and Post Dredging Limits Drawing:
  - a. Contour elevations for the existing and post dredge channel bottom of the dredge areas not greater than 1.0 feet apart.
  - b. Elevations at the limits of the dredging (both top of slope and toe of slope).
  - c. Horizontal dredging limits.
  - d. At a minimum, the finished surfaces shall be surveyed on a 20-foot by 20-foot grid, at similar locations as the pre-construction bathymetric survey.
- 3. ISS Limits Drawing:
  - a. Contour elevations for the top and bottom of the completed ISS not greater than 1.0 feet apart.
  - b. Vertical ISS Limits.
  - c. Horizontal ISS limits.
  - d. At a minimum, the completed ISS shall be surveyed on a 20-foot by 20-foot grid.
- 4. As Built Drawing:
  - a. Drawing illustrating dimensions, locations, angles and elevations of construction and site features including Lowland Cover system limits, new monitoring wells, new fence and gates, new utility poles, and any other newly installed site feature.
  - b. Limits of work, spot elevations and surface contours of restored areas.

END OF SECTION

## SECTION 02 00 00

### EXISTING CONDITIONS

#### PART 1 - GENERAL

##### 1.01 SITE DESCRIPTION

- A. The Site was used as a manufactured gas plant (MGP) from 1856-1903. After that, the Site sat vacant as various parts of the plant were demolished from 1905 to 1944. The subsurface remnants of the gas holder remain in place and other building remnants can be expected.
- B. A commercial building was constructed in the 1960s or 1970s and was demolished in 2009. The building foundation remains.
- C. Work will occur on three parcels in Seneca Falls, New York (the Site):
  - 1. The Former MGP located at 187 Fall Street owned by New York State Electric & Gas Corporation (NYSEG);
  - 2. A vacant residential property to the east of the MGP at 185 Fall Street owned by NYSEG; and,
  - 3. A commercial property located to the west of the MGP at 193 Fall Street owned by a third party. NYSEG will obtain the appropriate access agreements for construction on this property.
- D. The Site is bounded by the Seneca River and Canal to the South, Fall Street to the north, a gas station to the west (193 Fall Street), and a single-family residence to the east (185 Fall Street).
- E. The Site has two distinct topographic levels. The Upland Area is the northern two-thirds of the site, adjacent to Fall Street. The Lowland Area to the south borders the Seneca Canal and is roughly 20 feet lower in elevation.
- F. The main site features of the Upland Area are a building slab and parking lot. The residential property at 185 Fall Street is also located on the Upland Area.
- G. The Lowland Area is vacant and wooded.
- H. Site access to the Lowland Area shall be via an access road between the Upland and Lowland areas. The access road requires improvements to support construction equipment and truck traffic.

### EXISTING CONDITIONS



## 1.02 DESCRIPTION OF WORK

- A. Prior to submitting a bid, the Remediation Contractor shall review and understand the information contained in the following documents:
  - 1. Issued for Construction Submission, including Contract Documents and Drawings and Specifications completed by Haley & Aldrich of New York and other Contract Documents.
  - 2. Haley & Aldrich of New York, Report on Remedial Design, December 2017.
  - 3. Haley & Aldrich of New York, Report on Pre-Design Investigation, March 2016. (included as an appendix to the Remedial Design).
  - 4. New York State Department of Environmental Conservation (NYSDEC), Record of Decision NYSEG – Seneca Falls MGP, March 2015.
  - 5. Boring Logs.
  - 6. Tabulated groundwater, surface water, soil, sediment and other chemical test data proximate to the Work Area.
  - 7. Other supplemental information supplied to the bidders by AVANGRID as part of the RFP.
- B. The subsurface and environmental conditions information presented in these documents, as applicable, are for information only and shall not be interpreted as a warranty of subsurface or environmental conditions whether interpreted from written text, test boring logs, test pits logs, chemical test results, or other data.
- C. Complete all Work in a manner to comply with applicable regulations.

## 1.03 RELATED SECTIONS

- A. SECTION 01 11 00 – Summary of Work
- B. SECTION 01 35 29 – Health and Safety Requirements
- C. Drawings
- D. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

## 1.04 EXISTING CONDITIONS

- A. Expect to encounter existing and remnant utilities, buried foundations, oversized debris and rubble, including concrete, brick, and wood.

1. A subsurface circular concrete structure was identified in the northern portion of the Upland Area parking lot, adjacent to the building floor slab. The structure was filled with debris to at least 15 feet below ground surface (bgs).
- B. Expect to encounter non-aqueous phase liquid (NAPL), oil-like material (OLM) and tar-like material (TLM) in soil and sediment.
- C. Any damage to existing site features and neighboring properties shall be repaired at Remediation Contractor's sole expense.
- D. Refer to Related Sections for conditions applicable to the scope of work outlined in those Sections.

#### 1.05 QUALITY ASSURANCE

- A. See Specification Section 01 40 00 – Quality Requirements for information regarding Quality Assurance.

#### 1.06 QUALIFICATIONS

- A. The subsurface data are provided to the Remediation Contractor for information. The Remediation Contractor shall interpret said data according to the Remediation Contractor's own judgment and shall understand that subsurface conditions may differ from those recorded in the reports or as shown on the test boring logs, test pit logs, or other subsurface explorations. The subsurface data represents the conditions at the sampling location at the time of exploration only. The Owner or the Design Engineer shall not be liable for any error or discrepancy in the information provided.

#### 1.07 SUBMITTALS

Not Used

#### PART 2 - PRODUCTS

Not Used

#### PART 3 - EXECUTION

Not Used

END OF SECTION

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## SECTION 02 41 16

### STRUCTURE DEMOLITION AND MANAGEMENT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. This Section provides procedures and requirements for demolition to be conducted during remediation.
- B. The Remediation Contractor shall undertake the following work:
  - 1. Demolition of existing concrete building slab and associated former building foundation.
  - 2. Demolition of asphalt pavement.
  - 3. Demolition of concrete masonry unit retaining wall.
  - 4. Demolition of remnant Manufactured Gas Plant (MGP) gas holder of unknown size and depth to at least 4 feet below the existing ground surface. Remove liquids contained in accordance with Section 02 70 00 – Construction Water Management.
  - 5. Demolition of other subsurface remnant Manufactured Gas Plant (MGP) structures.
  - 6. Removal of utility poles taken out of service (NYSEG will move conductors to new poles outside the project Work Limits).
  - 7. Demolition of unknown subsurface structures, as approved by the Remediation Engineer and Owner.
  - 8. Size reduction of construction and demolition debris for off-site disposal.
  - 9. Processing and segregating construction and demolition debris as required for off-site disposal and/or recycling.
  - 10. Saw cutting as required.
  - 11. Managing, handling, storing, and loading construction and demolition debris.
  - 12. Protection of existing structures to remain.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety Requirements
- B. SECTION 01 57 26 – Dust Control

- C. SECTION 02 00 00 – Existing Conditions
- D. SECTION 02 53 00 – Waste Transportation, Treatment, and Disposal
- E. Drawings
- F. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### 1.03 EXISTING CONDITIONS

- A. Refer to Section 02 00 00 – Existing Conditions for information regarding site conditions.
- B. Available groundwater, surface water, soil, sediment and other chemical test data proximate to the Work Area are provided in the documents listed in specification Section 02 00 00 – Existing Conditions.
- C. Former MGP Structures are shown on Drawing C-303.

#### 1.04 QUALITY ASSURANCE

- A. See Specification Section 01 40 00 – Quality Requirements for information regarding Quality Assurance.
- B. The Remediation Engineer will observe the Remediation Contractor's activities associated with the Work of this Section.

#### 1.05 SUBMITTALS

- A. Requested information shall be submitted to the Remediation Engineer in accordance with the information outlined in Specification Section 01 33 00 – Submittal Procedures.
- B. Qualifications: If subcontracting to a demolition firm, submit qualifications. A minimum of 5 years documented experience is required.
- C. Demolition Plan (Submittal Group 2): Prior to mobilization to Site, submit Demolition Plan as a component of the Technical Execution Plan for review to ascertain compliance with the requirements specified. The plan shall include written procedures and schedules as applicable:
  - 1. The methods and procedures which will be used to perform:
    - a. Protection of utilities
    - b. Removal of piping
    - c. Demolition/removal of known structures
    - d. Demolition/removal of unknown subsurface structures
    - e. Dust, vapor and odor control
  - 2. The sequencing and scheduling of abovementioned activities.

- D. Record Documents: Accurately record actual locations of capped utilities, if required.

#### 1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable local, State, and Federal codes and Owner requirements for demolition of structures, safety of adjacent structures and utilities, dust control, waste management, and runoff control.
- B. The Design Engineer will obtain select applicable permits and furnish them to the Remediation Contractor prior to the start of work. The Remediation Contractor will obtain other permits necessary for the completion of the Work. Refer to Section 01 70 00 – Execution and Closeout Requirements.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct roadways, sidewalks, hydrants without permits.
- E. Conform to procedures applicable when hazardous or contaminated materials are discovered.

#### 1.07 SEQUENCING AND SCHEDULING

- A. Sequence activities to complete demolition in the following order:
  - 1. Submit pre-mobilization documents to the Owner and Remediation Engineer.
  - 2. Install erosion control protection devices.
  - 3. Demolish structures as described on the Drawings.
  - 4. Demolish unknown structures encountered during earthwork, with concurrence and approval by the Owner or Remediation Engineer.
  - 5. Proceed with earthwork.
- B. Comply with Village requirements regarding haul traffic schedules and routes.

### PART 2 - PRODUCTS

#### 2.01 EQUIPMENT

- A. Provide personnel with personal protective equipment and clothing as described in the Remediation Contractor's Health and Safety Plan.
- B. Provide water source for dust control.



## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify that surfaces and the Site conditions are ready to receive work.

### 3.02 PREPARATION

- A. Erosion Controls shall be installed prior to initiating demolition work.
- B. Provide, erect and maintain temporary barriers as required.
- C. Make all necessary provisions including, but not limited to, retaining subcontractors and contacting local municipalities and utility companies.
- D. Conduct operations with minimum interference to public or private accesses. Maintain egress and access at all times.
- E. Spray work areas with water to minimize dust. Provide water source, hoses and water connections for this purpose.
- F. Control odors and vapors.

### 3.03 DEMOLITION AND REMOVAL

- A. Complete demolition activities as described in the Drawings and Specifications or, in the case of unknown structures, as approved by the Owner or Remediation Engineer.
- B. Segregate, live load or stage demolition material as needed to expedite demolition.
- C. Break demolition debris into sizes suitable for transportation and disposal in accordance with disposal facility requirements.
- D. Load demolition debris directly into transport vehicles/containers as frequently as possible to expedite project schedule. Do not bury materials on Site.
- E. At the end of each day's work, leave work in a safe and secure condition so that unauthorized admittance is prohibited.
- F. Remove materials as work progresses.
- G. Remove temporary work.

### 3.04 WASTE HANDLING

- A. Handle wastes in accordance with Section 02 53 00 – Waste Transportation, Treatment, and Disposal.
- B. Handle wastes generated according to applicable rules and regulations.

- C. Load all waste material in Remediation Contractor provided trucks and/or containers. Remediation Engineer is responsible for transportation, disposal or recycling of all waste material generated except the following for which transportation and disposal will be direct contracted by the Owner:
1. Waste material suitable for and requiring off-site thermal treatment and destruction.
  2. Asbestos wrapped pipe
  3. Scrap Metal for recycling (at the Owner's discretion depending on the type and quantity of scrap metal generated)

END OF SECTION

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## SECTION 02 51 29

### DECONTAMINATION PROCEDURES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Furnish all labor, equipment, materials, and supervision to decontaminate equipment and vehicles leaving the Site or active work area as required.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety Requirements
- B. SECTION 01 50 00 – Temporary Facilities and Controls
- C. SECTION 01 57 26 – Dust Control
- D. SECTION 02 00 00 – Existing Conditions
- E. SECTION 02 41 16 – Structure Demolition and Management
- F. SECTION 02 61 13 – Piping Removal and Management
- G. SECTION 02 61 23 – Excavation and Management
- H. SECTION 02 70 00 – Construction Water Treatment System
- I. SECTION 44 32 00 – Vapor and Odor Control
- J. Drawings
- K. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

##### 1.03 EXISTING CONDITIONS

- A. Refer to Section 02 00 00 – Existing Conditions for information regarding site conditions.
- B. Available groundwater, surface water, soil, sediment and other chemical test data proximate to the Work Area are provided in the documents listed in specification Section 02 00 00 – Existing Conditions.

##### 1.04 QUALITY ASSURANCE

- A. See Specification Section 01 40 00 – Quality Requirements for information regarding Quality Assurance.

- B. The Remediation Engineer or Owner will observe the Remediation Contractor's activities associated with the Work of this Section.

#### 1.05 SUBMITTALS

- A. Requested information shall be submitted to the Remediation Engineer in accordance with the information outlined in Specification Section 01 33 00 – Submittal Procedures.
- B. A Decontamination Plan describing procedures for decontaminating small equipment and hand tools; personal protective equipment; and large equipment and vehicles shall be included as a component of the Technical Execution Plan.
- C. Shop drawings of the decontamination pad shall be submitted to the Remediation Engineer for approval.
- D. Product data on the materials used to construct the decontamination pad shall be submitted to the Remediation Engineer for approval.

#### PART 2 - PRODUCTS

Not applicable.

#### PART 3 - EXECUTION

##### 3.01 GENERAL

- A. All equipment and materials shall be used in a manner to minimize the potential for, and extent of, any unnecessary contamination.
- B. Any earthwork equipment that performs intrusive activities in any part of the construction area or is used to handle MGP-impacted soils shall be decontaminated prior to leaving the Site or prior to leaving the impacted Work Zone/Exclusion zone or prior to moving across a "clean" portion of the Site.
- C. All site traffic will be performed in accordance with the Traffic Control Plan included in the Technical Execution Plan, so as to avoid cross-contamination, with clean trucks remaining outside of the impacted areas, and kept separate from the potentially contaminated truck traffic.
- D. Careful attention to cross-contamination is warranted. Delivery vehicles should not enter contaminated areas, to avoid tracking MGP-impacted soil.
- E. Dry "gross" removal of soils on earthmoving or delivery vehicles within or over the area to be excavated is preferred over a washing approach.
- F. Daily work zones including the Exclusion Zone, Contamination Reduction Zone and Support Zone shall be designated each work day by the Remediation Engineer at the morning tailboard safety meeting. Locations and demarcations of the work zone will be documented and communicated to Site personnel at the meeting.

### 3.02 DECONTAMINATION PAD

- A. Construct a temporary decontamination pad in accordance with the Drawings. The decontamination pad shall provide a watertight surface for draining and collecting rinse waters, and shall support all equipment requiring decontamination.
- B. The decontamination pad shall meet the following criteria:
  - 1. The pad shall be constructed with an impervious, compatible material, and shall be free of cracks or other potential leakage routes (minimum 40 mil HDPE liner).
  - 2. The pad shall be designed, through size or other means, to collect all solids, liquid and semi-liquid material generated or collected during decontamination or other related activities.
  - 3. Pad shall be sized to meet Remediation Contractor's production requirements. The details (size and location) provided in the Drawings are for guidance only.

### 3.03 EQUIPMENT DECONTAMINATION

- A. Thorough brushing down of equipment shall be conducted within the work area prior to final rinsing above the decontamination pad so as to minimize the amount of soils and sediments collected in the wash waters.
- B. All vehicles and equipment leaving the Site shall be cleaned and rendered free of any visible solids. This will be accomplished by washing with water until visible solids are no longer present on the piece of equipment. Steam cleaners, water jets, scrub brushes and non-phosphate detergent may be used in an approved manner to aid in the removal of solids and the decontamination of equipment. All washing activities shall take place on the decontamination pad unless otherwise approved by Remediation Engineer.
- C. No detergents or cleaning fluids containing surfactants shall be used for decontamination. Surfactants in the collected decontamination fluid may foul the on-site construction water treatment system.
- D. The undercarriage and wheels of all trucks and construction vehicles/equipment shall be decontaminated prior to departing the work area.
- E. Decontamination of equipment is required if it is moved from an area with impacted material to an area identified as clean.
- F. Equipment washing shall be conducted in a manner to minimize the generation of decontamination waters. The decontamination water will be collected, transported, and discharged in accordance with Section 02 70 00 – Construction Water Management.
- G. G. Clean loading techniques (e.g., use of poly sheeting draped over the side of containers, installation of gravel or matting in loading areas) shall be employed by the Remediation Contractor to minimize the transfer of contaminated material and or fugitive soil/dust to over the road trucks and containers.



### 3.04 DISPOSAL OF DECONTAMINATION RESIDUALS

- A. The decontamination pad shall be completely dismantled and disposed off-site, along with any collected residuals from the decontamination process, in a manner consistent with all applicable local, state, and federal regulations, and as approved by the Remediation Engineer.
- B. Prior to the removal of decontamination materials from the site for off-site disposal, the Remediation Engineer shall be responsible for sampling and characterizing the material for off-Site disposal to meet the requirements of the Owner and the selected disposal facility.
- C. Store, handle, and transport contaminated materials in accordance with all applicable local, state, and federal regulations, site requirements, and Section 02 53 00 – Waste Transportation, Treatment, and Disposal.
- D. Contaminated or potentially contaminated materials shall not be removed from the Site by the Remediation Contractor without prior notification to, and the approval of, the Remediation Engineer and Owner.

END OF SECTION

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## SECTION 02 53 00

### WASTE TRANSPORTATION, TREATMENT, AND DISPOSAL

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Properly transport and dispose of all items, which can be generally classified as non-hazardous wastes removed from the Site, to appropriate disposal facilities. This includes existing wastes as well as the waste generated by the Remediation Contractor during construction.
- B. The Remediation Engineer, in consultation with the Owner, shall be responsible for sampling and laboratory analysis of project related waste streams for waste characterization purposes. Sample results will be analyzed on an expedited 48-hour turnaround time and will be provided by the Remediation Engineer for the Owner and Remediation Contractor use in a tabular format, with comparison to appropriate comparison criteria, 72-hours after sample collection. Preparation of waste profiles for the designated Treatment, Storage and/or Disposal Facility (TSDF), as needed, will be the responsibility of the Remediation Engineer in consultation with the Owner.
- C. The Remediation Contractor shall be held accountable for assuring that all manifesting, loading, containerization transportation and disposal requirements of the TSDF, Solid Waste Management Facility (SWMF), Publicly Owned Treatment Works (POTW), or reclamation/recycling/salvage facility, Federal, State, and local governments are complied with and properly documented.
- D. The Remediation Contractor shall manage contaminated materials in a manner that ensures the protection of health, safety, public welfare, and the environment.
- E. This Section includes a description of requirements and responsibilities for proper transportation, treatment, and disposal of waste materials removed and identified for off-site disposal including the following materials:
  - 1. Land Clearing Debris from above existing ground surface.
  - 2. Grubbings, stumps and below grade roots and vegetative debris
  - 3. Sanitary Waste
  - 4. General Refuse (Solid Waste)
  - 5. Remediation-related Solid Waste
  - 6. Construction and Demolition Debris
  - 7. MGP-Impacted Construction and Demolition Debris

8. MGP-Impacted Soil
9. Asbestos Wrapped Pipe
10. Pipe Liquid Contents (if collected and segregated separately from construction water)
11. Construction Water
12. Scrap Metal
13. ISS Spoils

#### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety
- B. SECTION 01 50 00 – Temporary Facilities and Controls
- C. SECTION 01 57 26 – Dust Control
- D. SECTION 02 00 00 – Existing Conditions
- E. SECTION 02 41 16 – Structure Demolition and Management
- F. SECTION 02 51 29 – Decontamination Procedures
- G. SECTION 02 61 13 – Piping Removal and Management
- H. SECTION 02 61 23 – Excavation and Management
- I. SECTION 02 70 00 – Construction Water Treatment System
- J. SECTION 31 10 00 – Clearing and Grubbing
- K. SECTION 31 23 19 – Dewatering
- L. SECTION 44 32 00 – Vapor and Odor Control
- M. Drawings
- N. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### 1.03 REFERENCE STANDARDS

- A. HAZWOPER: OSHA Regulation 29 CFR 1910.120

#### 1.04 EXISTING CONDITIONS

- A. Refer to Section 02 00 00 – Existing Conditions for information regarding site conditions.
- B. Available groundwater, surface water, soil, sediment and other chemical test data proximate to the Work Area are provided in the documents listed in specification Section 02 00 00 – Existing Conditions.
- C. In-situ waste characterization analytical results are included in the Pre-Design Investigation report (attachment to the Remedial Design Report, H&A, May 2017) and other project documents included with the bid package.
- D. Designated Disposal Facility Acceptance to be provided to the Remediation Contractor with Notice to Proceed. Waste Profiles will be provided to Remediation Contractor by the Remediation Engineer as part of project kick off and mobilization tasks and as the project progresses.

#### 1.05 QUALITY ASSURANCE

- A. See Specification Section 01 40 00 – Quality Requirements for information regarding Quality Assurance.
- B. The Remediation Engineer will observe the Remediation Contractor's activities associated with the Work of this Section.

#### 1.06 SUBMITTALS

- A. Requested information shall be submitted to the Remediation Engineer in accordance with the information outlined in Specification Section 01 33 00 – Submittal Procedures.
- B. Waste Delivery Summary: Provide a weekly summary of the waste sent off-site for the previous week. The summary should include at a minimum:
  - 1. Delivery Date
  - 2. Manifest Number
  - 3. Net weight delivered per truck
  - 4. Total tonnages and/or quantities for the week broken down by waste stream.
- C. Weight Slips (Submittal Group 4): Copies of landfill certified weight slips will be required as documentation of quantities for payment of material transport and disposal costs.
- D. Certificates of Treatment, Disposal or Destruction: Provide the Remediation Engineer a copy of signed received delivery manifests within 2 days of receipt by the Remediation Contractor and Certificates of Treatment/Disposal/Destruction prior to the Final Application for Payment.

- E. The Remediation Contractor shall prepare and provide appropriate shipping paperwork (e.g., manifests) for the waste stream and selected TSDF. The Remediation Engineer shall review and sign the shipping paperwork as the Owner's designated Agent prior to shipping waste material off-site.

## PART 2 - PRODUCTS

Not applicable.

## PART 3 - EXECUTION

### 3.01 MATERIAL TRANSPORT AND TREATMENT/DISPOSAL

- A. The Remediation Contractor shall be responsible for the on-site storage, on-site transportation, and on-site handling of all materials, both contaminated and non-contaminated, in accordance with all applicable local, state, and federal regulations.
- B. No materials, contaminated materials, or potentially contaminated materials shall be removed from the Site by the Remediation Contractor without prior notification to, and approval of, the Remediation Engineer and Owner.
- C. Waste generated as a result of the Work shall be segregated into separate waste classifications and disposed of as described herein. The Remediation Contractor shall be responsible for off-site transportation and disposal of all waste classifications except for waste designated for thermal treatment at ESMI, asbestos wrapped pipe, and scrap metal. For these exceptions, the Owner will transport and dispose or treat off site.
  - 1. Land Clearing Debris from above existing ground surface may be chipped and re-used on site with the approval of the Remediation Engineer. Excess material may be composted or recycled at an off-site facility, subject to prior approval of the Owner.
  - 2. Grubbings, stumps, roots and vegetative debris from below existing ground surface shall be disposed at Seneca Meadows Landfill.
  - 3. Sanitary Waste from on-site sanitary facilities shall be collected and disposed at a POTW by a licensed sewage/septage company.
  - 4. General Refuse (Solid Waste) generated as a result of the Work or the on-site workers shall be disposed with solid waste at Seneca Meadows Landfill or other appropriate disposal location as identified by the Remediation Contractor.
  - 5. Remediation-related Solid Waste including worker PPE, construction water treatment system residual carbon and resin, and sorbent booms associated with in water work shall be treated and disposed at ESMI or disposed as solid waste at Seneca Meadows Landfill.

6. Construction and Demolition Debris shall be disposed or recycled off-site as appropriate. Concrete and asphalt shall be sized to 4-ft by 4-ft blocks for acceptance at Seneca Meadows Landfill or other appropriate disposal location as identified by the Remediation Contractor. Bricks shall be disposed with solid waste at Seneca Meadows Landfill or other appropriate disposal location as identified by the Remediation Contractor.
  7. MGP-Impacted Construction and Demolition Debris shall be disposed at Seneca Meadows Landfill.
  8. MGP-Impacted Soil shall be treated and disposed at Environmental Soil Management Inc. (ESMI) or disposed at Seneca Meadows Landfill.
  9. Asbestos Wrapped Pipe shall be set aside with minimal disturbance to the wrap, secured in a temporary storage area on a polyethylene lined surface, and covered with a polyethylene cover. The Owner will arrange necessary sizing for transport, and off-site transportation and disposal.
  10. Pipe Contents removed from the site shall be evaluated at the time of generation for off-site disposal at a suitable TSDF, approved by the Owner.
  11. Construction Water generated during the work shall be treated on-site and discharged to the Seneca River (Seneca-Cayuga Canal) under a temporary State Pollution Discharge Eliminate System (SPDES) permit. Construction water not able to be treated due to concentration of contaminants or limited treatment system capacity shall be disposed off-site at a POTW or recycling facility identified by the Remediation Contractor.
  12. Scrap Metal shall be sized for recycling at an off-site facility selected by the Owner. The Owner will provide containers for metal debris storage and disposal.
  13. ISS Spoils shall be treated and disposed at ESMI or disposed at Seneca Meadows Landfill.
- D. Remediation Contractor is responsible for any and all trucking violations including but not limited to speeding, overweight, remediation of overturned truck and any other violations. Drivers or transportation firms incurring transport violations or complaints from neighbors may be removed from the project at the discretion of the Remediation Engineer or Owner.
- E. Haul truck drivers must remain in their cabs with windows closed whenever truck is being loaded with waste, or is otherwise located in an exclusion zone or contamination reduction zone. Outside of these zones, if drivers leave their cabs, they must wear appropriate PPE and be escorted by a Remediation Contractor's representative.
- F. Truck decontamination area and soil load out pads shall be constructed and maintained in accordance with Section 01 50 00 - Temporary Facilities and Control.



- G. All haul truck and associated equipment shall be decontaminated before leaving the Site in accordance with Section 02 51 29 – Decontamination Procedures.
- H. Trucks shall not queue or park on any public or private streets. Haul trucks shall not arrive before site operations begin at 7:00 a.m.
- I. Cover all trucks leaving the site and prevent debris from spilling from trucks or being tracked off-site.
- J. All trucks shall be in good condition with no holes or perforations in the body. Remediation Engineer reserves the right to reject haul trucks deemed to be in poor condition, or otherwise unsuitable for hauling contaminated soil/ materials.
- K. Develop a contingency plan for trucking-related incidents and for response to material spills once material leaves the Site.

### 3.02 WASTE MANIFESTING

- A. Coordinate manifest requirements with Remediation Engineer. Remediation Contractor shall provide manifests. Remediation Engineer will review and sign manifests as agent for the Owner.
- B. Any trucks hauling ISS and MGP contaminated waste must possess a valid New York State Part 364/381 Waste Transporter Permit.

END OF SECTION

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## SECTION 02 61 13

### PIPING REMOVAL AND MANAGEMENT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. This Section provides procedures and requirements for removal and management of abandoned gas utilities and MGP-related piping. These procedures include, but are not limited to, methods of excavation, cutting, handling, and stockpiling.
- B. Piping to be removed shall include, but is not limited to, the piping indicated on Drawing C-303. Additional former MGP piping encountered during pipe removal or other construction activities (excavation/ISS) shall be removed in accordance with these Specifications.
- C. Manage contaminated materials in a manner that ensures the protection of health, safety, public welfare, and the environment.
- D. Work to be performed under this Section includes, but is not limited to, the following items including all labor, materials, equipment and services necessary and incidental to the proper execution of Work:
  - 1. Prepare submittals.
  - 2. Carefully dig to locate and expose former gas service and MGP-related piping, in accordance with Section 02 61 23 – Excavation and Management. If former gas service is not known to be abandoned, employ soft dig methods to locate and expose the gas pipe.
  - 3. Containerization of pipe liquid contents. Containers (e.g., drums) to be provided by Remediation Contractor.
  - 4. Removal and cutting of pipes into lengths suitable for transport and disposal requirements.
  - 5. Stockpile and manage pipe segments in a manner that ensures the protection of health, safety, public welfare and the environment including all necessary dust, odor, and emissions controls.
  - 6. Handle, store, load, and transport pipe sections in compliance with the provisions of all applicable federal, state and local laws, regulations and bylaws.
  - 7. Provide transportation and disposal at an Owner-approved treatment and/or disposal facility. Owner to pay transportation and disposal directly for asbestos wrapped pipe, if encountered.

8. Characterization of containerized pipe liquids to be performed by the Remediation Engineer in consultation with the Owner.

#### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety
- B. SECTION 01 50 00 – Temporary Facilities and Controls
- C. SECTION 01 57 26 – Dust Control
- D. SECTION 02 00 00 – Existing Conditions
- E. SECTION 02 41 16 – Structure Demolition and Management
- F. SECTION 02 53 00 – Waste Transportation, Treatment, and Disposal
- G. SECTION 02 61 23 – Excavation and Management
- H. SECTION 44 32 00 – Vapor and Odor Control
- I. Drawings
- J. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### 1.03 REFERENCE STANDARDS

- A. HAZWOPER: OSHA Regulation 29 CFR 1910.120

#### 1.04 EXISTING CONDITIONS

- A. Refer to Section 02 00 00 – Existing Conditions for information regarding Site conditions.
- B. Available groundwater, surface water, soil, sediment and other chemical test data proximate to the Work Area are provided in the documents listed in specification Section 02 00 00 – Existing Conditions.
- C. Former MGP structures and previous utility location mark outs are shown on Drawing C-303.

#### 1.05 QUALITY ASSURANCE

- A. See Specification Section 01 40 00 – Quality Requirements for information regarding Quality Assurance.
- B. The Remediation Engineer will observe the Remediation Contractor's activities associated with the Work of this Section.

#### 1.06 SUBMITTALS

- A. Requested information shall be submitted to the Remediation Engineer in accordance with the information outlined in Specification Section 01 33 00 – Submittal Procedures.
- B. Weight Slips: Copies of landfill certified weight slips will be required as documentation of quantities for payment of material transport and disposal costs.

#### PART 2 - PRODUCTS

Not applicable.

#### PART 3 - EXECUTION

##### 3.01 ON-SITE MATERIALS MANAGEMENT

- A. General: Soil excavated to expose and facilitate pipe removal shall be handled and stored in accordance with Section 02 61 23 – Excavation and Management. As pipe sections are removed from an excavation, they shall be cleaned of adhered soil through dry brushing or wet brushing with water spray (as necessary).

##### 3.02 PIPE CONTENTS DEWATERING

- A. Dewater all pipes prior to removal. Pipe liquid contents shall be containerized separate from other construction water if by visual or olfactory determinations the liquids are different than other construction water.
- B. Dewater pipes in a manner that insures that pipe liquid contents are not discharged into the excavation.
- C. Complete dewatering of pipes may not be required if hydraulic connectivity with groundwater is apparent and cessation of dewatering is approved by the Remediation Engineer.

##### 3.03 MATERIALS STORAGE

- A. Segregate pipe materials (i.e., clean piping for recycling, MGP-impacted piping for disposal, possible asbestos-wrapped piping, etc.) for disposal in consultation with the Remediation Engineer.
- B. Store removed pipe segments on-site in designated lined storage areas approved by the Remediation Engineer. Do not remove regulated material from the Site for disposal or treatment without approval of the Remediation Engineer and Owner and appropriate Bills of Lading/Manifests for off-site disposal.
- C. Inspect stockpiles and roll-offs daily during construction and record inspection observations in a daily logbook for submittal to the Remediation Engineer on a weekly basis.

### 3.04 MATERIAL TRANSPORT AND DISPOSAL

- A. Loading, transport, treatment, and/or disposal of removed pipes, and liquid pipe contents shall be done in accordance with Specification Section 02 53 00 - Waste Transportation, Treatment, and Disposal.

END OF SECTION

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## SECTION 02 61 23

### EXCAVATION AND MANAGEMENT

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Work to be done under this Section includes, but is not limited to, providing all labor, materials, equipment, and incidentals as necessary to conduct and complete the Work specified herein and shown on the Drawings.
  - 1. Excavate all materials, including soil, boulders, grubblings and all other materials as necessary at the locations and to the depths shown on the Drawings. At locations of restoration plantings, over-excavate as needed to accommodate
  - 2. Preserve and protect existing and new site improvements during the Work including, but not limited to, the residential structure at 185 Fall Street.
  - 3. Sequence Work to minimize excavation time, minimize stockpile size and residence time and schedule timely arrival and placement of clean backfill.
  - 4. Control airborne dust to below visible levels, required regulatory levels, and as required by Section 01 57 26 – Dust Control.
  - 5. Control vapor and odors emanating from soil during excavation as necessary in accordance with Section 44 32 00 – Vapor and Odor Control.
  - 6. Manage excavated materials in accordance with Section 02 53 00 – Waste Transportation, Treatment, and Disposal.
  - 7. Decontaminate excavation equipment in accordance with Section 02 51 29 – Decontamination Procedures.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety Requirements
- B. SECTION 01 57 26 – Dust Control
- C. SECTION 02 00 00 – Existing Conditions
- D. SECTION 02 41 16 – Structure Demolition and Management
- E. SECTION 02 61 13 – Piping Removal and Management
- F. SECTION 31 10 00 – Clearing and Grubbing
- G. SECTION 31 23 23.13 – Backfill



- H. SECTION 31 25 00 – Erosion and Sedimentation Control
- I. SECTION 33 29 00 – Well Abandonment
- J. SECTION 44 32 00 – Vapor and Odor Control
- K. Drawings
- L. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### 1.03 REFERENCE STANDARDS

- A. 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Permits
- B. New York State Department of Environmental Conservation, New York Standards and Specifications for Erosion and Sediment Controls, 2005.
- C. New York State Department of Environmental Conservation "Technical Guidance for Site Investigation and Remediation"; DER-10 (NYSDEC DER-10); May 3, 2010.
- D. Seneca County Soil & Water Conservation District.
- E. American Society of Civil Engineers, Design and Construction of Urban Stormwater Management Systems, 1992.

#### 1.04 SUBMITTALS

- A. Requested information shall be submitted to the Remediation Engineer in accordance with the information outlined in Specification Section 01 33 00 – Submittal Procedures.
  - 1. Confirmation notices from DigSafelyNY.
  - 2. Monthly reconfirmation notices from DigSafelyNY.
  - 3. Report from a private utility locating service identifying probable locations of underground utilities.
  - 4. Moisture conditioning/bulking agent manufacturer's product information and safety data sheet for each product to be delivered to the site.

#### PART 2 – PRODUCTS

Not applicable.

## PART 3 – EXECUTION

### 3.01 GENERAL

- A. Authorized excavation includes excavation of soil, to the vertical and horizontal limits shown on the Drawings, and as defined by the Design Engineer and other materials part of these Contract Documents. Supply sufficient excavation equipment to perform the Work.
- B. Unauthorized excavation consists of excavation of on-site materials beyond the proposed limits of excavation, as defined by the Design Engineer, without specific direction of the Remediation Engineer. Unauthorized excavation also consists of excavation of other on-site soils and materials not specifically addressed in these Contract Documents, or any removal/disturbance/damage of soils on adjacent, off-site properties. Unauthorized excavation and resultant remedial Work shall be at the Remediation Contractor's expense. Unauthorized excavations shall be backfilled and compacted using the same procedures as specified for authorized excavations of same classification at the Remediation Contractor's Expense.
- C. All work shall be performed to minimize the generation of air emissions in accordance with Sections 01 57 26 – Dust Control and 44 32 00 – Vapor and Odor Control.
- D. The quantity of exposed soil shall be minimized by the coordination of work and construction sequencing. Inactive areas shall be temporarily stabilized within 14 days.
- E. Backfill shall be performed in accordance with Section 31 23 23.13 – Backfill.
- F. Restoration shall be performed in accordance with Section 32 30 00 – Site Restoration.

### 3.02 PREPARATION

- A. Complete underground utility clearance before performing any invasive ground penetrating activities such as grubbing, grading, subsurface structure demolition or excavating.
  - 1. Contact and coordinate with DigSafelyNY to mark out known subsurface utilities within the identified limit of work.
  - 2. Procure the services of a private utility locating service to investigate, map, and mark out the locations of potential subsurface utilities within the limit of work.
- B. Plan invasive ground activities (i.e., excavation) in consideration of the subsurface utility clearance work.
  - 1. For marked locations of known active utilities, excavate using means and methods that ensure the health and safety of the workers and the protection of

the utility that is designated to remain active. Do not disrupt active utility services without prior coordination with the utility owner.

2. For marked locations of known inactive utilities as confirmed by the utility owner, excavate using means and methods that prevent uncontrolled breakage of the utility and release of any residual contents. Determine if any abandoned/inactive pipes are coated with hazardous materials such as asbestos or contain any residual liquids or solids. Handle residual liquids, solids, or pipes with asbestos wraps in accordance with Section 02 53 00 – Waste Transport, Treatment, and Disposal.
3. For marked locations of potential utilities, select excavation means and methods to ensure careful uncovering of the utility to facilitate additional investigation for determination of the type of utility and or status (abandoned/inactive or active).

### 3.03 EXCAVATION

- A. All excavated material shall be classified, managed, and if required, stockpiled and disposed of off-site, in accordance with Section 02 53 00 – Waste Transportation, Treatment, and Disposal.
- B. Prior to excavation, demolish surface structures as shown on the Drawings and specified in Section 02 41 16 – Structure Demolition and Management.
- C. Remove former MGP structures and MGP-impacted soils in the Upland Area and 185 Fall Street to the approximate depths shown on the Drawings.
- D. Remove abandoned pipes encountered in the excavation in accordance with Section 02 61 13 – Piping Removal.

### 3.04 STABILITY OF EXCAVATIONS

- A. Slopes should not be cut greater than 1.5 horizontal to 1 vertical or as deemed suitable by an excavation competent person. Side slopes of excavations shall also comply with local codes and/or ordinances having jurisdiction, such as OSHA. Shore and brace in accordance with safe and acceptable engineering practice and local building codes and conditions where sloping is not possible because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- B. Upland ISS Areas: Along the Fall Street right-of-way, utilize an ISS support wall for support of excavations as detailed on Drawing C-400.

- C. Residential property excavation (185 Fall Street):
  - 1. Excavation adjacent to the residential building:
    - a. Excavate test pits to determine the geometry and depth of the existing building foundation at locations shown on Drawing C-400 prior to initiating full scale excavation.
    - b. Maintain a standoff distance of 5 feet from the outside face of the foundation wall for full depth excavation.
    - c. Utilize trench boxes as described and shown on Drawings C-400 and C-404 to maintain stability of excavations.
    - d. Within 5 feet of the building foundation excavate to 2 feet below existing ground surface.
    - e. Do not excavate within the excavation exclusion zone as determined by the foundation depth based on the test pit findings and the criteria shown on Drawing C-404.
  - 2. Excavation adjacent to the residential east property line:
    - a. Utilize trench boxes as described and shown on Drawings C-400 and C-404 to maintain stability of excavations without encroaching on the property to the east
- D. Canal Bank:
  - 1. Excavate a stable cut back slope from the edge of water into the lowland area to support the depth of dredge (between 4 and 6 feet) required along the bank.
  - 2. Stability of excavation shall consider the saturated condition of the soils and interface with flowing canal water.
  - 3. Remediation Contractor shall determine safe setback distances for the size and type of equipment used to excavate the cut back slope in support of completing the dredge.

### 3.05 TESTING

- 1. Documentation testing will be performed by the Remediation Engineer within the 5-foot standoff zone of the residential building foundation.
- 2. Bottom of sidewall samples will be collected by the Remediation Engineer at a depth of 2 feet below the existing ground surface at a maximum 30-foot interval.
- 3. Sample testing will be performed by the Remediation Engineer.

4. The Remediation Contractor shall support the Remediation Engineer in the collection of the samples including providing safe access to the excavation and a preparing a suitable sampling surface.

END OF SECTION

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## SECTION 02 70 00

### CONSTRUCTION WATER TREATMENT SYSTEM

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. The Design Engineer has obtained a temporary State Pollution Discharge Elimination System (SPDES) permit equivalent (herein referred to as the “SPDES permit”) for the discharge of treated water to Seneca River. Treated water shall be discharged in accordance with the applicable permit.
- B. Remediation Contractor work to be done under this Section includes, but is not limited to, providing all labor, materials, equipment, and incidentals as necessary to operate and maintain a temporary water treatment system at the subject site.
- C. This section describes the requirements for the functional design, performance, construction features, operation, and testing of the equipment described in the following sections.
- D. The Remediation Contractor may propose an alternate water treatment system design that, at a minimum, shall meet the performance standards of the site’s SPDES permit discharge limits and design, construction, and operational intent established herein. Alternatively, the Remediation Contractor may propose offsite disposal of water at an applicable licensed disposal facility. It is noted that the Remediation Contractor is required to provide a base bid in accordance with the design specified in the Contract Documents. Alternates should be provided separately and will be considered during the Remediation Contractor selection process.
- E. The Remediation Contractor is responsible for all costs and fees related to the operation, monitoring, and maintenance of the water treatment system (e.g., system sampling, media change-out, system repairs, discharge fees).
- F. The Remediation Engineer is responsible for all costs and fees related to the analytical testing required under the SPDES permit.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 33 00 – Submittal Procedures
- B. SECTION 01 35 29 – Health and Safety Requirements
- C. SECTION 02 51 29 – Decontamination Procedures
- D. SECTION 02 53 00 – Waste Transportation, Treatment, and Disposal
- E. SECTION 31 23 19 – Dewatering



- F. Drawings
- G. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### 1.03 REFERENCE STANDARDS

- A. 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) permits. The SPDES permit is included as Attachment 02 70 00-1 to this section.
- B. New York State Department of Environmental Conservation, New York Standards and Specifications for Erosion and Sediment Controls, 2005.
- C. New York State Department of Environmental Conservation "Technical Guidance for Site Investigation and Remediation"; DER-10 (NYSDEC DER-10); May 3, 2010.

#### 1.04 SUBMITTALS

- A. Submit in accordance with Section 01 33 00
- B. The Remediation Contractor shall submit a Technical Execution Plan with their bid. The Technical Execution Plan shall include:
  - 1. Description of water treatment system, equipment (including size and capacity), processes, and monitoring.
  - 2. Remediation Contractor shall submit an Operation and Maintenance Plan with their design of the water treatment system to include regular maintenance, daily operating procedures and recording of performance parameters, logs, and record keeping.
  - 3. Calculation and support documentation for treatment system design, component selection and sizing.
  - 4. Description of the coordination with the construction dewatering system (including additional pumps and equipment required).
  - 5. Any proposed alterations from the minimum required system shown in the Drawings
- C. The Remediation Contractor shall prepare Pre-construction submittals prior to execution of work at the site including:
  - 1. All applications submitted for permits and permits obtained.
  - 2. Detailed equipment documentation including cut sheets.
  - 3. Proposed secondary containment systems.

4. Proposed inspection checklist.
- D. The Remediation Contractor shall submit construction submittals during the operation of the water treatment system including:
1. Daily discharge volume log.
  2. Daily inspection logs.

#### 1.05 DESCRIPTION OF WORK

- A. Construction dewatering, described in Specifications Section 31 23 19 – Dewatering, will generate water impacted with MGP constituents. Attachment 02 70 00-2 to this specification provides the maximum concentrations of selected parameters detected in groundwater during the remedial investigation of the site and as presented in the Record of Decision (NYSDEC, 2015). These concentrations are provided for guidance in designing the water treatment system. The actual influent concentrations and parameters may vary significantly depending on source of influent water. Remediation Contractor shall provide and maintain a water treatment system that can treat and discharging water in accordance with the site's SPDES permit and the Specifications for all required parameters.
- B. The Remediation Contractor shall ensure continuous operation of treatment system throughout the duration of the project as directed by the Remediation Engineer.
- C. Remediation Contractor shall prepare and submit a Technical Execution Plan in accordance with the procedures set forth in Specifications Section 01 33 00 – Submittal Procedures. Remediation Contractor shall follow the approved water treatment plan, and be responsible for meeting the requirements of the discharge permit volume and constituent concentration limitations.
- D. Remediation Contractor shall maintain Daily Discharge Volume Logs obtained from a continuously totalizing water meter, hours of treatment system operation, peak flow rates, and other pertinent data for the Remediation Engineer's verification and approval, in accordance with the discharge permit. Remediation Contractor's Daily Report of water treatment activities shall be in a format acceptable to the Remediation Engineer and shall include the results of daily system inspections.
- E. Remediation Contractor is responsible for all fines and penalties associated with nonconformance of the system in meeting the discharge permit.
- F. The Remediation Contractor shall provide all manpower, equipment and materials to execute all activities necessary to provide, operate, and maintain a temporary water treatment system. The temporary water treatment system shall include the following major components as depicted in the Drawings:
1. Secondary containment;

2. Influent tanks (one fractionation tanks and one baffle/oil-water
  3. Separator tank);
  4. Effluent storage tank (one fractionation tank);
  5. Transfer pumps;
  6. Bag filters;
  7. Granular activated carbon (GAC) vessels;
  8. Anion resin;
  9. Piping and appurtenances; and,
  10. Meters and gauges.
- G. The temporary water treatment system shall be capable of treating a flow rate of 50 gallons per minute (gpm).
- H. The proposed temporary water treatment systems shall be capable of reducing the anticipated sources of water (i.e., groundwater, decontamination water, surface water runoff, dewatering of sediment) to the discharge treatment levels required by the SPDES permit. The Remediation Engineer will be responsible for collecting the system performance analytical samples or any other sampling required prior to discharge in accordance with the SPDES permit.

## PART 2 – PRODUCTS

### 2.01 GENERAL

- A. This section specifies the minimum design and construction requirements for major treatment system components. Substitutions of system components other than those specified herein must be submitted for consideration and approval by the Design Engineer in accordance with the requirements of the Contract Documents. Remediation Contractor shall provide freeze protection for all water treatment system equipment, tanks, piping, and pipe connections to allow for operation through the winter months, including but not limited to: insulation, enclosures, heaters, heat tapes, and circulation pumps.
- B. The Remediation Contractor shall prepare a level area suitable to stage water treatment equipment as shown on the drawings and in accordance with the equipment vendor's recommendations. Level area may consist of a 6-inch gravel road base coarse aggregate or approved equal.

- C. The Remediation Contractor shall provide an erosion control pad for the outfall consisting of a filter fabric and small rip rap (4"-8"). The structure shall be removed, and the area stabilized following construction dewatering activities.

## 2.02 SECONDARY CONTAINMENT

- A. The temporary water treatment system, exclusive of influent and effluent tanks shall be constructed with a containment area complete with continuous 20-mil HDPE liner and berms to provide containment volume equal to 110% of the largest container within the containment area plus the volume of a 25-year 24-hour rain event (5 inches).
- B. Influent and effluent tanks shall be contained within a 12" high HDPE spill guard or approved equal.

## 2.03 INFLUENT SETTLING TANKS

- A. The influent baffle tank shall have a minimum of 18,000-gallon capacity with weirs and NAPL skimmer boom to facilitate removal of non-aqueous phase liquids.
- B. The influent settling tanks shall be of steel construction and shall provide, at a minimum, enough storage capacity to store at least 30,000 gallons. The tanks shall allow the water level in the tank to be determined by visual inspection and the use of a stick level indicator.
- C. Each tank shall be furnished with an inlet and outlet pipe connection. The tank shall be equipped with two, 4-inch valves at each end.
- D. The influent tank shall be a minimum of one 21,000-gallon Steel Manifold Fractionation Tanks, and one 18,000-gallon baffle tank, manufactured by Rain For Rent, or approved equal.
- E. The Remediation Contractor shall take such measures as are necessary to ensure that water does not freeze within the tanks and piping.
- F. Additional tanks (if needed) shall be the responsibility of the Remediation Contractor.
- G. Each tank shall be equipped with a high-high level alarm switch tied in to the supplying pump(s) to prevent tank overflows. Additionally, the alarm will provide a lighted signal indicating to the operator a high-high level condition.

## 2.04 EFFLUENT STORAGE TANKS

- A. The treated water storage tank shall be of steel construction with a total minimum storage capacity of at least 20,000-gallons.
- B. Each tank shall be furnished with an 8" valve manifold with 4" outlets.

- C. The tank shall be 21,000-gallon Steel Manifold Fractionation Tank, manufactured by Rain For Rent, or approved equal.
- D. The Remediation Contractor shall take such measures as are necessary to ensure that water does not freeze within the tanks and piping.
- E. Additional tanks (if needed) shall be the responsibility of the Remediation Contractor.
- F. Each tank shall be equipped with a high-high level alarm switch tied in to the supplying pump(s) to prevent tank overflows. Additionally, the alarm will provide a lighted signal indicating to the operator a high-level condition.

#### 2.05 TRANSFER PUMPS

- A. The transfer pumps shall be horizontal close-coupled, end suction centrifugal pumps of cast iron, stainless steel or bronze construction and rated for a combined pumping rate of 50 gpm (maximum allowable throughput to the temporary water treatment system) at a pumping head to be determined by the Remediation Contractor.
- B. Impellers shall be designed to handle solids of up to ½ inch in diameter.
- C. The pump motors shall be non-overloading of National Electrical Manufacturers Association (NEMA) standard design suitable for close coupled pump mounting.
- D. Controls for transfer pumps shall consist of level switches in tank for low water level, high water level and high-high water levels.
- E. The transfer pumps shall be diesel operated model DV-80, as manufactured by Power Prime Pumps, or approved equal. Storage for diesel fuel shall be double contained in accordance with SPCC regulations.
- F. A transfer pump supplying water to the system from the dewatering area shall be provided by the Remediation Contractor to meet the requirements of the site. Operation may be diesel or air operated. Shop drawings must be submitted for approval prior to use and installation.

#### 2.06 BAG FILTERS

- A. The bag filters (four total – two parallel pairs) shall have a loaded hydraulic capacity exceeding 50 gpm. The bag filter housing shall be carbon steel, and shall be pressure rated to a maximum 125 pounds per square inch (psi).
- B. The primary bag filters shall be housing model BF200, as provided by Rain for Rent, or approved equal. The primary filter bags shall have a rating of a maximum of 50-micron opening and be oil sorbent material.

- C. The secondary bag filters shall be model BF200, as provided by Rain for Rent, or approved equal. The secondary filter bags shall have a rating of a maximum of 5-micron opening.

#### 2.07 GRANULAR ACTIVATED CARBON VESSELS

- A. The Granular Activated Carbon (GAC) vessels (two total) shall have a loaded hydraulic capacity of greater than 50 gpm. A minimum of 2,000 pounds of GAC shall be used per vessel. The vessels shall be provided with lifting supports suitable for lifting by a fork lift truck.
- B. The vessels shall be designed for a downflow application, a carbon dry fill opening in the top and a carbon discharge connection in the unit bottom. All vessel fittings shall be installed by the GAC vessel manufacturer at the time and place of manufacturer. The Remediation Contractor shall not modify the GAC vessel in the field without written approval from the Manufacturer.
- C. All water shall be routed through the GAC vessels in series during normal treatment system operations. When the primary GAC vessel becomes spent (breakthrough of constituents above permitted limits), a carbon change-out of the primary vessel shall occur. The secondary vessel shall be moved to the primary position and a new GAC vessel shall be placed in the secondary position. GAC units shall be equipped with backwash capabilities.
- D. The GAC units shall be model PV2000, as manufactured by Evoqua, or approved equal.
- E. The GAC shall be Aquacarb 1230C carbon as supplied by Evoqua or approved equal.

#### 2.08 ANION RESIN BEDS

- A. The anion resin shall be capable of treating 50 gpm of water generated from dewatering activities. During the remedial investigation, the concentration of cyanide in groundwater ranged from non-detect to 650 ug/L. The discharge criteria is 1.0 ug/L. If the manufacturer of the anion resin bed determines the discharge criteria cannot be met, the Remediation Contractor shall petition the Design Engineer for a relaxation of the standard and shall include the basis for the change based on manufacturer's literature and testing of the provided system with site specific groundwater.
- B. The anion resin vessel shall be capable of processing a minimum of 50 gpm at a pressure of 60 psi and have a capacity of sufficient resin to reduce concentrations to below discharge criteria. A minimum of 30 sq. ft. shall be supplied per vessel.
- C. The anion resin vessel shall be Super 30 vessels, as manufactured by Evoqua, or approved equal.
- D. The resin shall be A-284 anion resin, as supplied by Evoqua, or approved equal.



- E. The anion resin beds may be bypassed if analytical results determine that cyanide treatment is not required for the applicable permit.

#### 2.09 PIPING AND APPURTENANCES

- A. The Remediation Contractor shall provide all necessary piping and appurtenances required for operation of the temporary treatment system.
- B. Influent piping from the excavation upstream of the influent tanks and outside the containment berm shall be double walled to ensure containment in the event of a leak. Effluent piping from the treatment system to the point of discharge may be single-wall pipe.
- C. Sample ports shall consist of ½" diameter schedule 40 PVC, stainless steel or brass pipe extensions with ½" ball valves.
- D. All piping and appurtenances shall conform to applicable American Society for Testing and Materials (ASTM) standards.
- E. All exterior piping required for the treatment system shall be protected from vehicular traffic when placed on ground surface (e.g. influent pipe from construction areas, discharge pipe).
- F. All exterior piping and equipment shall be freeze protected during freezing weather via insulation, enclosures, heaters, heat tapes, and circulation pumps or approved equal.

#### 2.10 METERS AND GAUGES

- A. The Remediation Contractor shall provide all necessary meters and gauges to ensure proper monitoring of the entire treatment system.
- B. Remediation Contractor shall provide adequate system controls to permit unattended operation with occasional operator checks for monitoring and adjustments.
- C. The Remediation Contractor shall provide a notification system, such as pressure gages and alarms, to alert an operator if the system experiences conditions that will potentially cause the treatment system to shut down.
- D. Remediation Contractor shall provide high-level alarms on tanks to prevent overflow conditions. Alarms may cause automatic actions to relieve the condition or may warn the operator.
- E. If an upset condition occurs, which may result in a release or nonconformance with the discharge permit, Remediation Contractor shall immediately suspend operation and notify the Remediation Engineer.
- F. The water treatment system shall not be operated without onsite supervision.

- G. Remediation Contractor shall provide and maintain at all times a flow meters to record water discharged from both the treatment system to the effluent storage tank(s) and any locations required by the discharge permit.

### PART 3 – EXECUTION

#### 3.01 GENERAL

- A. The Remediation Contractor shall provide, operate and maintain a temporary on-site water treatment system as described in this specification that shall treat liquid waste streams encountered during remedial work. The Remediation Contractor shall maintain lines of communication with the Owner, Remediation Engineer and the NYSDEC regarding all discharge issues. The Remediation Contractor shall ensure continuous operation of treatment system throughout the duration of the project.

#### 3.02 DISCHARGE LIMITS

- A. The Remediation Contractor shall at all times maintain the treatment system so as to not exceed the effluent limits as required for discharge to Seneca River. The Remediation Engineer will be responsible for the collection of performance and discharge analytical samples.
- B. Treated water will need to be sampled prior to discharge in accordance with the SPDES permit. The Remediation Contractor will need to provide sufficient storage to handle the accumulated water while waiting for analytical results. Samples will be analyzed on an expedited 48-hour turnaround time basis. The Remediation Engineer shall provide a tabular summary, for the Owner and NYSDEC's use, of the sample results and a comparison to the appropriate criteria within 72-hours of sample collection.
- C. The pH of the discharged effluent shall not be less than 6.5 or greater than 8.5.
- D. Metals shall be monitored but will not require treatment unless otherwise specified by the SPDES permit.

#### 3.03 TESTING AND STARTUP ACTIVITIES

- A. After mobilization and setup of the water treatment system, the Remediation Contractor shall perform system startup and testing activities and troubleshooting prior to initiating full scale (normal) operations.
- B. Startup and testing activities shall be in accordance with the manufacturer's recommendations and as indicated in the Remediation Contractor prepared O&M manual that has been reviewed by the Design Engineer. General startup and testing of the temporary water treatment system shall consist of treating a minimum of 20,000 gallons of water collected from the first proposed excavation/dredging area (i.e., water that has been in contact with soil/sediment to be removed). During the startup test, the water treatment system shall be operated at the 50 gpm peak flow rate until the entire

20,000-gallon batch is treated or at the maximum flow obtained from the dewatering. During this time, the Remediation Contractor shall continuously monitor and record readings (every 30-minute minimum) from all gauges and meters as necessary in order to demonstrate that the system is operating as designed to the satisfaction of the Remediation Engineer. In addition, the Remediation Contractor shall make adjustments to the system as necessary to maintain a continuous flow rate of approximately 50 gpm while meeting the operating requirements of each system component.

- C. The Remediation Contractor shall assist the Remediation Engineer in the collection of start-up testing samples following treatment of approximately 10,000 gallons and 20,000 gallons of water. The entire 20,000 gallons of treated water shall be retained in the effluent storage tanks until analytical results obtained indicate that the Remediation Contractor may discharge the water to the Seneca River. Samples collected during start-up will be submitted by the Remediation Engineer for laboratory testing based on the following parameters:

| <b>Parameter</b>                 | <b>Influent/Mid-Carbon/Effluent</b> |
|----------------------------------|-------------------------------------|
| Volatile Organic Compounds       | Yes                                 |
| Semi Volatile Organic Compounds  | Yes                                 |
| Cyanide                          | Yes                                 |
| pH                               | Yes                                 |
| Biological Oxygen Demand (BOD-5) | Effluent Only                       |
| Total Suspended Solids           | Effluent Only                       |
| Total Dissolved Solids           | Effluent Only                       |
| Metals                           | Effluent Only                       |
| Phenols                          | Effluent Only                       |
| Turbidity                        | Effluent Only                       |
| Oil & Grease                     | Effluent Only                       |

- D. As required by the SPDES permit, the Remediation Engineer shall collect grab samples and have analyzed at the approved laboratory. The samples shall be analyzed for the parameters identified above and in the permit. All analytical results shall be submitted to the NYSDEC and the Owner.

### 3.04 WATER QUALITY TESTING

- A. Remediation Contractor shall provide sampling ports for collecting samples in accordance with the discharge permit and upon direction from the Remediation Engineer. Remediation Contractor shall assist the Remediation Engineer in collection of samples as directed by the Engineer. During the system operation, testing will be conducted weekly and analyzed for the parameters listed in Subpart 3.03.C of this specification. The Remediation Engineer will collect the water samples for analysis.

### 3.05 ROUTINE MONITORING

- A. The temporary water treatment system will be manually operated and controlled through a series of valves, visual reading gauges, and pump controls as necessary to accommodate system operation. The Remediation Contractor shall provide for a water treatment system operator to be on-site at all times during system operation. The system will be manually controlled by the operator. The daily activities to be performed and logged by the system operator (at least once per shift) include at a minimum:
1. Visual inspection of influent and effluent piping to and from the treatment system;
  2. Visual inspection of all pumps, tanks, fittings and equipment for leakage;
  3. Visual inspection of the sludge storage tank to document storage capacity;
  4. Obtaining readings from the system pressure gauges associated with all treatment systems within the treatment train. Pressure gauge readings may be used to determine when a backwash event or filter replacement is required or that a treatment unit is not functioning properly;
  5. Obtaining readings from the flow meter to monitor the system flow rate;
  6. Obtaining readings from the flow totalizer to record the total system flow to date and calculate the daily and weekly flow- totals; and
  7. During the operation of the treatment system, the influent tanks shall be visually inspected each time they are emptied to determine the depth of the sediment in the bottom of the tank. If sediment is observed to be 4 inches deep (or if directed by the Remediation Engineer) the tank shall be cleaned. Liquids from the cleaning activities shall be treated using the temporary water treatment system, while solids shall be collected in a sediment bag and placed into the dewatering area for subsequent disposal by the Remediation Contractor. The Remediation Contractor shall solidify material to make it suitable for off-site disposal as a solid waste.
  8. Influent and effluent valves for all tanks and vessels shall be closed while a system operator is not onsite to prevent unmonitored and unintentional discharge of liquids from the tank or vessel.

### 3.06 CORRECTIVE ACTIONS

- A. At the direction of the Owner or the Remediation Engineer, the Remediation Contractor shall take corrective actions as necessary to maintain specified treatment system performance in the event of an upset condition and/or operating conditions that result in noncompliant effluent water quality. During Corrective Actions, the Remediation

Contractor may be required to mobilize additional influent and/or effluent storage tanks and/or repeat start-up and testing procedures as specified herein.

### 3.07 DOCUMENTATION

- A. The Remediation Contractor shall maintain a daily operations log (i.e., tabulated results) in which the process variables described above will be recorded at a minimum frequency of once per shift or more frequently if requested by the Remediation Engineer. In addition, all activities related to O&M of the treatment system will be documented in the daily log. The daily log will be kept on site and will be made available to the Remediation Engineer on demand. Electronic copies of each daily log sheet will be submitted to the Remediation Engineer daily.

### 3.08 DECOMMISSIONING

- A. Following conclusion of the water treatment system operations, the Remediation Contractor shall:
1. Clean/decontaminate all equipment in accordance with the vendor/supplier requirements,
  2. The outfall structure shall be removed, and the area stabilized
  3. Provide transportation and disposal of any decommissioning related waste. Waste resin and carbon can be commingled with Remediation-related Solid Waste and disposed off-site in accordance with Section 02 53 00 – Waste Transportation, Treatment, and Disposal.
  4. Restore the treatment area to original conditions.

END OF SECTION

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## EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning: Start of Remediation Construction  
~~with the start of each discharge event~~

and lasting until: Completion of Remediation Construction  
~~7 days from the start of the discharge.~~

The discharges from the treatment facility to **Surface water** shall be limited and monitored by the operator as specified below:

| Outfall and Parameters                                                                                         | CAS No.                                     | Limitations<br>Daily Max. | Units | Minimum Monitoring<br>Requirements |             | FN |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------|-------|------------------------------------|-------------|----|
|                                                                                                                |                                             |                           |       | Measurement<br>Frequency           | Sample Type |    |
| <del>Outfall 001 - Containerized Well Development<br/>Water and/or Pump Test Water</del>                       |                                             |                           |       |                                    |             |    |
| <b>Outfall 001 - Seneca River</b>                                                                              |                                             |                           |       |                                    |             |    |
| Flow                                                                                                           | NA                                          | Monitor                   | GPD   | Continuous                         | Recorder    |    |
| pH (range)                                                                                                     | NA                                          | 6.5 – 8.5                 | SU    | 1                                  | Grab        |    |
| Oil and Grease                                                                                                 | NA                                          | 15                        | mg/l  | 1                                  | Grab        |    |
| BOD, 5-day                                                                                                     | NA                                          | 5                         | mg/l  | 1                                  | Grab        |    |
| Solids, Total Suspended                                                                                        | NA                                          | 10                        | mg/l  | 1                                  | Grab        |    |
| Solids, Total Dissolved                                                                                        | NA                                          | 200                       | mg/l  | 1                                  | Grab        |    |
| Acenaphthene                                                                                                   | 83-32-9                                     | 5.3                       | µg/l  | 1                                  | Grab        |    |
| Acenaphthylene                                                                                                 | 208-96-8                                    | 10                        | µg/l  | 1                                  | Grab        |    |
| Acetaldehyde                                                                                                   | 75-07-0                                     | 8                         | µg/l  | 1                                  | Grab        |    |
| Acetone                                                                                                        | 67-64-1                                     | 100                       | µg/l  | 1                                  | Grab        | 2  |
| Acrolein                                                                                                       | 107-02-8                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| Acrylamide                                                                                                     | 79-06-1                                     | 5                         | µg/l  | 1                                  | Grab        |    |
| Acrylic acid                                                                                                   | 79-10-7                                     | 50                        | µg/l  | 1                                  | Grab        |    |
| Acrylonitrile                                                                                                  | 107-13-1                                    | 2                         | µg/l  | 1                                  | Grab        | 2  |
| Alachlor                                                                                                       | 15972-60-8                                  | 0.5                       | µg/l  | 1                                  | Grab        |    |
| Aldicarb                                                                                                       | 116-06-3                                    | 7                         | µg/l  | 1                                  | Grab        | 2  |
| Aldicarb sulfone                                                                                               | 1646-88-4                                   | 2                         | µg/l  | 1                                  | Grab        |    |
| Aldicarb sulfoxide                                                                                             | 1646-87-3                                   | 4                         | µg/l  | 1                                  | Grab        |    |
| Aldrin                                                                                                         | 309-00-2                                    | 0.02                      | µg/l  | 1                                  | Grab        | 2  |
| Alkyl dimethyl benzyl ammonium chloride                                                                        | 68391-01-5                                  | 50                        | µg/l  | 1                                  | Grab        |    |
| Alkyl diphenyl oxide sulfonates                                                                                | NA                                          | 50                        | µg/l  | 1                                  | Grab        |    |
| Allyl chloride                                                                                                 | 107-05-1                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| Aluminum, ionic                                                                                                | NA                                          | 100                       | µg/l  | 1                                  | Grab        |    |
| Ametryn                                                                                                        | 834-12-8                                    | 50                        | µg/l  | 1                                  | Grab        |    |
| 4-Aminobiphenyl                                                                                                | 92-67-1                                     | 5                         | µg/l  | 1                                  | Grab        |    |
| Aminocresols<br>*see Phenolic compounds – total phenols                                                        | 95-84-1; 2835-95-2;<br>2835-99-6            | *                         | µg/l  | 1                                  | Grab        |    |
| Aminomethylene phosphonic acids salts<br>* applies to each aminomethylene phosphonic acid salt<br>individually | NA                                          | 50*                       | µg/l  | 1                                  | Grab        |    |
| Aminopyridines<br>* applies to sum of these substances                                                         | 462-08-8; 504-24-5;<br>504-29-0; 26445-05-6 | 1*                        | µg/l  | 1                                  | Grab        |    |
| 3-Aminotoluene                                                                                                 | 108-44-1                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| 4-Aminotoluene                                                                                                 | 106-49-0                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| Ammonia, Total (as NH <sub>3</sub> )                                                                           | 7664-41-7                                   | 660                       | µg/l  | 1                                  | Grab        |    |



| Outfall and Parameters                                                                   | CAS No.       | Limitations<br>Daily Max. | Units    | Minimum Monitoring<br>Requirements |             | FN |
|------------------------------------------------------------------------------------------|---------------|---------------------------|----------|------------------------------------|-------------|----|
| <del>Outfall 001 – Containerized Well Development<br/>Water and/or Pump Test Water</del> |               |                           |          | Measurement<br>Frequency           | Sample Type |    |
| Outfall 001 - Seneca River                                                               |               |                           |          |                                    |             |    |
| Ammonia and Ammonium (NH <sub>3</sub> + NH <sub>4</sub> <sup>+</sup> as N)               | 7664-41-7; NA | 2200                      | µg/l     | 1                                  | Grab        |    |
| Aniline                                                                                  | 62-53-3       | 10                        | µg/l     | 1                                  | Grab        | 2  |
| Anthracene                                                                               | 120-12-7      | 3.8                       | µg/l     | 1                                  | Grab        |    |
| Antimony                                                                                 | NA            | 10                        | µg/l     | 1                                  | Grab        | 2  |
| Arsenic                                                                                  | NA            | 50                        | µg/l     | 1                                  | Grab        |    |
| Aryltiazoles<br>* applies to each aryltiazole individually                               | NA            | 50*                       | µg/l     | 1                                  | Grab        |    |
| Asbestos                                                                                 | NA            | 7,000,000                 | Fibers/L | 1                                  | Grab        |    |
| Atrazine                                                                                 | 1912-24-9     | 8                         | µg/l     | 1                                  | Grab        | 2  |
| Azinphosmethyl                                                                           | 86-50-0       | 0.6                       | µg/l     | 1                                  | Grab        | 2  |
| Azobenzene                                                                               | 103-33-3      | 0.5                       | µg/l     | 1                                  | Grab        |    |
| Barium                                                                                   | NA            | 1,000                     | µg/l     | 1                                  | Grab        |    |
| Benz(a)anthracene                                                                        | 56-55-3       | 0.05                      | µg/l     | 1                                  | Grab        | 2  |
| Benzene                                                                                  | 71-43-2       | 1                         | µg/l     | 1                                  | Grab        |    |
| Benzidine                                                                                | 92-87-5       | 0.3                       | µg/l     | 1                                  | Grab        | 2  |
| Benzisothiazole                                                                          | 271-61-4      | 50                        | µg/l     | 1                                  | Grab        |    |
| Benzo(b)flouranthene                                                                     | 205-99-2      | 0.07                      | µg/l     | 1                                  | Grab        | 2  |
| Benzo(k)fluoranthene                                                                     | 207-08-9      | 0.02                      | µg/l     | 1                                  | Grab        | 2  |
| Benzo(a)pyrene                                                                           | 50-32-8       | 0.09                      | µg/l     | 1                                  | Grab        | 2  |
| Benzo(ghi)perylene                                                                       | 191-24-2      | 10                        | µg/l     | 1                                  | Grab        |    |
| Beryllium                                                                                | NA            | 3                         | µg/l     | 1                                  | Grab        |    |
| 1-1'-Biphenyl                                                                            | 92-52-4       | 5                         | µg/l     | 1                                  | Grab        |    |
| Bis(2-chloroethoxy)methane                                                               | 111-91-1      | 5                         | µg/l     | 1                                  | Grab        |    |
| Bis(2-chloroethyl)ether                                                                  | 111-44-4      | 0.03                      | µg/l     | 1                                  | Grab        |    |
| Bis(chloromethyl)ether                                                                   | 542-88-1      | 5                         | µg/l     | 1                                  | Grab        |    |
| Bis(2-chloro-1-methylethyl)ether                                                         | 108-60-1      | 5                         | µg/l     | 1                                  | Grab        |    |
| Bis(2-ethylhexl)phthalate                                                                | 117-81-7      | 8                         | µg/l     | 1                                  | Grab        | 2  |
| Boric acid, Borates & Metaborates<br>* apply to the sum of these substances              | NA            | 125*                      | µg/l     | 1                                  | Grab        |    |
| Boron                                                                                    | NA            | 1,000                     | µg/l     | 1                                  | Grab        |    |
| Bromide                                                                                  | NA            | 2,000                     | µg/l     | 1                                  | Grab        |    |
| Bromobenzene                                                                             | 108-86-1      | 5                         | µg/l     | 1                                  | Grab        |    |
| Bromochloromethane                                                                       | 74-97-5       | 5                         | µg/l     | 1                                  | Grab        |    |
| Bromodichloromethane                                                                     | 75-27-4       | 50                        | µg/l     | 1                                  | Grab        |    |
| Bromoform                                                                                | 75-25-2       | 50                        | µg/l     | 1                                  | Grab        |    |
| Bromomethane                                                                             | 74-83-9       | 5                         | µg/l     | 1                                  | Grab        |    |
| n-Butanol                                                                                | 71-36-3       | 50                        | µg/l     | 1                                  | Grab        |    |
| cis-2-Butenal                                                                            | 15798-64-8    | 5                         | µg/l     | 1                                  | Grab        |    |
| trans-2-Butenal                                                                          | 123-73-9      | 5                         | µg/l     | 1                                  | Grab        |    |
| cis-2-Butenenitrile                                                                      | 1190-76-7     | 5                         | µg/l     | 1                                  | Grab        |    |
| trans-2-Butenenitrile                                                                    | 627-26-9      | 5                         | µg/l     | 1                                  | Grab        |    |
| Butoxyethoxyethanol                                                                      | 112-34-5      | 50                        | µg/l     | 1                                  | Grab        |    |
| Butoxypropanol                                                                           | 5131-66-8     | 50                        | µg/l     | 1                                  | Grab        |    |
| Butylate                                                                                 | 2008-41-5     | 50                        | µg/l     | 1                                  | Grab        |    |
| n-Butylbenzene                                                                           | 104-51-8      | 5                         | µg/l     | 1                                  | Grab        |    |
| sec-Butylbenzene                                                                         | 135-98-8      | 5                         | µg/l     | 1                                  | Grab        |    |
| Tert-Butylbenzene                                                                        | 98-06-6       | 5                         | µg/l     | 1                                  | Grab        |    |

| Outfall and Parameters                                                                   | CAS No.   | Limitations<br>Daily Max. | Units | Minimum Monitoring<br>Requirements |             | FN |
|------------------------------------------------------------------------------------------|-----------|---------------------------|-------|------------------------------------|-------------|----|
| <del>Outfall 001 – Containerized Well Development<br/>Water and/or Pump Test Water</del> |           |                           |       | Measurement<br>Frequency           | Sample Type |    |
| Outfall 001 - Seneca River                                                               |           |                           |       |                                    |             |    |
| Butyl benzyl phthalate                                                                   | 85-68-7   | 50                        | µg/l  | 1                                  | Grab        |    |
| Butyl isopropyl phthalate                                                                | NA        | 50                        | µg/l  | 1                                  | Grab        |    |
| Cadmium                                                                                  | NA        | 1.2                       | µg/l  | 1                                  | Grab        |    |
| Carbofuran                                                                               | 1563-66-2 | 1.0                       | µg/l  | 1                                  | Grab        |    |
| Carbon disulfide                                                                         | 75-15-0   | 60                        | µg/l  | 1                                  | Grab        |    |
| Carbon tetrachloride                                                                     | 56-23-5   | 0.5                       | µg/l  | 1                                  | Grab        | 2  |
| Carboxin                                                                                 | 5234-68-4 | 50                        | µg/l  | 1                                  | Grab        |    |
| Chloramben                                                                               | NA        | 50                        | µg/l  | 1                                  | Grab        |    |
| Chloranil                                                                                | 118-75-2  | 5                         | µg/l  | 1                                  | Grab        |    |
| Chlordane                                                                                | 57-74-9   | 0.05                      | µg/l  | 1                                  | Grab        |    |
| Chloride                                                                                 | NA        | 250,000                   | µg/l  | 1                                  | Grab        |    |
| Chlorinateddibenzo-p-dioxins and Chlorinated<br>dibenzofurans                            | NA        | 0.008                     | µg/l  | 1                                  | Grab        | 2  |
| Chlorine, Total Residual                                                                 | NA        | 13                        | µg/l  | 1                                  | Grab        |    |
| 2-Chloroaniline                                                                          | 95-51-2   | 5                         | µg/l  | 1                                  | Grab        |    |
| 3- Chloroaniline                                                                         | 108-42-9  | 5                         | µg/l  | 1                                  | Grab        |    |
| 4- Chloroaniline                                                                         | 106-7-8   | 5                         | µg/l  | 1                                  | Grab        |    |
| Chlorobenzene                                                                            | 108-90-7  | 5                         | µg/l  | 1                                  | Grab        |    |
| 4-Chlorobenzotrifluoride                                                                 | 98-56-6   | 5                         | µg/l  | 1                                  | Grab        |    |
| 1-Chlorobutane                                                                           | 109-69-3  | 5                         | µg/l  | 1                                  | Grab        |    |
| Chloroethane                                                                             | 75-00-3   | 5                         | µg/l  | 1                                  | Grab        |    |
| Chloroform                                                                               | 67-66-3   | 7                         | µg/l  | 1                                  | Grab        |    |
| Chloromethyl methyl ether                                                                | 107-30-2  | 5                         | µg/l  | 1                                  | Grab        |    |
| 2-Chloronaphthalene                                                                      | 91-58-7   | 10                        | µg/l  | 1                                  | Grab        |    |
| 2-Chloronitrobenzene                                                                     | 88-73-3   | 5                         | µg/l  | 1                                  | Grab        |    |
| 3-Chloronitrobenzene                                                                     | 121-73-3  | 5                         | µg/l  | 1                                  | Grab        |    |
| 4-Chloronitrobenzene                                                                     | 100-00-5  | 5                         | µg/l  | 1                                  | Grab        |    |
| Chloroprene                                                                              | 126-99-8  | 5                         | µg/l  | 1                                  | Grab        |    |
| Chlorothalonil                                                                           | 1897-45-6 | 5                         | µg/l  | 1                                  | Grab        |    |
| 2-Chlorotoluene                                                                          | 95-49-8   | 5                         | µg/l  | 1                                  | Grab        |    |
| 3-Chlorotoluene                                                                          | 108-41-8  | 5                         | µg/l  | 1                                  | Grab        |    |
| 4-Chlorotoluene                                                                          | 106-43-4  | 5                         | µg/l  | 1                                  | Grab        |    |
| 4-Chloro-o-toluidine                                                                     | 95-69-2   | 5                         | µg/l  | 1                                  | Grab        |    |
| 5-Chloro-o-toluidine                                                                     | 95-79-4   | 0.7                       | µg/l  | 1                                  | Grab        |    |
| 3-Chloro-1,1,1-trifluoropropane                                                          | 460-35-5  | 5                         | µg/l  | 1                                  | Grab        |    |
| Chromium                                                                                 | NA        | 50                        | µg/l  | 1                                  | Grab        |    |
| Chromium (hexavalent)                                                                    | NA        | 30                        | µg/l  | 1                                  | Grab        | 2  |
| Chrysene                                                                                 | 218-01-9  | 0.6                       | µg/l  | 1                                  | Grab        | 2  |
| Cobalt                                                                                   | NA        | 5                         | µg/l  | 1                                  | Grab        |    |
| Copper                                                                                   | NA        | *                         | µg/l  | 1                                  | Grab        |    |
| *Limit is 4.8 ug/l except in New York/New Jersey<br>Harbor where it is 7.9 ug/l          |           |                           |       |                                    |             |    |
| Cyanide (PQL)<br>Sum of HCN and CN <sup>-</sup> expressed as CN                          | NA        | 1.0                       | µg/l  | 1                                  | Grab        |    |
| Cyanogen bromide                                                                         | 506-68-3  | 5                         | µg/l  | 1                                  | Grab        |    |
| Cyanogen chloride                                                                        | 506-77-4  | 5                         | µg/l  | 1                                  | Grab        |    |

| Outfall and Parameters                                                                                                                       | CAS No.                          | Limitations<br>Daily Max. | Units | Minimum Monitoring<br>Requirements |             | FN |
|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------|-------|------------------------------------|-------------|----|
| <del>Outfall 001 – Containerized Well Development<br/>Water and/or Pump Test Water</del>                                                     |                                  |                           |       | Measurement<br>Frequency           | Sample Type |    |
| Outfall 001 - Seneca River                                                                                                                   |                                  |                           |       |                                    |             |    |
| Dalapon<br>* Includes related forms that convert to the organic acid upon acidification to a pH of 2 or less; and esters of the organic acid | NA                               | 50*                       | µg/l  | 1                                  | Grab        |    |
| p,p'-DDD                                                                                                                                     | 72-54-8                          | 0.02                      | µg/l  | 1                                  | Grab        | 2  |
| p,p'-DDE                                                                                                                                     | 72-55-9                          | 0.01                      | µg/l  | 1                                  | Grab        | 2  |
| p,p'-DDT                                                                                                                                     | 50-29-3                          | 0.05                      | µg/l  | 1                                  | Grab        | 2  |
| Dechlorane Plus                                                                                                                              | 13560-89-9                       | 5                         | µg/l  | 1                                  | Grab        |    |
| Demton<br>FN: apply to the sum of these substances                                                                                           | 8065-48-3; 298-03-3;<br>126-75-0 | 0.1                       |       |                                    |             |    |
| Diazinon                                                                                                                                     | 333-41-5                         | 0.08                      | µg/l  | 1                                  | Grab        |    |
| Dibenzo(a,h) anthracene                                                                                                                      | 53-70-3                          | 0.1                       | µg/l  | 1                                  | Grab        | 2  |
| 1,2-Dibromobenzene                                                                                                                           | 583-53-9                         | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,3-Dibromobenzene                                                                                                                           | 108-36-1                         | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,4-Dibromobenzene                                                                                                                           | 106-37-6                         | 5                         | µg/l  | 1                                  | Grab        |    |
| Dibromochloromethane                                                                                                                         | 124-48-1                         | 10                        | µg/l  | 1                                  | Grab        |    |
| 1,2-Dibromo-3-chloropropane                                                                                                                  | 96-12-8                          | 0.04                      | µg/l  | 1                                  | Grab        |    |
| Dibromodichloromethane                                                                                                                       | 594-18-3                         | 5                         | µg/l  | 1                                  | Grab        |    |
| Dibromomethane                                                                                                                               | 74-95-3                          | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,2-Dibromo-3-nitrilopropionamide                                                                                                            | 10222-01-2                       | 50                        | µg/l  | 1                                  | Grab        |    |
| Di-n-butyl phthalate                                                                                                                         | 84-74-2                          | 50                        | µg/l  | 1                                  | Grab        |    |
| Dichlorobenzenes<br>* applies to each isomer (1,2-, 1,3- and 1,4-dichlorobenzene) individually.                                              | 95-50-1; 541-73-1;<br>106-46-7   | 3*                        | µg/l  | 1                                  | Grab        |    |
| 3,3'-Dichlorobenzidine                                                                                                                       | 91-94-1                          | 5                         | µg/l  | 1                                  | Grab        |    |
| 3,4-Dichlorobenzotriflouride                                                                                                                 | 328-84-7                         | 5                         | µg/l  | 1                                  | Grab        |    |
| cis-1,4-Dichloro-2-butene                                                                                                                    | 1476-11-5                        | 5                         | µg/l  | 1                                  | Grab        |    |
| trans-1,4-Dichloro-2-butene                                                                                                                  | 110-57-6                         | 5                         | µg/l  | 1                                  | Grab        |    |
| Dichlorodifluoromethane                                                                                                                      | 75-71-8                          | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,1-Dichloroethane                                                                                                                           | 75-34-3                          | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,2-Dichloroethane                                                                                                                           | 107-06-2                         | 0.6                       | µg/l  | 1                                  | Grab        |    |
| 1,1-Dichloroethene                                                                                                                           | 75-35-4                          | 0.5                       | µg/l  | 1                                  | Grab        |    |
| cis-1,2-Dichloroethene                                                                                                                       | 156-59-2                         | 5                         | µg/l  | 1                                  | Grab        |    |
| trans-1,2-Dichloroethene                                                                                                                     | 156-60-5                         | 5                         | µg/l  | 1                                  | Grab        |    |
| Dichloroflouromethane                                                                                                                        | 75-43-4                          | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,4-Dichlorophenol<br>*See limit for Phenolic compounds (total phenols)                                                                      | 120-83-2                         | *                         | µg/l  | 1                                  | Grab        |    |
| 2,4-Dichlorophenoxyacetic acid                                                                                                               | 94-75-7                          | 10                        | µg/l  | 1                                  | Grab        |    |
| 1,1-Dichloropropane                                                                                                                          | 78-99-9                          | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,2-Dichloropropane                                                                                                                          | 78-87-5                          | 0.5                       | µg/l  | 1                                  | Grab        |    |
| 1,3-Dichloropropane                                                                                                                          | 142-28-9                         | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,2-Dichloropropane                                                                                                                          | 594-20-7                         | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,1-Dichloropropene                                                                                                                          | 563-58-6                         | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,3-Dichoropropene<br>FN: applies to the sum of cis- and trans- 1,3-Dichoropropene, CAS Nos. 10061-01-5 and 10061-02-6 respectively          | 542-75-6                         | 0.4*                      | µg/l  | 1                                  | Grab        |    |

| Outfall and Parameters                                                                   | CAS No.    | Limitations<br>Daily Max. | Units | Minimum Monitoring<br>Requirements |             | FN |
|------------------------------------------------------------------------------------------|------------|---------------------------|-------|------------------------------------|-------------|----|
| <del>Outfall 001 – Containerized Well Development<br/>Water and/or Pump Test Water</del> |            |                           |       | Measurement<br>Frequency           | Sample Type |    |
| Outfall 001 - Seneca River                                                               |            |                           |       |                                    |             |    |
| 2,3-Dichlorotoluene                                                                      | 32768-54-0 | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,4-Dichlorotoluene                                                                      | 95-73-8    | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,5-Dichlorotoluene                                                                      | 19398-61-9 | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,6-Dichlorotoluene                                                                      | 118-69-4   | 5                         | µg/l  | 1                                  | Grab        |    |
| 3,4-Dichlorotoluene                                                                      | 95-75-0    | 5                         | µg/l  | 1                                  | Grab        |    |
| 3,5-Dichlorotoluene                                                                      | 25186-47-4 | 5                         | µg/l  | 1                                  | Grab        |    |
| Dieldrin                                                                                 | 60-57-1    | 0.005                     | µg/l  | 1                                  | Grab        | 2  |
| Di(2-ethylhexyl)adipate                                                                  | 103-23-1   | 20                        | µg/l  | 1                                  | Grab        |    |
| Diethyl phthalate                                                                        | 84-66-2    | 50                        | µg/l  | 1                                  | Grab        |    |
| 1,2-Diflouro-1,1,2,2-tetrachloroethane                                                   | 76-12-0    | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,2-Diisopropylbenzene                                                                   | 577-55-9   | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,3-Diisopropylbenzene                                                                   | 99-62-7    | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,4-Diisopropylbenzene                                                                   | 100-18-5   | 5                         | µg/l  | 1                                  | Grab        |    |
| N,N-Dimethylaniline                                                                      | 121-69-7   | 1                         | µg/l  | 1                                  | Grab        |    |
| 2,3-Dimethylaniline                                                                      | 87-59-2    | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,4-Dimethylaniline                                                                      | 95-68-1    | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,5-Dimethylaniline                                                                      | 95-78-3    | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,6-Dimethylaniline                                                                      | 87-62-7    | 5                         | µg/l  | 1                                  | Grab        |    |
| 3,4-Dimethylaniline                                                                      | 95-64-7    | 5                         | µg/l  | 1                                  | Grab        |    |
| 3,5-Dimethylaniline                                                                      | 108-69-0   | 5                         | µg/l  | 1                                  | Grab        |    |
| 3,3'-Dimethylbenzidine                                                                   | 119-93-7   | 5                         | µg/l  | 1                                  | Grab        |    |
| 4,4'-Dimethylbibemzyl                                                                    | 538-39-6   | 5                         | µg/l  | 1                                  | Grab        |    |
| 4,4'-Dimethyldiphenylmethane                                                             | 4957-14-6  | 5                         | µg/l  | 1                                  | Grab        |    |
| Dimethylformamide                                                                        | 68-12-2    | 50                        | µg/l  | 1                                  | Grab        |    |
| alpha, alpha-Dimethyl phenethylanime                                                     | 122-09-8   | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,4-Dimethylphenol                                                                       | 105-67-9   | *                         | µg/l  | 1                                  | Grab        |    |
| *See limit for Phenolic compounds (total phenols)                                        |            |                           |       |                                    |             |    |
| Dimethyl phthalate                                                                       | 131-11-3   | 50                        | µg/l  | 1                                  | Grab        |    |
| Dimethyl tetrachloroterephthalate                                                        | 1861-32-1  | 50                        | µg/l  | 1                                  | Grab        |    |
| 1,3-Dinitrobenzene                                                                       | 99-65-0    | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,4-Dinitrophenol                                                                        | 51-28-5    | *                         | µg/l  | 1                                  | Grab        |    |
| *See limit for Phenolic compounds (total phenols)                                        |            |                           |       |                                    |             |    |
| 2,3-Dinitrotoluene                                                                       | 602-01-7   | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,4-Dinitrololuene                                                                       | 121-14-2   | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,5-Dinitrololuene                                                                       | 619-15-8   | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,6-Dinitrololuene                                                                       | 606-20-2   | 5                         | µg/l  | 1                                  | Grab        |    |
| 3,4-Dinitrololuene                                                                       | 610-39-9   | 5                         | µg/l  | 1                                  | Grab        |    |
| 3,5-Dinitrololuene                                                                       | 618-85-9   | 5                         | µg/l  | 1                                  | Grab        |    |
| Di-n-octyl phthalate                                                                     | 117-84-0   | 50                        | µg/l  | 1                                  | Grab        |    |
| Dinoseb                                                                                  | 88-85-7    | *                         | µg/l  | 1                                  | Grab        |    |
| *See limit for Phenolic compounds (total phenols)                                        |            |                           |       |                                    |             |    |
| Dioxin                                                                                   | NA         | *                         | µg/l  | 1                                  | Grab        |    |
| *See Chlorinated dibenzo-9-dioxins and Chlorinated dibenzofurans                         |            |                           |       |                                    |             |    |
| Diphenamid                                                                               | 957-51-7   | 50                        | µg/l  | 1                                  | Grab        |    |
| Diphenylamine                                                                            | 122-39-4   | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,2-Diphenylhydrazine                                                                    | 122-66-7   | 10                        | µg/l  | 1                                  | Grab        | 2  |

| Outfall and Parameters                                                                                     | CAS No.               | Limitations<br>Daily Max. | Units | Minimum Monitoring<br>Requirements |             | FN |
|------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------|-------|------------------------------------|-------------|----|
| <del>Outfall 001 - Containerized Well Development<br/>Water and/or Pump Test Water</del>                   |                       |                           |       | Measurement<br>Frequency           | Sample Type |    |
| Outfall 001 - Seneca River                                                                                 |                       |                           |       |                                    |             |    |
| Diquat<br>* Applies to the concentration of diquat ion whether free or as an undissociated salt.           | 2764-72-9             | 20*                       | µg/l  | 1                                  | Grab        |    |
| Dodecylguanidine acetate and Dodecylguanidine hydrochloride<br>* Applies to the sum of these substances    | 2439-10-3; 13590-97-1 | 50*                       | µg/l  | 1                                  | Grab        |    |
| Dyphylline                                                                                                 | 479-18-5              | 50                        | µg/l  | 1                                  | Grab        |    |
| Endosulfan                                                                                                 | 115-29-7              | .001                      | µg/l  | 1                                  | Grab        |    |
| Endothall                                                                                                  | 145-73-3              | 50                        | µg/l  | 1                                  | Grab        |    |
| Endrin                                                                                                     | 72-20-8               | 0.05                      | µg/l  | 1                                  | Grab        | 2  |
| Endrin aldehyde                                                                                            | 7421-93-4             | 5                         | µg/l  | 1                                  | Grab        |    |
| Endrin ketone                                                                                              | 53494-70-5            | 5                         | µg/l  | 1                                  | Grab        |    |
| Ethylbenzene                                                                                               | 100-41-4              | 4.5                       | µg/l  | 1                                  | Grab        |    |
| Ethylene chlorohydrin                                                                                      | 107-07-3              | 50                        | µg/l  | 1                                  | Grab        |    |
| Ethylene dibromide                                                                                         | 106-93-4              | 6 x 10 <sup>-4</sup>      | µg/l  | 1                                  | Grab        |    |
| Ethylene glycol                                                                                            | 107-21-1              | 50                        | µg/l  | 1                                  | Grab        |    |
| Ethylene oxide                                                                                             | 75-21-8               | 0.05                      | µg/l  | 1                                  | Grab        |    |
| Fluometuron                                                                                                | 2164-17-2             | 50                        | µg/l  | 1                                  | Grab        |    |
| Fluoranthene                                                                                               | 206-44-0              | 50                        | µg/l  | 1                                  | Grab        |    |
| Fluorene                                                                                                   | 86-73-7               | 50                        | µg/l  | 1                                  | Grab        |    |
| Fluoride                                                                                                   | NA                    | 1500                      | µg/l  | 1                                  | Grab        |    |
| Formaldehyde                                                                                               | 50-00-0               | 8                         | µg/l  | 1                                  | Grab        |    |
| Glyphosate                                                                                                 | 1071-83-6             | 50                        | µg/l  | 1                                  | Grab        |    |
| Guaifenesin                                                                                                | 93-14-1               | 50                        | µg/l  | 1                                  | Grab        |    |
| Heptachlor                                                                                                 | 76-44-8               | 0.01                      | µg/l  | 1                                  | Grab        | 2  |
| Heptachlor epoxide                                                                                         | 1024-57-3             | 0.2                       | µg/l  | 1                                  | Grab        | 2  |
| Hexachlorobenzene                                                                                          | 118-74-1              | 0.2                       | µg/l  | 1                                  | Grab        | 2  |
| Hexachlorobutadiene                                                                                        | 87-68-3               | 1                         | µg/l  | 1                                  | Grab        | 2  |
| alpha-Hexachlorocyclohexane                                                                                | 319-84-6              | 0.01                      | µg/l  | 1                                  | Grab        | 2  |
| beta-Hexachlorocyclohexane                                                                                 | 319-85-7              | 0.02                      | µg/l  | 1                                  | Grab        | 2  |
| delta-Hexachlorocyclohexane                                                                                | 319-86-8              | 0.04                      | µg/l  | 1                                  | Grab        | 2  |
| epsilon-Hexachlorohexane                                                                                   | 6108-10-7             | 0.02                      | µg/l  | 1                                  | Grab        | 2  |
| gamma-Hexachlorohexane                                                                                     | 58-89-9               | 0.02                      | µg/l  | 1                                  | Grab        | 2  |
| Hexachloropentadiene                                                                                       | 77-47-4               | 2.0                       | µg/l  | 1                                  | Grab        | 2  |
| Hexachloroethane                                                                                           | 67-72-1               | 0.6                       | µg/l  | 1                                  | Grab        |    |
| Hexachlorophene<br>* See limit for Phenolic Compounds (total phenols)                                      | 70-30-4               | *                         | µg/l  | 1                                  | Grab        |    |
| Hexachloropropene                                                                                          | 1888-71-7             | 5                         | µg/l  | 1                                  | Grab        |    |
| 2-Hexanone                                                                                                 | 591-78-6              | 50                        | µg/l  | 1                                  | Grab        |    |
| Hexazinone                                                                                                 | 51235-04-2            | 50                        | µg/l  | 1                                  | Grab        |    |
| Hydrazine                                                                                                  | 302-01-2              | 5                         | µg/l  | 1                                  | Grab        |    |
| Hydrogen sulfide                                                                                           | 7783-04-2             | 2                         | µg/l  | 1                                  | Grab        |    |
| Hydroquinone<br>* See limit for Phenolic Compounds (total phenols)                                         | 123-31-9              | *                         | µg/l  | 1                                  | Grab        |    |
| 1-Hydroxyethylidene-1,1-diphosphonic acid                                                                  | 2809-21-4             | 50                        | µg/l  | 1                                  | Grab        |    |
| 2-(2-Hydroxy-3,5-di-tert-pentylphenyl)-benzotriazole<br>* See limit for Phenolic Compounds (total phenols) | 25973-55-1            | *                         | µg/l  | 1                                  | Grab        |    |

| Outfall and Parameters                                                                                                     | CAS No.     | Limitations<br>Daily Max. | Units | Minimum Monitoring<br>Requirements |             | FN |
|----------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------|-------|------------------------------------|-------------|----|
| <del>Outfall 001 - Containerized Well Development<br/>Water and/or Pump Test Water</del>                                   |             |                           |       | Measurement<br>Frequency           | Sample Type |    |
| Outfall 001 - Seneca River                                                                                                 |             |                           |       |                                    |             |    |
| Indeno(1,2,3-cd)pyrene                                                                                                     | 193-39-5    | 0.2                       | µg/l  | 1                                  | Grab        | 2  |
| Iron                                                                                                                       | NA          | 300                       | µg/l  | 1                                  | Grab        |    |
| Isodecyl diphenyl phosphate                                                                                                | 29761-21-5  | 1.7                       | µg/l  | 1                                  | Grab        |    |
| Isodrin                                                                                                                    | 465-73-6    | 5                         | µg/l  | 1                                  | Grab        |    |
| Isophorone                                                                                                                 | 78-59-1     | 50                        | µg/l  | 1                                  | Grab        |    |
| Isopropalin                                                                                                                | 33820-53-0  | 5                         | µg/l  | 1                                  | Grab        |    |
| Isopropylbenzene                                                                                                           | 98-82-8     | 2.6                       | µg/l  | 1                                  | Grab        |    |
| 2-Isopropyltoluene                                                                                                         | 527-84-4    | 5                         | µg/l  | 1                                  | Grab        |    |
| 3-Isopropyltoluene                                                                                                         | 535-77-3    | 5                         | µg/l  | 1                                  | Grab        |    |
| 4-Isopropyltoluene                                                                                                         | 99-87-6     | 5                         | µg/l  | 1                                  | Grab        |    |
| Isothiazolones, total (isothiazolinones) (includes 5-chloro-2-methyl-4-isothiazolin-3-one & 2-methyl-4-isothiazolin-3-one) | NA          | 1                         | µg/l  | 1                                  | Grab        |    |
| Lead                                                                                                                       | NA          | 4                         | µg/l  | 1                                  | Grab        |    |
| Linear alkyl benzene sulfonates (LAS)                                                                                      | NA          | 40                        | µg/l  | 1                                  | Grab        |    |
| Magnesium                                                                                                                  | NA          | 35,000                    | µg/l  | 1                                  | Grab        |    |
| Malathion                                                                                                                  | 121-75-5    | 0.6                       | µg/l  | 1                                  | Grab        | 2  |
| Manganese                                                                                                                  | NA          | 300                       | µg/l  | 1                                  | Grab        |    |
| Mercaptobenzothiazole                                                                                                      | 149-30-4    | 50                        | µg/l  | 1                                  | Grab        |    |
| Mercury                                                                                                                    | NA          | 5 x 10 <sup>-2</sup>      | µg/l  | 1                                  | Grab        | 4  |
| Methacrylic acid                                                                                                           | 79-41-4     | 50                        | µg/l  | 1                                  | Grab        |    |
| Methacrylonitrile                                                                                                          | 126-98-7    | 5                         | µg/l  | 1                                  | Grab        |    |
| Methoxychlor                                                                                                               | 72-43-5     | 0.4                       | µg/l  | 1                                  | Grab        | 2  |
| (1-Methoxyethyl) benzene                                                                                                   | 4013-34-7   | 50                        | µg/l  | 1                                  | Grab        |    |
| (2-Methoxyethyl) benzene                                                                                                   | 3558-60-6   | 50                        | µg/l  | 1                                  | Grab        |    |
| N-Methylaniline                                                                                                            | 100-61-8    | 5                         | µg/l  | 1                                  | Grab        |    |
| Methylbenz(a)anthracenes<br>* Applies to the sum of these substances                                                       | NA          | 0.002*                    | µg/l  | 1                                  | Grab        |    |
| Methyl chloride                                                                                                            | 74-87-3     | 5                         | µg/l  | 1                                  | Grab        |    |
| 4,4'-Methylene-bis-(2-chloroaniline)                                                                                       | 101-14-4    | 5                         | µg/l  | 1                                  | Grab        |    |
| 4,4'-Methylene-bis-(N-methyl)aniline                                                                                       | 1807-55-2   | 5                         | µg/l  | 1                                  | Grab        |    |
| 4,4'-Methylene-bis-(N,N'-dimethyl) aniline                                                                                 | 101-61-1    | 5                         | µg/l  | 1                                  | Grab        |    |
| Methylene bistiocyanate                                                                                                    | 6317-18-6   | 50                        | µg/l  | 1                                  | Grab        |    |
| Methylene chloride                                                                                                         | 75-09-2     | 5                         | µg/l  | 1                                  | Grab        |    |
| 4-(1-Methylethoxy)-1-butanol                                                                                               | 31600-69-8  | 50                        | µg/l  | 1                                  | Grab        |    |
| 2-Methylethyl-1,3-dioxolane                                                                                                | 126-39-6    | 50                        | µg/l  | 1                                  | Grab        |    |
| Methyl ethyl ketone                                                                                                        | 78-93-3     | 50                        | µg/l  | 1                                  | Grab        |    |
| Methyl iodide                                                                                                              | 74-88-4     | 5                         | µg/l  | 1                                  | Grab        |    |
| 2-Methylnapthalene                                                                                                         | 91-57-6     | 4.2                       | µg/l  | 1                                  | Grab        |    |
| Methyl parathion<br>* see Parathion and Methyl parathion                                                                   | 298-00-0    | *                         | µg/l  | 1                                  | Grab        |    |
| alpha-Methylstyrene                                                                                                        | 98-83-9     | 5                         | µg/l  | 1                                  | Grab        |    |
| 2-Methylstyrene                                                                                                            | 611-15-4    | 5                         | µg/l  | 1                                  | Grab        |    |
| 3-Methylstyrene                                                                                                            | 100-80-1    | 5                         | µg/l  | 1                                  | Grab        |    |
| 4-Methylstyrene                                                                                                            | 622-97-9    | 5                         | µg/l  | 1                                  | Grab        |    |
| Methyl tert-butyl ether (MTBE)                                                                                             | 1634-04-4   | 10                        | µg/l  | 1                                  | Grab        |    |
| Metolachlor ESA                                                                                                            | 171118-09-5 | 50                        | µg/l  | 1                                  | Grab        |    |



| Outfall and Parameters                                                                                                                                                                                                                              | CAS No.          | Limitations<br>Daily Max. | Units | Minimum Monitoring<br>Requirements |             | FN  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-------|------------------------------------|-------------|-----|
| <del>Outfall 001 – Containerized Well Development<br/>Water and/or Pump Test Water</del>                                                                                                                                                            |                  |                           |       | Measurement<br>Frequency           | Sample Type |     |
| Outfall 001 - Seneca River                                                                                                                                                                                                                          |                  |                           |       |                                    |             |     |
| Metolachlor OA                                                                                                                                                                                                                                      | 152019-73-3      | 50                        | µg/l  | 1                                  | Grab        |     |
| Metribuzin                                                                                                                                                                                                                                          | 21087-64-9       | 50                        | µg/l  | 1                                  | Grab        |     |
| Mirex                                                                                                                                                                                                                                               | 2385-85-5        | 0.4                       | µg/l  | 1                                  | Grab        | 2   |
| Naphthalene                                                                                                                                                                                                                                         | 91-20-3          | 10                        | µg/l  | 1                                  | Grab        |     |
| Niacinamide                                                                                                                                                                                                                                         | 98-92-0          | 500                       | µg/l  | 1                                  | Grab        |     |
| Nickel                                                                                                                                                                                                                                              | NA               | 8.2                       | µg/l  | 1                                  | Grab        |     |
| Nitrate                                                                                                                                                                                                                                             | NA               | 10,000                    | µg/l  | 1                                  | Grab        |     |
| Nitrate and Nitrite (as N)                                                                                                                                                                                                                          | NA               | 10,000                    | µg/l  | 1                                  | Grab        |     |
| Nitrilotriacetic acid<br>*Includes realted forms that convert to nitrilotriacetic<br>acid upon acidification to a pH of 2.3 or less                                                                                                                 | NA               | 3*                        | µg/l  | 1                                  | Grab        |     |
| Nitrite (as N)                                                                                                                                                                                                                                      | NA               | 1,000                     | µg/l  | 1                                  | Grab        |     |
| 2-Nitroaniline                                                                                                                                                                                                                                      | 88-74-4          | 5                         | µg/l  | 1                                  | Grab        |     |
| 3-Nitroaniline                                                                                                                                                                                                                                      | 99-09-2          | 5                         | µg/l  | 1                                  | Grab        |     |
| 4-Nitroaniline                                                                                                                                                                                                                                      | 100-01-6         | 5                         | µg/l  | 1                                  | Grab        |     |
| Nitrobenzene                                                                                                                                                                                                                                        | 98-95-3          | 0.4                       | µg/l  | 1                                  | Grab        |     |
| N-Nitrosodiphenylamine                                                                                                                                                                                                                              | 86-30-6          | 50                        | µg/l  | 1                                  | Grab        |     |
| 2-Nitrotoluene                                                                                                                                                                                                                                      | 88-72-2          | 5                         | µg/l  | 1                                  | Grab        |     |
| 3-Nitrotoluene                                                                                                                                                                                                                                      | 99-08-1          | 5                         | µg/l  | 1                                  | Grab        |     |
| 4-Nitrotoluene                                                                                                                                                                                                                                      | 99-99-0          | 5                         | µg/l  | 1                                  | Grab        |     |
| 5-Nitro-o-toluidine                                                                                                                                                                                                                                 | 99-55-8          | 5                         | µg/l  | 1                                  | Grab        |     |
| Octachlorostyrene                                                                                                                                                                                                                                   | 29082-74-4       | 6 x 10 <sup>-6</sup>      | µg/l  | 1                                  | Grab        |     |
| Oxamyl                                                                                                                                                                                                                                              | 23135-22-0       | 50                        | µg/l  | 1                                  | Grab        |     |
| Parathion                                                                                                                                                                                                                                           | 56-38-2          | 0.065                     | µg/l  | 1                                  | Grab        |     |
| Parathion and Methyl parathion<br>** Applies to the sum of these substances. For the<br>waters of the Great Lakes System, the<br>Department will substitute a guidance value for the<br>aquatic Type standard if so determined under<br>702.15 (c). | 5638-2; 298-00-0 | 0.008**                   | µg/l  | 1                                  | Grab        |     |
| Pendimethalin                                                                                                                                                                                                                                       | 40487-42-1       | 5                         | µg/l  | 1                                  | Grab        |     |
| Pentachlorobenzene                                                                                                                                                                                                                                  | 608-93-5         | 5                         | µg/l  | 1                                  | Grab        |     |
| Pentachloroethane                                                                                                                                                                                                                                   | 76-01-7          | 5                         | µg/l  | 1                                  | Grab        |     |
| Pentachlorophenol<br>* See limit for Phenolic Compounds (total phenols)                                                                                                                                                                             | 87-86-5          | *                         | µg/l  | 1                                  | Grab        |     |
| Phenanthrene                                                                                                                                                                                                                                        | 85-01-8          | 1.5                       | µg/l  | 1                                  | Grab        |     |
| Phenol<br>* See limit for Phenolic Compounds (total phenols)                                                                                                                                                                                        | 108-95-2         | *                         | µg/l  | 1                                  | Grab        |     |
| Phenolic compounds – Total Phenols<br>* Applies to the sum of these substances                                                                                                                                                                      | NA               | 8                         | µg/l  | 1                                  | Grab        | 2,8 |
| Phenols, total chlorinated<br>* See limit for Phenolic Compounds (total phenols)                                                                                                                                                                    | NA               | *                         | µg/l  | 1                                  | Grab        |     |
| Phenols, total unchlorinated<br>* See limit for Phenolic Compounds (total phenols)                                                                                                                                                                  | NA               | *                         | µg/l  | 1                                  | Grab        |     |
| 1,2-Phenylenediamine                                                                                                                                                                                                                                | 95-54-5          | 5                         | µg/l  | 1                                  | Grab        |     |
| 1,3-Phenylenediamine                                                                                                                                                                                                                                | 108-45-2         | 5                         | µg/l  | 1                                  | Grab        |     |
| 1,4-Phenylenediamine                                                                                                                                                                                                                                | 108-45-2         | 5                         | µg/l  | 1                                  | Grab        |     |
| Phenyl ether                                                                                                                                                                                                                                        | 101-84-8         | 10                        | µg/l  | 1                                  | Grab        |     |

| Outfall and Parameters                                                                                                                                                 | CAS No.                                    | Limitations<br>Daily Max. | Units | Minimum Monitoring<br>Requirements |             | FN  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------|-------|------------------------------------|-------------|-----|
| <del>Outfall 001 - Containerized Well Development<br/>Water and/or Pump Test Water</del>                                                                               |                                            |                           |       | Measurement<br>Frequency           | Sample Type |     |
| Outfall 001 - Seneca River                                                                                                                                             |                                            |                           |       |                                    |             |     |
| Phenylhydrazine                                                                                                                                                        | 100-63-0                                   | 5                         | µg/l  | 1                                  | Grab        |     |
| Phenylpropanolamine                                                                                                                                                    | 14838-15-4                                 | 50                        | µg/l  | 1                                  | Grab        |     |
| 3-Phenyl-1-propene                                                                                                                                                     | 637-50-3                                   | 5                         | µg/l  | 1                                  | Grab        |     |
| cis-1-Phenyl-1-propene                                                                                                                                                 | 766-90-5                                   | 5                         | µg/l  | 1                                  | Grab        |     |
| trans-1-Phenyl-1-propene                                                                                                                                               | 873-66-5                                   | 5                         | µg/l  | 1                                  | Grab        |     |
| Phosphorus                                                                                                                                                             | NA                                         | 20                        | µg/l  | 1                                  | Grab        |     |
| Picloram                                                                                                                                                               | NA                                         | 50                        | µg/l  | 1                                  | Grab        |     |
| Polybrominated biphenyls<br>*Applies to each congener individually                                                                                                     | NA                                         | 5*                        | µg/l  | 1                                  | Grab        |     |
| PCB-1016                                                                                                                                                               | 12674-11-2                                 | 0.20                      | µg/l  | 1                                  | Grab        | 2,3 |
| PCB-1221                                                                                                                                                               | 11104-28-2                                 | 0.20                      | µg/l  | 1                                  | Grab        | 2,3 |
| PCB-1232                                                                                                                                                               | 11141-16-5                                 | 0.20                      | µg/l  | 1                                  | Grab        | 2,3 |
| PCB-1242                                                                                                                                                               | 53469-21-9                                 | 0.20                      | µg/l  | 1                                  | Grab        | 2,3 |
| PCB-1248                                                                                                                                                               | 12672-29-6                                 | 0.20                      | µg/l  | 1                                  | Grab        | 2,3 |
| PCB-1254                                                                                                                                                               | 11097-69-1                                 | 0.20                      | µg/l  | 1                                  | Grab        | 2,3 |
| PCB-1260                                                                                                                                                               | 11096-82-5                                 | 0.20                      | µg/l  | 1                                  | Grab        | 2,3 |
| Prometon                                                                                                                                                               | 1610-18-0                                  | 50                        | µg/l  | 1                                  | Grab        |     |
| Propham                                                                                                                                                                | 122-42-9                                   | 50                        | µg/l  | 1                                  | Grab        |     |
| n-Propylbenzene                                                                                                                                                        | 103-65-1                                   | 5                         | µg/l  | 1                                  | Grab        |     |
| Propylene glycol                                                                                                                                                       | 57-55-6                                    | 1000                      | µg/l  | 1                                  | Grab        |     |
| Pyrene                                                                                                                                                                 | 129-00-0                                   | 4.6                       | µg/l  | 1                                  | Grab        |     |
| Pyridine                                                                                                                                                               | 110-86-1                                   | 50                        | µg/l  | 1                                  | Grab        |     |
| Quaternary ammonium compounds (including dimethyl<br>benzyl ammonium chloride & dimethyl ethyl benzyl<br>ammonium chloride)<br>*Applies to the sum of these substances | NA                                         | 10*                       | µg/l  | 1                                  | Grab        |     |
| Selenium                                                                                                                                                               | NA                                         | 4.6                       | µg/l  | 1                                  | Grab        |     |
| Silver, Total                                                                                                                                                          | NA                                         | 50                        | µg/l  | 1                                  | Grab        |     |
| Simazine                                                                                                                                                               | 122-34-9                                   | 0.5                       | µg/l  | 1                                  | Grab        |     |
| Styrene                                                                                                                                                                | 100-42-5                                   | 5                         | µg/l  | 1                                  | Grab        |     |
| Sulfate                                                                                                                                                                | NA                                         | 250,000                   | µg/l  | 1                                  | Grab        |     |
| Sulfides, Total                                                                                                                                                        | NA                                         | 50                        | µg/l  | 1                                  | Grab        |     |
| Tebuthiuron                                                                                                                                                            | 34014-18-1                                 | 50                        | µg/l  | 1                                  | Grab        |     |
| Terbufos                                                                                                                                                               | 13071-79-9                                 | 100                       | µg/l  | 1                                  | Grab        | 2   |
| Tetrachlorobenzenes<br>* Applies to the sum of 1,2,3,4-, 1,2,3,5- and 1,2,4,5-<br>tetrachlorobenzene.                                                                  | 636-66-2; 634-90-2;<br>95-94-3; 12408-10-5 | 5*                        | µg/l  | 1                                  | Grab        |     |
| 1,1,1,2-Tetrachloroethane                                                                                                                                              | 630-20-6                                   | 5                         | µg/l  | 1                                  | Grab        |     |
| 1,1,2,2-Tetrachloroethane                                                                                                                                              | 79-34-5                                    | 0.2                       | µg/l  | 1                                  | Grab        |     |
| Tetrachloroethene                                                                                                                                                      | 127-18-4                                   | 0.7                       | µg/l  | 1                                  | Grab        |     |
| alpha, alpha, alpha, 4-Tetrachlorotoluene                                                                                                                              | 5216-25-1                                  | 5                         | µg/l  | 1                                  | Grab        |     |
| Tetrahydrofuran                                                                                                                                                        | 109-99-9                                   | 50                        | µg/l  | 1                                  | Grab        |     |
| 1,2,3,4-Tetramethylbenzene                                                                                                                                             | 488-23-3                                   | 5                         | µg/l  | 1                                  | Grab        |     |
| 1,2,3,5-Tetramethylbenzene                                                                                                                                             | 527-53-7                                   | 5                         | µg/l  | 1                                  | Grab        |     |
| 1,2,4,5-Tetramethylbenzene                                                                                                                                             | 95-93-2                                    | 5                         | µg/l  | 1                                  | Grab        |     |
| Thallium                                                                                                                                                               | NA                                         | 0.5                       | µg/l  | 1                                  | Grab        |     |
| Theophylline                                                                                                                                                           | 58-55-9                                    | 40                        | µg/l  | 1                                  | Grab        |     |

| Outfall and Parameters                                                                    | CAS No.                                    | Limitations<br>Daily Max. | Units | Minimum Monitoring<br>Requirements |             | FN |
|-------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------|-------|------------------------------------|-------------|----|
| <del>Outfall 001 - Containerized Well Development<br/>Water and/or Pump Test Water</del>  |                                            |                           |       | Measurement<br>Frequency           | Sample Type |    |
| Outfall 001 - Seneca River                                                                |                                            |                           |       |                                    |             |    |
| Toluene                                                                                   | 108-88-3                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| Toluene-2,4-diamine                                                                       | 95-80-7                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| Toluene-2,5-diamine                                                                       | 95-70-5                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| Toluene-2,6-diamine                                                                       | 823-40-5                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| o-Toluidine                                                                               | 95-53-4                                    | 0.6                       | µg/l  | 1                                  | Grab        |    |
| Tolytriazole                                                                              | 29385-43-1                                 | 50                        | µg/l  | 1                                  | Grab        |    |
| Toxaphene                                                                                 | 8001-35-2                                  | 1                         | µg/l  | 1                                  | Grab        | 2  |
| 1,2,4-Tribromobenzene                                                                     | 615-54-3                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| Tributyltin oxide                                                                         | 56-35-9                                    | 50                        | µg/l  | 1                                  | Grab        |    |
| 2,4,6-Trichloroaniline                                                                    | 634-93-5                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| Trichlorobenzenes<br>*Applies to the sum of 1,2,3-, 1,2,4- and 1,3,5-<br>trichlorobenzene | 87-61-6; 120-82-1;<br>108-70-3; 12002-48-1 | 5*                        | µg/l  | 1                                  | Grab        |    |
| 1,1,1-Trichloroethane                                                                     | 71-55-6                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,1,2-Trichloroethane                                                                     | 79-00-5                                    | 1                         | µg/l  | 1                                  | Grab        |    |
| Trichloroethene                                                                           | 79-01-6                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| Trichlorofluoromethane                                                                    | 75-69-4                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,4,5-Trichlorophenoxypropionic acid                                                      | 93-72-1                                    | 10                        | µg/l  | 1                                  | Grab        |    |
| 1,1,2-Trichloropropane                                                                    | 598-77-6                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,2,3-Trichloropropane                                                                    | 96-18-4                                    | 0.04                      | µg/l  | 1                                  | Grab        |    |
| cis-1,2,3-Trichloropropene                                                                | 13116-57-9                                 | 5                         | µg/l  | 1                                  | Grab        |    |
| trans-1,2,3-trichloropropene                                                              | 13116-58-0                                 | 5                         | µg/l  | 1                                  | Grab        |    |
| alpha,2,4-Trichlorotoluene                                                                | 94-99-5                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| alpha,2,6-Trichlorotoluene                                                                | 2014-83-7                                  | 5                         | µg/l  | 1                                  | Grab        |    |
| alpha,3,4-Trichlorotoluene                                                                | 102-47-6                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| alpha, alpha,2-Trichlorotoluene                                                           | 88-66-4                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| alpha, alpha,4-Trichlorotoluene                                                           | 13940-94-8                                 | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,3,4-Trichlorotoluene                                                                    | 7359-72-0                                  | 0.34                      | µg/l  | 1                                  | Grab        |    |
| 2,3,5-Trichlorotoluene                                                                    | 56961-86-5                                 | 0.34                      | µg/l  | 1                                  | Grab        |    |
| 2,3,6-Trichlorotoluene                                                                    | 2077-46-5                                  | 0.34                      | µg/l  | 1                                  | Grab        |    |
| 2,4,5-Trichlorotoluene                                                                    | 6639-30-1                                  | 0.34                      | µg/l  | 1                                  | Grab        |    |
| 2,4,6-Trichlorotoluene                                                                    | 23749-65-7                                 | 0.34                      | µg/l  | 1                                  | Grab        |    |
| 1,1,1-Trichloro-2,2,2-trifluoethane                                                       | 354-58-5                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,1,2-Trichloro-1,2,2-trifluoethane                                                       | 76-13-1                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,2,3-Trimethylbenzene                                                                    | 526-73-8                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,2,4-Trimethylbenzene                                                                    | 95-63-6                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,3,5-Trimethylbenzene                                                                    | 108-67-8                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,3,6-Trimethylpyridine                                                                   | 1462-84-6                                  | 50                        | µg/l  | 1                                  | Grab        |    |
| 2,4,6-Trimethylpyridine                                                                   | 108-75-8                                   | 50                        | µg/l  | 1                                  | Grab        |    |
| sym-Trinitrobenzene                                                                       | 99-35-4                                    | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,3,4-Trinitrotoluene                                                                     | 602-29-9                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,3,6-Trinitrotoluene                                                                     | 18292-97-2                                 | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,4,5-Trinitrotoluene                                                                     | 610-25-3                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| 2,4,6-Trinitrotoluene                                                                     | 118-96-7                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| 3,4,5-Trinitrotoluene                                                                     | 603-15-6                                   | 5                         | µg/l  | 1                                  | Grab        |    |
| Triphenyl phosphate                                                                       | 115-86-6                                   | 4                         | µg/l  | 1                                  | Grab        |    |
| Vanadium                                                                                  | NA                                         | 14                        | µg/l  | 1                                  | Grab        |    |

| Outfall and Parameters                                                                   | CAS No.  | Limitations<br>Daily Max. | Units | Minimum Monitoring<br>Requirements |             | FN |
|------------------------------------------------------------------------------------------|----------|---------------------------|-------|------------------------------------|-------------|----|
| <del>Outfall 001 – Containerized Well Development<br/>Water and/or Pump Test Water</del> |          |                           |       | Measurement<br>Frequency           | Sample Type |    |
| Outfall 001 - Seneca River                                                               |          |                           |       |                                    |             |    |
| Vinyl chloride                                                                           | 75-01-4  | 2                         | µg/l  | 1                                  | Grab        |    |
| 1,2-Xylene                                                                               | 95-47-6  | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,3-Xylene                                                                               | 108-38-3 | 5                         | µg/l  | 1                                  | Grab        |    |
| 1,4-Xylene                                                                               | 106-42-3 | 5                         | µg/l  | 1                                  | Grab        |    |
| Zinc                                                                                     | NA       | 66                        | µg/l  | 1                                  | Grab        |    |

Footnotes:

1. ~~Samples must be collected prior to each discharge event. Discharge may not commence until the sample results show compliance with the above discharge limitations.~~  
**See Below**
2. Discharge limit is set at the Practical Quantitation Limit (PQL). Actual surface water effluent standard/limitation is below this limit. Analysis of this parameter shall be of the most stringent USEPA approved method in accordance with 40 CFR 136.
3. For PCBs:
  - a. The treatment plant operator must monitor this discharge for PCBs using USEPA laboratory method 608. The laboratory must make all reasonable attempts to achieve a Minimum Detection Level (MDL) of 0.065 µg/l.
  - b. 0.065 µg/l is the discharge goal. The treatment plant operator shall report all values above the MDL (0.065 µg/l per Aroclor). If the level of any Aroclor is above 0.65 µg/l, the treatment must evaluate the treatment system and identify the cause of the detectable level of PCBs in the discharge.
  - c. If the Department determines that effluent monitoring results above can be prevented by implementation of additional measures as proposed by the treatment plant operator in footnote 3.b 9above, and approved by the Department, the treatment plant operator shall implement such additional measures.
4. The water quality based effluent limit for mercury is  $7 \times 10^{-4}$  µg/l. The enforceable limit is set at 0.05 µg/l for the purposes of compliance. The enforceable limit maybe revised in the future if DEC determines another limit is more appropriate. Mercury must be analyzed using USEPA Method 1631.
5. Only waters generated at remediation sites during sampling, pump tests, well development, or dewatering of excavations are authorized for treatment and discharge.
6. Samples and measurements, to comply with the monitoring requirements specified above, must be taken from the holding tank prior to discharge to the receiving waterbody.
7. Discharge is not authorized until such time as an engineering submission showing the method of treatment and discharge is approved by the Department. The discharge rate may not exceed the effective treatment system or ground adsorptive capacity. All monitoring data, engineering submissions and modification requests must be submitted to the following DER contact person: \_\_\_\_\_.
8. Total phenolics must be analyzed using EPA Methods 420.1 or 420.2.
9. Discharge to a surface waterbody within the New York City Watershed is not authorized by these effluent criteria. Separate review of any proposed discharge to surface water within the New York City Watershed is required.

**Refer to Specification 02 70 00 Subpart 3.3(C.) for System Testing and Startup Requirements. Following successful startup, effluent samples are to be collected weekly and analyzed for Volatile Organic Compounds, Semi-Volatile Organic Compounds, Cyanide, pH, Total Suspended Solids, Total Dissolved Solids, Metals, Phenols, Turbidity and Oil & Grease. Metal sample results shall be for monitoring purposes only.**

**Section 027000 Attachment 2****Maximum Groundwater Concentrations and SPDES Discharge Limits for Selected Parameters****NYSEG Seneca Falls Former MGP Site**

| Parameter                  | CAS No.  | Maximum Groundwater Concentration | SPDES Daily Discharge Limitation |
|----------------------------|----------|-----------------------------------|----------------------------------|
| <b>VOCs (ug/L)</b>         |          |                                   |                                  |
| Benzene                    | 71-43-2  | 2300                              | 1                                |
| Ethylbenzene               | 100-41-4 | 120                               | 4.5                              |
| Toluene                    | 108-88-3 | 1300                              | 5                                |
| Xylenes, Total             | NA       | 1000                              | 5                                |
| <b>SVOCs (ug/L)</b>        |          |                                   |                                  |
| Benzo(a)anthracene         | 56-55-3  | 3                                 | 0.05                             |
| Benzo(b)fluoranthene       | 205-99-2 | 5                                 | 0.07                             |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 540                               | 8                                |
| 1-1'-Biphenyl (Biphenyl)   | 92-52-4  | 21                                | 5                                |
| Chrysene                   | 218-01-9 | 2                                 | 0.6                              |
| Indeno(1,2,3-cd)pyrene     | 193-39-5 | 2                                 | 0.2                              |
| Napthalene                 | 91-20-3  | 900                               | 10                               |
| Phenanthrene               | 81-01-8  | 77                                | 1.5                              |
| Phenol (Total Phenols)     | 108-95-2 | 13                                | 8                                |
| <b>Inorganics (ug/L)</b>   |          |                                   |                                  |
| Cyanide                    | NA       | 650                               | 1                                |

**Notes:**

- 1) Maximum groundwater concentration presented taken from Table I Record of Decision (NYSDEC, March 2015) based on sampling performed during Remedial Investigation.
- 2) List is for groundwater parameters that exceeded Standard, Criteria or Guidance (SCG) values for VOCs, SVOCs and cyanide. Other VOCs, SVOCS and parameters may be present in the construction water requiring treatment depending on source of water. All parameters tested per the SPDES permit must meet daily discharge limitation even if not presented in this table.

## SECTION 31 10 00

### CLEARING AND GRUBBING

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

The work to be performed under this Section includes, but is not limited to, the following items including all labor, materials, equipment and services incidental to Site clearing and grubbing activities. This work shall consist of removing trees, shrubs, vegetation, stumps and root masses in areas shown on the Drawings, and as described in these Specifications and as necessary to protect the environment and comply with applicable regulations.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety Requirements.
- B. SECTION 01 57 26 – Dust Control.
- C. SECTION 02 53 00 – Waste Transportation, Treatment, and Disposal.
- D. Drawings.
- E. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

##### 1.03 REFERENCE STANDARDS

- A. 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Permits
- B. New York State Department of Environmental Conservation, New York Standards and Specifications for Erosion and Sediment Controls, 2005.
- C. Seneca County Soil & Water Conservation District.

#### PART 2 – PRODUCTS

Not applicable.

#### PART 3 – EXECUTION

##### 3.01 TEMPORARY EROSION CONTROL MEASURES

- A. All erosion and sediment control devices shall be in place prior to the start of any grubbing or earthwork. Equipment shall be installed per manufacturer recommendations.



### 3.02 CLEARING

- A. Protect and preserve trees and other vegetation located outside of the limits of construction and as indicated on the Drawings.
- B. Clear all trees, shrubs and bushes to ground level within the defined clearing limits shown on the Drawings.
- C. Manage all clearing debris generated through clearing activities as specified in Section 02 53 00 – Waste Transportation, Treatment, and Disposal.

### 3.03 GRUBBING

- A. Minimize grubbed areas to the open active work area to reduce the disturbed area of the Site and mitigate the potential for erosion and sedimentation.
- B. Remove vegetation, tree/shrub/bush stumps, and root masses within the clearing limits identified on the Drawings.
- C. Manage grubblings generated through grubbing activities as specified in Section 02 53 00 – Waste Transportation, Treatment, and Disposal.

END OF SECTION

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## SECTION 31 23 19

### DEWATERING

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. This section specifies performance of dewatering required to excavate and backfill below the groundwater table; to remove collected stormwater runoff from open excavations; to maintain contaminated material stockpile containment areas in a manner that prevents uncontrolled release of stormwater having contacted contaminated material; and to ensure acceptance of excavated sediment at the selected disposal facility. Acceptance criteria are provided in Section 02 53 00 – Waste Transportation, Treatment, and Disposal.
- B. Coordinate dredging production with sediment dewatering capacity, disposal facility acceptance, and all scheduling and coordination with subcontractors. The Owner and/or Remediation Engineer will not be responsible for delays in the Work due to subcontractor availability or other circumstances.
- C. Control the collection of surface water runoff and groundwater in open excavations by limiting the total area of open excavation at a given time.
- D. Coordination and control of equipment and vehicle wash/decontamination water shall be considered as part of the work under Section 02 70 00 – Construction Water Management.
- E. Provide all materials, equipment, labor, and services necessary for dewatering.

##### 1.02 RELATED SECTIONS

- A. Section 01 35 29 – Health and Safety Requirements
- B. Section 02 53 00 – Waste Transportation, Treatment, and Disposal
- C. Section 02 61 23 – Excavation and Management
- D. Section 02 70 00 – Construction Water Treatment System
- E. Section 35 20 23 – Dredging
- F. Drawings
- G. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

### DEWATERING

### 1.03 SUBMITTALS

- A. Submit in accordance with Section 01 33 00 – Submittal Procedures.
- B. Daily inspection logs of stockpiles and frac tanks for weekly submittal to the Remediation Engineer.
- C. Product data for drying/bulking agents.

## PART 2 – PRODUCTS

### 2.01 DEWATERING PAD

- A. The sediment dewatering pad/sediment containers shall be constructed in accordance with the Drawings.

### 2.02 DRYING/BULKING AGENTS

- A. Drying/bulking agents may include materials such as sawdust, CKD, lime kiln dust, Portland cement, recycled/crushed gypsum board, or other suitable materials locally available, cost effective, and acceptable to the TSDF.
- B. Drying agents used must be approved by the Remediation Engineer and Owner and only when on-site dry sediment is insufficient to adequately address potential NAPL and moisture content requirements of the TSDF.
- C. In the event needed, drying agents shall be added at the minimum percentage needed and shall not exceed 7-8% by weight unless approved by Remediation Engineer.

## PART 3 – EXECUTION

### 3.01 INSTALLATION

- A. Establish a sediment dewatering pad/sediment containers in accordance with the Drawings.
- B. If the cleared area in the Lowland Area is not large enough to accommodate dredging activities, equipment, and the dewatering pad/sediment containers, the dewatering pad/sediment containers may be moved to the Upland Area, with approval from the Owner and Remediation Engineer.
- C. Dredge sediment stockpiles shall not exceed 4 feet in height.

### 3.02 MATERIAL DEWATERING

- A. Dredged sediment will be direct loaded onto the dewatering pad/sediment containers, to the extent practicable.

- B. If the direct loading onto the dewatering pad/sediment containers is not feasible, dredged sediment will be loaded into watertight trucks and transported to the dewatering pad.
- C. Dredged material shall be dewatered on/in the dewatering pad/sediment containers. The stockpile retention time on the pad shall be minimized.
- D. Prevent water and sediment from spilling from trucks or the dewatering pad/sediment containers during transport from the dredge area to the dewatering area, and at all other times.
- E. Once sediment has drained on the dewatering pad, it shall be blended as needed with other previously dredged sediment to homogenize the impacted soils to eliminate pockets of excessive moisture or coal tar.
- F. MGP-impacted sediment stockpiles shall be kept to a minimum, and coordinated with the transport of dewatered sediments for off-site disposal. Maintenance of stockpiles, including over nights or weekends, shall be required as stated in Section 02 53 00 – Waste Transportation, Treatment, and Disposal.
- G. Dewatering shall be complete and thorough, and satisfy the requirements of the disposal facility and State and Federal transportation regulations. Dewatering shall be complete enough to preclude the formation of free water during transport to the disposal facility. All free water shall be removed from the sediment prior to off-site transportation.
- H. Alternate methods to gravity dewatering shall be submitted to the Remediation Engineer in writing for approval 10 days prior to use. Alternate methods shall not create odors or the potential for releases of contaminated sediment or water.
  - 1. As needed and with the approval of the Remediation Engineer, additional drying and/or absorption agent shall be blended with the sediment to further moisture condition the material by reducing the moisture content, absorbing residual coal tar, and/or reducing odor in the blended material.
- I. All dewatering effluent shall be collected, treated, and stored on-site in accordance with Section 02 70 00 – Construction Water Management and transported and disposed in accordance with Section 02 53 00 – Waste Transportation, Treatment, and Disposal.
- J. Inspect stockpiles daily during construction and record inspection observations in a daily logbook for submittal to the Remediation Engineer on a weekly basis.

### 3.03 WATER MANAGEMENT AND DISPOSAL

- A. Dewatering effluent will be managed in accordance with Section 02 70 00 – Construction Water Management.

3.04 STANDBY EQUIPMENT

- A. Provide complete standby equipment, installed and available for immediate operation, as may be required to adequately maintain de-watering on a continuous basis (when and where necessary) and in the event that all or any part of the system may become inadequate or fail.

3.05 CORRECTIVE ACTION

- A. If dewatered sediment is rejected by the disposal facility, further dewatering of the material shall be required at no cost to the Owner or Remediation Engineer.

3.06 REMOVAL

- A. Maintain compliance with all conditions of regulating permits and provide such information to the Remediation Engineer. Obtain written approval from the Remediation Engineer before discontinuing operation of dewatering system.

3.07 CONSTRUCTION WATER

- A. All surface water runoff and groundwater in open excavation shall be collected and sent to construction water treatment system.

END OF SECTION

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## SECTION 31 23 23.13

### BACKFILL

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Work to be done under this Section includes, but is not limited to, providing all labor, materials, equipment, and incidentals as necessary to conduct and complete the Work specified herein and shown on the Drawings.
  - 1. Stabilize all disturbed areas.
  - 2. Prepare, grade, shape, compact and protect all subgrades, backfills, and ground surfaces as shown on the Drawings.
  - 3. Furnish materials from off-site source(s) acceptable to Owner/Remediation Engineer and analytical testing by the Remediation Engineer as required to complete the Work. No soil shall leave or be imported to the site without the Owner/ Remediation Engineer's approval.
  - 4. Install clean canal fill suitable for restoration of a benthic community within the dredged limits of the Seneca River and Canal to lines and grades shown on the Drawings.
  - 5. Place and compact clean backfill in the 185 Fall Street excavations and above the ISS portion of the Upland Area, as shown on the Drawings.
  - 6. Install 1-foot Lowland Soil Cap in the Lowland Area as shown on the Drawings.
  - 7. Control airborne dust to below visible levels, required regulatory levels and as required by other Sections.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety Requirements
- B. SECTION 01 57 26 – Dust Control
- C. SECTION 02 61 23 – Excavation and Management
- D. SECTION 31 25 00 – Erosion and Sedimentation Control
- E. SECTION 32 30 00 – Site Restoration
- F. SECTION 32 92 00 – Turf and Grasses
- G. Drawings

### BACKFILL



- H. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### 1.03 REFERENCE STANDARDS

- A. 6 NYCRR Part 375
- B. New York State Department of Environmental Conservation, New York Standards and Specifications for Erosion and Sediment Controls, November 2016.
- C. New York State Department of Environmental Conservation "Technical Guidance for Site Investigation and Remediation"; DER-10 (NYSDEC DER-10); May 3, 2010.
- D. Seneca County Soil & Water Conservation District.

#### 1.04 SUBMITTALS

- A. Material Sources: At a minimum, submit name and address of each imported material source for each material type within eight days of Notice to Proceed. Coordinate with the Remediation Engineer to schedule a visit to the proposed borrow source/supplier location to collect samples for chemical and geotechnical analysis.
- B. Borrow source samples of suitable size for geotechnical laboratory testing to be performed by the Remediation Engineer
- C. Borrow source samples of suitable size for chemical laboratory test data to be performed by the Remediation Engineer.

### PART 2 – PRODUCTS

#### 2.01 SELECT GRANULAR FILL

- A. To be used for site restoration; vegetated and gravel restoration, lowland cover, and canal bank restoration.
- B. Select Granular Fill shall conform to the requirements of NYSDOT 733-11 with the following gradation:

| Sieve Size Designation | Percent Passing by Weight |
|------------------------|---------------------------|
| 4-inch                 | 100                       |
| No. 40                 | 0-70                      |
| No. 200                | 0-15                      |

## 2.02 CANAL FILL

### A. Canal Fill shall meet the following requirements:

#### 1. Gradation

| Sieve Size Designation | Percent Passing by Weight |
|------------------------|---------------------------|
| 8-inch                 | 100                       |
| 3-inch                 | 70                        |
| No. 4                  | 40                        |
| No. 200                | 10                        |

#### 2. Classification

| Classification                                               | Mix Percentage |
|--------------------------------------------------------------|----------------|
| River run small cobble                                       | 30             |
| River run course and fine gravel                             | 30             |
| Fine to course sand                                          | 30             |
| Mix of inorganic and organic fines<br>(0.075 mm and smaller) | 10             |

#### 3. pH between 6.5 and 7.5

#### 4. An organic carbon content of 5 to 10 percent (8 to 18 percent organic matter) on a dry weight basis.

#### 5. A concentration of chemical contaminants less than ecological resource soil clean objectives (SCOs) in 6 NYCRR Part 375.

## 2.03 TOPSOIL

### A. Topsoil shall be provided as the final surficial soil in all disturbed areas to be vegetated.

1. Topsoil shall be of good quality, friable, and free of objectionable weed roots or seeds, clay lumps, sticks, trash slag, cinders, stones larger than 1 inch in any dimension, or other extraneous material harmful to plant growth.
2. Topsoil shall be as defined in ASTM D 5268 and shall have a texture of sandy loam as defined by the USDA textural classification.
3. Topsoil shall have a minimum of 4 percent and a maximum of 20 percent organic material content.
4. Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs, or marshes.

5. Perform nutrient analysis as described in specification 32 92 00 – Turf and Grass.

2.04 CRUSHED STONE

- A. To be used for the site construction entrance and the temporary crane pads.
- B. Crushed Stone shall conform to the requirements of NYSDOT 733-20 with the following gradation:

| Sieve Size Designation | Percent Passing by Weight |
|------------------------|---------------------------|
| 1-inch                 | 100                       |
| ½-inch                 | 30-100                    |
| ¼-inch                 | 0-30                      |
| No. 10                 | 0-10                      |
| No. 20                 | 0-5                       |

2.05 DENSE GRADED AGGREGATE

- A. To be used for site restoration; gravel restoration.
- B. Dense Graded Aggregate shall conform to the requirements of NYSDOT 703-0202, Course Aggregate, Type 2 with the following gradation:

| Sieve Size Designation | Percent Passing by Weight |
|------------------------|---------------------------|
| 1½-inch                | 100                       |
| 1-inch                 | 90-100                    |
| ½-inch                 | 0-15                      |
| No. 200                | 0-1                       |

2.06 STONE MIX

- A. To be used for temporary working pads in Dredge area.
- B. Stone Mix shall consist of NYSDOT #3 and #4.

2.07 SOIL SOURCE QUALITY CONTROL

- A. Any source proposed for use as backfill will be shown to not exceed the allowable constituent levels for imported fill or soil per Section 5.4 of NYSDEC DER-10.
- B. Imported material shall meet the chemical test requirements of 6 NYCRR Part 375-6.7(d) for Restricted Use-Residential and Restricted Use-Commercial Sites and use the lower of the protection of groundwater or the protection of public health soil cleanup objectives (SCOs), for the identified use of the parcel where soil is being placed as follows:
1. 185 Fall Street Backfill – Restricted Use-Residential SCOs

2. Upland Area Backfill – Restricted Use-Commercial or Restricted Use-Industrial SCOs
  3. Lowland Area Cover System – Restricted Use-Commercial or Restricted Use-Industrial SCOs
  4. Seneca River and Canal Fill – “If Ecological resources are Present” SCOs
- C. Imported materials with a gradation of 10% or less by weight passing the number 80 sieve as determined by ASTM D 422 may be imported without chemical sampling and analysis consistent with NYSDEC DER-10 Paragraph 5.4(e)(5).

### PART 3 – EXECUTION

#### 3.01 GENERAL

- A. Backfilling activities, including placement and compaction, shall not be performed when air temperatures are at or below 32 degrees F unless approved by Remediation Engineer.
- B. Previously placed, and possibly accepted, backfill shall be excavated and replaced at no additional cost if the backfill does not conform to the Contract Documents.
- C. Placement of fill and backfill shall be systematically conducted in the specified uniform layer thicknesses.
- D. Measurement of backfill layer or lift thickness shall be conducted in all cases prior to compaction.
- E. Backfill excavations as promptly as work permits, but not until completion of the following:
  1. Acceptance by the Remediation Engineer of construction below finish grade.
  2. Completion of quality control testing, acceptance by the Remediation Engineer and recording locations of underground utilities.
  3. Removal of trash and debris.
- F. In freezing weather, a layer of fill shall not be left in an uncompacted state at the close of a day's operations. Prior to terminating operations for the day, the final layer of fill, after compaction, shall be rolled with a smooth-wheeled roller to eliminate ridges of soil left by tractors, trucks and compaction equipment. The placement of frozen or saturated fill materials shall not be permitted. The placement of fill on frozen ground shall not be permitted.

#### BACKFILL

- G. Any excavations improperly backfilled or where settlement occurs shall be reopened, to the depth required for proper compaction, then refilled and compacted with the surface restored to the required grade and condition, at no additional expense to the Owner.

### 3.02 PLACEMENT AND COMPACTION

- A. The Remediation Engineer shall approve all excavated surfaces prior to placing any fill. Subgrade shall not contain any topsoil, organics, roots over 1 inch in diameter, standing water, ice or frozen soil.
- B. When necessary, compact subgrade surfaces in excavations to density requirements for backfill material.
- C. Compaction shall be performed with mechanical vibratory or tamping equipment suitable for the size of the excavation to create a firm and unyielding surface, as approved by the Remediation Engineer.
- D. Compaction in confined areas shall be conducted with acceptable equipment such as hand-guided static compactors or mechanical tampers as approved by the Remediation Engineer.
- E. During compaction operations, incidental compaction due to traffic by construction equipment other than that used specifically in compaction operations will not be credited toward the required minimum coverages specified.
- F. Compaction by means of puddling, jetting or flooding water is prohibited.
- G. Moisture Control:
  - 1. The amount of moisture in any one layer of fill material shall be as uniform as practical throughout. Fill that is too wet for proper compaction shall be harrowed, or otherwise dried or treated to achieve a proper moisture content to allow compaction to the required density. Additional measures including, but not limited to, adding stabilizing agents such as lime to hydrate excess moisture in the material, or other methods, may be required in order to place and adequately compact fill soils.
  - 2. Fill that is too dry for proper compaction shall have water uniformly applied over the surface of the loose layer. Sufficient water shall be added to allow compaction to the required density.
  - 3. Fill that exhibits weaving shall be repaired or replaced, as directed by the Remediation Engineer.

H. Select Granular Fill:

1. Place in layers not exceeding 12 inches.
2. Compact Select Granular Fill using a static roller compactor with a minimum of 3 passes covering the entire area. Where compression with static roller compactor is not feasible, track and compress the select granular fill with moderate pressure of the bucket of a backhoe or excavator.
3. For gravel restoration areas, compaction shall be to a minimum 95% Modified Proctor, ASTM D1557. Compaction testing shall be at a frequency of 1 test per 250 cubic yards of placed Select Granular Fill.
4. For vegetated restoration areas and Lowland Cover, compaction shall be to a minimum of 90% Modified Proctor, ASTM D1557. Compaction testing shall be at a frequency of 1 test per 250 cubic yards of placed Select Granular Fill.

I. Canal Fill:

1. Place, grade, and compact fill utilizing a long stick excavator in uniform lifts not to exceed 1 foot in depth.
2. Compact by compressing the canal fill with moderate pressure of the excavator bucket.

J. Topsoil:

1. Place topsoil materials in 6 to 8-inch layers.
2. Compress the topsoil using small tracked equipment with two perpendicular passes covering the entire area. Where compression with tracked equipment is not feasible, compress the topsoil with moderate pressure of the bucket of a backhoe or excavator or with handheld equipment.

K. Crushed Stone:

1. Place and compact material in uniform continuous layers, not exceeding 8 inches compacted depth.

L. Dense Graded Aggregate:

1. Place and compact material in uniform continuous layers, not exceeding 8 inches compacted depth.
2. Compact to a minimum 95% Modified Proctor, ASTM D1557. Compaction testing shall be at a frequency of 1 test per 250 cubic yards of placed dense aggregate.

- M. Each layer shall contain no rock, stones or boulders larger than 4 inches in their greatest dimension or one half the size of the maximum lift thickness.
- N. Any excavations improperly backfilled or where settlement occurs shall be reopened, to the depth required for proper compaction, then refilled and compacted with the surface restored to the required grade and condition, at no additional expense to the Owner.

### 3.03 GRADING

- A. Grading and Finishing: In areas designated for grading and finishing, rake or machine-grade the areas to remove stones over 2 inches and other unsatisfactory material; fill depressions and finish the surface within the indicated tolerances. Refer to the landscape drawings and specifications for preparations in landscaped areas.
- B. Unless noted otherwise in the Drawings or specifications, grades at the perimeter of excavated areas shall match existing grades at excavation perimeter.

### 3.04 SITE RESTORATION

- A. Restore site in accordance with the Drawings and Section 32 30 00 – Site Restoration, and Section 32 92 00 – Turf and Grasses.

END OF SECTION

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## SECTION 31 32 13

### IN-SITU SOLIDIFICATION

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. Perform in-situ solidification (ISS) of MGP-impacted soil by excavator mixing, trenching, rotary-blending, or auger method.
- B. Conduct bench scale testing prior to commencing full-scale ISS activities.
- C. Collect and analyze quality control data to verify compliance with required performance criteria.
- D. Perform ISS verification borings to verify homogeneous mixing, column overlap, and ISS depth verification.
- E. Collect quality control samples of freshly mixed soil and provide to the Remediation Engineer for preparation of test specimens and laboratory testing.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 33 00 – Submittal Procedures
- B. SECTION 01 71 23 – Field Engineering
- C. SECTION 02 00 00 – Existing Condition
- D. SECTION 02 51 29 – Decontamination Procedures
- E. SECTION 02 61 23 – Excavation and Management
- F. SECTION 31 23 23.13 – Backfill
- G. SECTION 44 32 00 – Odor Control
- H. Drawings
- I. Pre-Design Investigation Report (attachment to the Remedial Design Report, H&A, May 2017)
- J. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

### 1.03 SUMMARY

- A. Furnish all necessary machinery, material, reagents, labor, equipment, and incidentals required to conduct ISS of soil with a solidification agent to solidify MGP-impacted soils to reduce future migration of MGP-impacts to groundwater.
- B. The area to be solidified, as shown on the Drawings, is located within the identified limit of work and designated as in-situ solidification (ISS) Areas S1 through S9 at the Upland Area of the Seneca Falls Former MGP Site.
- C. ISS will extend to the depths shown on the Drawings and range from 7 to 20 feet below ground surface, prior to the pre-excavation removal.
- D. Work includes, but is not limited to, the following:
  - 1. Complete bench scale testing to demonstrate that the types and quantities of proposed ISS admixtures will achieve the performance requirements. Preliminary material performance testing was conducted by Haley & Aldrich during the Pre-Design Investigation (PDI) and included in the PDI Report attached to the Remedial Design Report.
  - 2. Coordinate with New York State licensed surveyor for layout of solidification area limits and establishment of a solidification control grid.
  - 3. Provide survey control of mix cell dimensions and top and bottom elevation of ISS for each cell.
  - 4. Provide specified solidification reagents/admixtures for incorporation with on-site soils necessary for ISS.
  - 5. Excavate and dispose off-site MGP-Impacted Soil within ISS areas from ground surface to generally 4 feet below ground surface to remove structures, historic utilities, and other obstructions to the ISS work, and allow room for volume increase (e.g., soil swell and addition of solidification agent) resulting from ISS.
  - 6. Incorporate solidification reagents/admixtures with the site soils to the required depth.
  - 7. Manage excess soil swell, while complying with applicable federal, state and local laws and regulations.
  - 8. Grade the top of the solidified soil to be a minimum of 48 inches below the final soil cover grade and slope from the center towards the edges a minimum of 0.5 percent to preclude the accumulation of surface water infiltration on top of the solidified soil.
  - 9. Backfill solidified areas with common borrow and final restoration materials to final grade elevation.

10. Remove temporary shoring and bracing systems completely from excavation areas (i.e., no shoring elements, such as soldier piles or wood lagging shall be abandoned in-place.
  11. Clean and restore the Site and facilities to meet project requirements, including removing excess spoils, hardened grout from equipment flushing, soils, rocks, debris and other materials encountered during soil mixing as required.
  12. Provide quality control testing to demonstrate that the ISS material conforms to the project requirements.
- E. Remediation Contractor shall be responsible for the alignment, continuity, width, depth and mix content of the completed ISS as necessary to meet the performance requirements.
- F. An ISS system shall be used which provides a safe, reliable method to treat impacted soil to depths up to 20 feet below existing ground surface so that the treated material conforms to the performance requirements of this Section. A system or procedure, other than described in this specification, may be used if the approved submittals, submitted in accordance with Section 01 33 00 – Submittal Procedures, demonstrate equivalent capabilities and ability to meet performance requirements. Such approval does not relieve the Remediation Contractor of responsibility for meeting specified requirements for safety, reliability, performance, required environmental controls, and site-specific operational requirements or restrictions. The ISS system shall include a data acquisition and display/control module for monitoring and recording key in-situ mixing parameters, including, but not limited to: grout flow to the auger, depth, vertical penetration rate, rotation speed, grout application per foot of depth, and pressures.

#### 1.04 REFERENCES

- A. American Society of Testing and Materials (ASTM) C150-05 Standard Specification for Portland Cement.
- B. ASTM D 806-00 (2006) Standard Test Method for Cement Content of Soil-Cement Mixtures.
- C. ASTM D 1633-00 Compressive Strength of Molded Soil-Cement Cylinders.
- D. ASTM 2901-99 Standard Test Method for Cement Content of Freshly Mixed Soil-Cement.
- E. ASTM D 4832-02 Standard Test Method for Preparation and Testing of Controlled Low Strength Materials (CLSM) Test Cylinders.
- F. ASTM D 4843 Standard Test Method for Wetting and Drying Test of Solid Wastes
- G. ASTM D 5084 Measurement of Hydraulic Conductivity of Saturated Porous Materials using a Flexible Wall Permeameter.

- H. ASTM C989 Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.

#### 1.05 SUBMITTALS

- A. The following pre-construction submittals shall be provided at least 21 days, or as otherwise specified, in advance of commencement of solidification activities.
  - 1. Soil Solidification Layout Drawing – Prepare a Soil Solidification Layout Drawing showing the location, dimensions, solidification methods, and bottom elevation of each soil solidification cell. The ISS layout shall divide the ISS area into individual cells, identify the solidification depth of each Area, and indicate the solidification method to be utilized in each Area. The survey control grid shall also be shown on the drawing.
  - 2. Mix Design – The Remediation Contractor shall perform bench scale testing prior to commencing solidification activities at the site to confirm an appropriate mix to achieve the prescribed performance criteria. The Remediation Contractor shall submit the proposed mix design for acceptance by the Design Engineer and the Remediation Engineer, the Remediation Contractor shall identify mix design components and provide material data sheets and test results as requested by Remediation Engineer.
  - 3. Key Personnel - Resumes of key personnel committed to the project shall be provided with the proposal. Requests for changes to key personnel shall be submitted 30 days in advance of mobilization and will require written approval from the Remediation Contractor. Key Personnel include Site Superintendent, ISS operations foreman/supervisor, batch plant operator, quality control personnel, and mixing equipment operators.
  - 4. Reagents - Reagent composition and certificate of analysis.
  - 5. Qualifications of the laboratory performing the construction phase quality control testing and the Remediation Contractor's quality control field staff.
  - 6. Submit an ISS Work Plan as a component of the Technical Execution Plan meeting the requirements of Section 01 33 00 – Submittal Requirements. The ISS Work Plan shall outline the procedures, equipment, and details of the ISS work, including, but not limited to:
    - a. Mixing and batch plant equipment
    - b. Mixing procedures to ensure complete homogenization of soils and solidification reagents
    - c. Scale systems and calibration
    - d. Data acquisition and control system
    - e. Reagent types and sources
    - f. Reagent storage and metering

- g. Grout preparation and control, metering and delivery equipment and methods
  - h. Field sampling tool(s) to sample freshly mixed grout/soil at specified discrete depths
  - i. Water source, storage and metering
  - j. Emissions controls for dust, odor and vapors
  - k. Field quality control and drilling progress documentation forms
- B. Provide daily submittals during the work summarizing the following minimum information:
  - 1. Total quantity of solidification reagent-soil mixed for the week in cubic yards and percent complete and daily batch reports for each mixed Area.
  - 2. A tabular summary of the ISS Areas completed to date and date of completion.
  - 3. A figure showing completed and not completed ISS cells.
  - 4. Quantities of reagents used during the week.
  - 5. Quantities of reagents delivered to the Site with backup in the form of weight slips, bills of lading, flow meter records, or equivalent.
  - 6. Soil disposal/handling methods and quantities managed.
  - 7. Daily batch proportions and mixing quality control data.
  - 8. Results of quality control testing.
  - 9. An updated summary of quality control samples collected and expected date when results will be available.
- C. Submittals listed above shall be approved by the Remediation Engineer and be submitted in accordance with the provisions of Section 01 33 00 – Submittal Procedures.
- D. All quality control records, tests, and inspections shall be documented by the Remediation Contractor and shall be made available to the Remediation Engineer for review.

#### 1.06 WORK AREA CONDITIONS

- A. The physical conditions indicated on the Drawings and in the Specifications are based on site investigations. A summary of prior site investigations is presented in Section 02 00 00 – Existing Conditions. While the site investigation data is representative of subsurface conditions at a specific location, variations in the impacted materials and soil moisture content are expected to exist and the Remediation Contractor shall plan accordingly. Boring and test pit logs from investigation activities at the Site are contained in included in the PDI Report attached to the Remedial Design Report.

- B. The seasonal high groundwater table is encountered at approximately 7-10 feet below ground surface though because of the fill on site, perched groundwater conditions may exist.
- C. The areas of the site where ISS will be performed contain historical fill soils and debris. Debris and remnant foundations from former MGP operations encountered require removal, unless ISS can be performed around the obstruction to accomplish solidification of all surrounding soil and approved by Remediation Engineer/Owner and New York State Department of Environmental Conservation.

#### 1.07 PERFORMANCE REQUIREMENTS

- A. In-Situ Soil Solidification
  - 1. The solidified soil shall meet the physical testing criteria and characteristics listed in Table 1. The Remediation Contractor shall conduct bench scale testing prior to ISS implementation to confirm the mix design required to achieve the prescribed criteria. The tests and observations criteria shall apply to samples that have been cured for 28 days. Samples achieving criteria listed below prior to 28 days curing shall be deemed acceptable; however, any alterations to the specified mix design shall require approval of the Remediation Engineer.

**Table 1**  
**POST-TREATMENT TEST CRITERIA**

| TEST                                                         | TEST VALUE                                                                                                                                                       |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental Performance                                    |                                                                                                                                                                  |
| Min. Unconfined Compressive Strength (UCS), ASTM D1633       | 50 psi                                                                                                                                                           |
| Max. Permeability, ASTM D5084 (at 10 psi confining pressure) | $1 \times 10^{-6}$ cm/sec                                                                                                                                        |
| Maximum Volumetric Swell                                     | 20%                                                                                                                                                              |
| Slump                                                        | 2 to 6 inches                                                                                                                                                    |
| Free Liquids                                                 | No Free Liquids                                                                                                                                                  |
| Coring                                                       | Core samples will be collected at a frequency of 1 per 5,000 square feet to insure material thoroughly mixed vertically and horizontally within each column/cell |
| Mixing Depth                                                 | As shown on Drawings                                                                                                                                             |
| Excavatability Performance                                   |                                                                                                                                                                  |
| Removability Modulus (RE, See Note)                          | $\leq 2.0$                                                                                                                                                       |
| Max. Unconfined Compressive Strength (UCS), ASTM D1633       | 300 psi                                                                                                                                                          |

Note: The RE is based on work by the Ohio Department of Transportation and is described in the March 1996 Performance Specification for Controlled Low Strength Material Controlled Density Fill (CLSM-CDF) prepared by Hamilton County, Ohio and the City of Cincinnati, Ohio. The RE is calculated as follows:

$$RE = \frac{w^{1.5} \times 104 \times C^{0.5}}{106}$$

Where:

w = dry density of cured material in pounds per cubic foot (pcf)

C = 28-day UCS

2. Provide an ISS system and layout capable of mixing to the approved mix design proportions over the full limits of the soil solidification area. The ISS layout shall divide the ISS area into individual cells, identify the solidification depth of each cell, and indicate the solidification method to be utilized in each cell.
3. The soil solidification layout shall provide for adequate and verifiable overlap (if required) between solidified Areas so that all soil within the limits of the soil solidification area will be solidified as specified.
4. The vertical limits of the soil solidification will be as shown on the Drawings.
5. Mix proportions- the actual weight of each reagent in each solidified cell shall be within five percent of the specified mix design (e.g., if the specified mix is 10% by dry weight of soil, then the tolerance shall be 9.5-10.5%), unless otherwise approved by the Remediation Engineer.
6. Emission Controls – The mixing system shall include control apparatus necessary to meet project, local, state and federal regulations for air emissions and dust. Remediation Contractor shall implement all controls necessary to meet these requirements.
7. Noise Control – The mixing system shall be compliant with state and local noise regulations. The Remediation Contractor shall install noise control devices onto equipment or use other mitigation controls as needed to comply with the applicable regulations to allow work to continue at hours necessary to meet project schedule requirements.

## 1.08 EQUIPMENT

### A. Mixing Equipment

1. The soil mixing equipment shall have an adequate capacity to meet performance and schedule requirements.
2. Mixing equipment shall include suitable rotary blending equipment. Bucket mixing alone, without rotary blending, will not be allowed.
3. The ISS system shall include a data acquisition and display/control module for monitoring and recording key in-situ mixing parameters, including, but not limited to: grout flow to the auger, depth, vertical penetration rate, rotation speed, grout application per foot of depth, and pressures.



4. The soil mixing equipment will operate using equipment capable of thoroughly mixing the soil in each soil solidification cell with specified reagents and water and shall create a homogeneous mixture vertically and horizontally across the soil cell.
  5. The mixing equipment shall be equipped with positive means for controlling and recording the mix proportions.
- B. Reagent Feed Units
1. Satisfactory means, utilizing weighing, metering or volumetric measurement, shall be provided to separately batch the required amount of each reagent.
  2. Silos and feeders shall be equipped and operated so that no caking of material or variation in feed occurs. Provisions shall be made so that each reagent can be easily sampled. No open-air stockpiles of reagents will be allowed.
- C. Accuracy of Measurement Equipment
1. Scales, meters and volumetric measuring devices used for measuring contaminated material, reagents and water for soil-cement mixing processes shall be accurate to plus or minus 1 percent of the quantity being measured.
  2. A check of calibration of measuring equipment shall be performed every five working days.

#### 1.09 MIX DESIGN

- A. Perform bench scale testing to provide data to determine the design mix necessary to meet the project performance requirements. The bench scale testing shall, at a minimum, include unconfined compression, permeability testing, and wet/dry testing to demonstrate compliance with the performance requirements. Acceptance of the bench scale testing and mix design by the Remediation Engineer does not preclude the Remediation Contractor's obligation to meet the performance criteria. The bench scale results submittal shall include:
1. Sampling procedures, sample descriptions, and sample characterization
  2. Source of all materials used in the bench scale testing and vendor certification of the materials.
  3. Test procedures, observations, and results.
  4. Recommended ISS mixtures including additive materials and soil content.
- B. The Design Engineer has performed a preliminary bench-scale treatability study using site soils, with the general findings and results listed below. The complete 2015 Timely Bench Scale Test Results are included in the PDI Report attached to the Remedial Design Report.

1. Reagents: Type II/V Portland cement (PC) and Grade 120 ground granulated blast furnace slag (GGBFS).
2. An upper limit on swell of 20% will be used to evaluate Remediation Contractor-recommended final mix designs.
3. The Remediation Contractor's treatability testing shall provide mix refinement to reduce slump to between 2 and 6 inches (or as otherwise determined acceptable during field demonstration testing) to maintain consistency during mixing and to moderate potential reductions in UCS or increases in hydraulic conductivity due to excess moisture.

## PART 2 – PRODUCTS

### 2.01 WATER

- A. The same water source shall be used for the bench scale testing and ISS implementation, unless otherwise approved by the Remediation Engineer.
- B. Water shall not contain concentrations of oil, acid, salt, alkali, organic matter, or other deleterious substances which will be detrimental to the successful execution of the solidification treatment process.
- C. The general vicinity of the Site is serviced by municipal potable water. Arrange for temporary hook-up to the City water service and pay all fees associated with City water usage.

### 2.02 REAGENTS

- A. The chemical composition of reagents used shall be provided to the Remediation Engineer. A certificate of analysis supplied by the vendor shall accompany each shipping unit of reagent. A minimum of one certificate per 1,000 tons shall be provided. Reagents shall be shipped in properly labeled containers with instructions for handling and storage. The instructions shall be strictly adhered to.
- B. Cement used in the solidification process shall conform to ASTM Designation C-150 "Standard Specification for Portland Cement" Type I. The cement shall be adequately protected from moisture and contamination while in transit. Cement shall be stored in a silo or other appropriate bulk storage container. Storage of cement in bags is not acceptable. Reclaimed cement or cement containing lumps or deleterious matter shall not be used. Cement shall be from an approved source and the supplier shall provide a certification of compliance with applicable requirements of ASTM C150.
- C. Ground granulated blast furnace slag shall conform to ASTM C989 and AASHTO M-302 Grade 120. The GGBFS shall be adequately protected from moisture and contamination while in transit. The GGBFS shall be stored in a silo or other appropriate bulk storage container or be pre-blended at the cement supplier. Storage of GGBFS in bags is not acceptable. The GGBFS containing lumps or deleterious matter shall not be used.

- D. Grout shall consist of a stable colloidal suspension of cement, GGBFS, and water. Other additives may be included as determined by the Remediation Contractor, subject to approval by the Remediation Engineer. The purpose of the grout is to assist in loosening the soils for mixing and to modify the soils for increased strength, reduced permeability, and reduced leaching. The grout shall be pumpable and workable with the ISS injection and mixing equipment.
- E. Admixtures may be used to obtain characteristics of the final mixture to meet the performance criteria, only with prior approval of the Remediation Engineer. These additives may include bentonite, sodium silicate, or other materials.

### PART 3 – EXECUTION

#### 3.01 GENERAL

- A. Following excavation and removal of overlying soil generally to a depth of 4 feet below ground surface, as well as removal of utilities, foundations, and other obstructions, proceed with soil solidification within the limits shown in the Drawings.
- B. Solidification of Areas S1 through S9 shall overlap (if required) in a manner to provide 100% coverage within the area identified for ISS.
- C. Soil mixing and reagent addition will be performed so that solidified soil will meet the performance requirements specified in this Section.

#### 3.02 LAYOUT AND SURVEY CONTROL

- A. Establish survey control grid/points which shall be utilized for cell location and designation in the field. Use the same coordinate system and vertical and horizontal controls as used by the Design Engineer in developing the Drawings.
- B. Survey the dimensions and location of each mix Area, using GPS or transit survey from established horizontal control points. Survey shall be performed during each day of solidification to ensure accurate location of mix Areas, to document that adequate Area overlap is obtained (if required), and to provide for updates of the ISS progress CAD drawing to be prepared by Remediation Contractor. Alternatively, Remediation Contractor may use GPS-enabled equipment, calibrated to the site coordinate system, to locate and track ISS cell locations. Remediation Contractor shall demonstrate calibration through location of site survey control points established by the Design Engineer and provided in the Drawings.
- C. For each mix area, survey the starting elevation of ISS (i.e., before mixing) and measure the total depth mixed to verify that the bottom of ISS elevation has been achieved.

#### 3.03 OPERATIONAL CONDITIONS

- A. Weather Conditions - Solidification shall not take place in an ambient temperature below 32 degrees F without approval by the Remediation Engineer. Provisions shall be made to maintain the temperature of the treated material above freezing while curing.

Soil shall not be treated if it contains any frozen material. The temperature of the treated material immediately after treatment shall not exceed 90 degrees F without approval. ISS shall not be performed during periods of heavy rainfall if this will result in the addition of excess water to the mixture which will adversely impact the curing and the ability to meet performance criteria.

- B. Oversize Material – In-situ material that exceeds the maximum allowable particle size of the ISS mixing equipment and that is amenable to treatment shall be reduced to a size that the mixing equipment can accommodate. Oversize material that cannot be reduced to an acceptable size shall be removed for off-site disposal.
- C. Obstructions - If obstructions including boulders, unknown subsurface structures or abandoned utilities are encountered, the ISS operator shall stop mixing at that location until the nature of the obstruction is known. Obstructions which cannot be penetrated, may be remediated by removal, grouting, or other acceptable means.

### 3.04 ISS CONSTRUCTION

- A. The solidification area shall be constructed using ISS to the lines, grades, and cross sections indicated on the Drawings. The ISS structure shall be essentially vertical with a pattern of overlapping columns or cells and shall extend to the elevations and Area limits shown on the Drawings. A description of the soil profile through which the ISS is to be constructed is provided on the Drawings and on the boring and test pit logs included in the PDI Report attached to the Remedial Design Report.
- B. Tolerances
  - 1. The ISS cells shall be essentially vertical. The working platform and ISS equipment shall be level for mixing to a consistent depth within the cell.
  - 2. The depth of ISS cells shall be measured or surveyed to within 6 inches of the desired elevation. The depth shall be measured from the surface to the lowest point on the mixing auger/tool.
  - 3. The ISS pattern of overlaps shall be surveyed and staked to ensure that the overlap ratio is constructed as designed.
  - 4. The grout injection ratio shall be calculated and documented for each ISS column or cell. The grout injection ratio may be corrected for previous overlaps in the same column. In all cases, the minimum injection ratio shall be obtained.
- C. Soil Mixing and Penetration
  - 1. Each ISS cell shall be penetrated while simultaneously injecting grout and then mixed by repeated passes of the mixing equipment. The number of mixing passes shall be monitored and optimized (and recorded) for each cell to achieve adequate mixing. The rate of penetration and grout addition shall be optimized to ensure complete mixing of grout with the soil.

D. Injection Rate

1. The grout injection rate shall be paced with the mixing rate within each cell to sequentially add grout as unmixed soil is penetrated and mixed. The volume of grout to be added to each cell shall be based on the volume of soil to be solidified and the mix design.
2. Reagent metering – The metering devices utilized for proper reagent blending must be approved by the Remediation Engineer prior to the start of full scale soil solidification. All metering devices shall be calibrated on-site prior to commencing on-site mixing operations, and calibration checks shall be performed at a minimum of once per 5 days (more frequent if required by device manufacturer). Calibration check reports must be submitted to the Remediation Engineer on a weekly basis.

3.05 FIELD DEMONSTRATION

Prior to full-scale operations, a field demonstration shall be performed. At least 300 cubic yards of contaminated soil shall be processed, and the tests listed in Tables 2 and 3 below shall be performed. Field quality control tests shall be performed on 3 field demonstration samples and laboratory tests on solidified soil specimens. Post-field demonstration coring and visual observations shall be performed at 1 location within the Field Demonstration area following 7 days of curing. Locations for sampling and investigation will be selected randomly by the Remediation Engineer.

A. Full-Scale Processing Equipment

1. The full-scale processing equipment shall be used for the field demonstration. Reagents, mix ratios, and mixing procedures used during the field demonstration, or as adjusted as a result of the field demonstration shall be the same as those used for the remainder of the work. Should the equipment selected for ISS construction by the Remediation Contractor fail to achieve complete mixing within the soil column or cell, fail to achieve the required penetration depth, or fail to meet the performance requirements, the Remediation Contractor shall provide alternate ISS equipment and/or means of construction acceptable to the Remediation Engineer to meet the performance requirements at no additional cost to the Owner.

B. Field Demonstration Location

1. The field demonstration shall be conducted in an area where MGP-impacted soil is encountered, representative of average site conditions. The field demonstration area shall be selected by the Remediation Contractor, subject to the approval of the Remediation Engineer.

C. Field Demonstration Testing

1. For each mix cell within the field demonstration area, perform field quality control tests listed in Table 2 including grout density, slump, and mixing

completeness observation. Adjust water content of grout or add supplemental water or reagent to mix cell if needed to modify the soil-reagent mix consistency to meet the slump criteria. Samples collection depths shall be randomly varied between surface, mid-depth, and bottom of mix cell to obtain adequate distribution and representativeness of sampling.

2. For each mix cell, collect a grab sample at a random depth as approved by the Remediation Engineer, perform a slump test, and provide a specimen to the Remediation Engineer. Remediation Contractor shall run the sample through a 3/8-inch wire mesh screen and prepare four (4) 3"x 6" specimen cylinders for UCS and three (3) 2"x4" specimen cylinders for permeability testing, which will accommodate laboratory testing at 3 curing durations and provide two (2) field archive specimens.
3. Perform laboratory testing on five of the mix cells to be selected by Remediation Contractor as follows:
  - a. UCS (ASTM D1633) at 3, 7, 14, and 28 days
  - b. Permeability (ASTM D5084) at 7, 14, and 28 days with 10 psi confining (effective) pressure

Remaining samples shall be archived for possible later testing or for field observation.

4. Monitor VOC emissions during ISS mixing immediately adjacent to the active mixing area to determine what level of engineering controls (e.g., odor suppressant foam) will be necessary during ISS mixing to comply with work zone and perimeter air monitoring action levels.

Table 2. FIELD QUALITY CONTROL TESTS

| TEST PROCEDURE                             | FREQUENCY                                                                                      | CRITERIA                                                 |
|--------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Grout Density by Mud Balance (API 13B-1)   | 1 per 500 cubic yards of solidification, minimum 1 per day and if batch plant operator changes | 11-11.5 lbs/gal <sup>1</sup>                             |
| Slump (ASTM C143)                          | 1 per mix cell                                                                                 | 2 – 6 inches                                             |
| Mix Homogeneity/<br>Completeness of Mixing | 1 per mix cell                                                                                 | Visual                                                   |
| Coring                                     | 1 per 5,000 square feet of ISS treatment area                                                  | No visual NAPL or non-mechanical breaks (See 3.06.C.1.d) |

<sup>1</sup> Grout density may be adjusted if an approved change in the grout water content is made

D. Field Demonstration Test Results

1. Review of field demonstration test results by Remediation Engineer shall be required prior to commencing full-scale ISS on the remainder of the ISS area. Full-scale ISS shall commence once UCS and permeability test results achieving the performance criteria are obtained, unless otherwise approved by Remediation Engineer. Passing results on samples cured less than 28 days are acceptable.
2. Provide all field and lab quality control documentation and test data for Remediation Engineer's review.
3. If test results from the field demonstration do not achieve performance criteria, additional archived samples shall be tested to better assess specimen variability and determine acceptability of results. Should archive sample testing fail to demonstrate compliance with performance criteria, Remediation Contractor will modify the mix design and additional field demonstration mixing will be required, with approval by Remediation Engineer.

E. Retesting and reprocessing

1. Retesting and reprocessing shall be performed at no additional cost to the Owner for treated material that does not meet that requirements set forth in the performance criteria, or the soil mixing fails to achieve thorough homogenous mixing, mixing to the specified depths, or complete mixing overlap to the depths specified.
2. The Remediation Contractor may elect to alter the mix design for re-mixing of these areas as necessary to meet the project performance criteria.
3. Testing shall be performed on re-mixed samples from the initial mix sampling. Sampling frequency shall be a minimum of one sample per 500 CY or one sample per day.

3.06 QUALITY CONTROL PROCEDURES

A. Documentation

1. For each mix cell, record and submit detailed documentation of the following:
  - a. Area and cell identification number;
  - b. Cell dimensions, depth, and volume;
  - c. Elevation of ground surface before and after solidification and elevation of bottom of ISS mixing;
  - d. Date and duration of mixing, including start and end time;
  - e. Auger rotation speed, and penetration rate as applicable;
  - f. Rotary pressure at base of each column, as applicable;
  - g. Mix ratio;



- h. Supplemental water or reagent added and reason;
  - i. Slump and grout density test results;
  - j. Reagent delivery information (density and flow rate);
  - k. Hydraulic pressure; and
  - l. Description of depths of obstructions or hard drilling or refusal encountered.
2. Field documentation shall be provided to the Remediation Engineer on a daily basis in electronic format.

B. Qualifications

- 1. Field personnel running the grout plant and performing quality control sampling and testing shall have a minimum of 2 years of ISS experience.
- 2. Laboratory quality control testing shall be performed by a laboratory with a minimum of 2 years of experience in performing the required tests. The laboratory shall demonstrate adequate capacity to meet the project demands. Test results shall be provided to Remediation Engineer no later than 5 business days following the designated cure time for samples.

C. Quality Control Testing

- 1. The following field quality control activities will be the responsibility of the Remediation Contractor.
  - a. Field Sampling and Testing
    - i. Grab samples for field testing will be collected as determined to be necessary based on observations of the ISS mixture and field conditions and a minimum of one sample per cell.
    - ii. Grab samples will be collected from a depth near the bottom of the completed area as determined by the Remediation Engineer. Grab samples will be collected as outlined in the procedure for collection grab samples for laboratory testing.
    - iii. Field testing will be performed following sample collection (on uncured samples). Collect grab samples of wet uncured, mixed soil and cement from a completed cell with a weighted chamber attached to a mixing rig or supported by pole. The sampler shall be placed at the proper depth as determined by the Remediation Engineer and then opened and closed from the surface. Grab samples shall be collected immediately following cell installation.
    - iv. Visually inspect collected grab samples for a homogeneous mix throughout the length of the mix cell.
    - v. Perform slump test (see Table 2) on grab samples to ensure that the mixture is performing similar to the expectations based on the bench scale results for the design mix.

- vi. Perform slump test following sample collection of freshly mixed soil and provide slump test result to Remediation Engineer for determination if consistency of the material meets the criteria identified in Table 2.
  - vii. Provide sufficient volume (generally a 5-gallon bucket is sufficient) of freshly mixed soil from the required depth interval to for the preparation of cylinder molds for curing and laboratory testing.
  - viii. Grout samples from each grout batch shall be tested for mud density (see Table 2).
- b. Grab Samples for Laboratory Testing
- i. Run the sample through a 3/8-inch wire mesh screen and prepare four (4) 3"x 6" specimen cylinders for UCS and three (3) 2"x4" specimen cylinders for permeability testing, which will accommodate laboratory testing of one sample, with two replicates for possible future testing, as well as a field archive sample.
  - ii. Laboratory testing will be performed at a frequency of one sample for 500 cubic yards and a minimum of one sample per day for the parameters in Table 3.
  - iii. The specimens for laboratory testing will be prepared as follows:
    - Sieve sample through a 3/8-inch wire mesh screen.
    - Place sample in plastic cylinder mold, rod to remove trapped air pockets, and then seal in accordance with ASTM D4832.
    - Cap, and store and cure on-site in a cooler with at least 2 inches of water in the bottom (to maintain humid condition) at ambient temperature of 60 degrees Fahrenheit  $\pm$  10 degrees. Samples shall be maintained on site in a neat and orderly fashion in damp and unfrozen conditions.
    - After at least 3 days of on-site curing, ship cured samples to the laboratory.
  - iv. Cure samples for 28 days and tested to assess compliance with the performance criteria. Passing test results obtained prior to 28 days of curing will be acceptable.
  - v. Maintain archive samples off-site until final "Review" for all QA/QC results by the Remediation Engineer.
- c. Quality Assurance Testing
- i. Duplicate samples shall be submitted to the Remediation Engineer for quality assurance laboratory testing at a frequency

of one set of samples per 5 sets of quality control tests performed. Quality assurance samples will be tested for the parameters listed in Table 2. The Remediation Contractor may require additional quality assurance tests as a result of failed quality assurance or quality control tests. The Remediation Contractor may also require additional quality assurance tests due to changes in the mix design or physical appearance of the contaminated soil.

d. Visual Observation Borings

- i. Perform continuously logged soil borings/cores through completed ISS areas at the frequency shown on Table 2. Remediation Engineer shall observe treated materials to verify uniformity of mixing, mix cell overlap, and completion to the target depth. The Remediation Contractor shall document observations with photographs and submit documentation to the Remediation Engineer.
- ii. Collect one half of the sampling locations in the approximate center of the solidified soil cell.
- iii. Collect one half of the sampling locations in the overlapping portions of four solidified soil cells.
- iv. The soil cores shall be a minimum of 3 inches in diameter with continuous recovery using either sonic drilling methods or a core bit. Mud rotary of drive and wash drilling methods with water will not be accepted.
- v. The soil cores shall be visually inspected for the following criteria and the results recorded by the Remediation Engineer:
  - Visible non-aqueous phase liquids
  - Non-mechanical induced cracking within the core
  - Percent core recovered
  - NAPL coating on the drilling tools
  - NAPL in drill wash tub
- vi. ISS installation will be considered a potential failure when one or more of the following conditions occur:
  - A continuous layer or seam of NAPL is noted on within the core
  - An isolated ball of NAPL greater than 1 centimeter is identified within the core
  - NAPL coating is visible on drilling tools
  - Visible NAPL is noted in the drill wash tub

If one or more of the above conditions exists, the NYSDEC must be notified to

discuss the severity of the problem, the degree of concern, and whether correction action will be necessary.

vii. Following completion of the core, the boring shall be filled with grout.

e. Summary of Quality Control Testing

Table 3. POST-TREATMENT QUALITY CONTROL TESTING FREQUENCY

| TEST PROCEDURE                                                         | FREQUENCY                                   |
|------------------------------------------------------------------------|---------------------------------------------|
| Unconfined Compressive Strength, ASTM D1633                            | 1 per 500 cubic yards, minimum of 1 per day |
| Permeability, ASTM D5084<br>(with 10 psi confining [effective] stress) | 1 per 500 cubic yards, minimum of 1 per day |

D. Retesting and Reprocessing

1. For any failing quality control test results, the two archive samples shall be tested for the failing parameter to assess data variability.
2. UCS test data will be evaluated as follows:
  - a. No samples with 28-day UCS result of less than 40 psi will be accepted.
  - b. No more than 10 percent of the test samples can have 28-day UCS between 40 and 50 psi.
  - c. The average of all 28-day UCS test results must be  $\geq 50$  psi.
  - d. The Removability Modulus (RE) shall be less than 2.0 for 100% of the test specimens.
  - e. If 28-day test results are unacceptable, Remediation Engineer may consider results from longer curing samples (up to 56 days) in determining compliance.
3. Permeability test data will be evaluated as follows:
  - a. No samples with 28-day permeability of  $> 1 \times 10^{-5}$  cm/sec will be accepted.
  - b. No more than 10 percent of the test samples can have 28-day permeability between  $1 \times 10^{-5}$  cm/sec and  $1 \times 10^{-6}$  cm/sec.
  - c. The average of all permeability test results must be  $\leq 1 \times 10^{-6}$  cm/sec.
  - d. If 28-day test results are unacceptable, Remediation Engineer may consider results from longer curing samples (up to 56 days) in determining compliance.
4. Additional testing of cylinders cured less than 28 days may be performed at the Remediation Contractor's option (and expense) for early indication of strength gain or permeability during full-scale solidification operations

5. Reprocessing of solidified areas may be required by the Remediation Engineer for areas that fail to meet performance criteria, subject to the data tolerance limits described above. Reprocessing of solidified areas shall be at no additional cost to the Remediation Engineer/Owner should failing results be due to inadequate mixing, or incorrect batch proportioning and reagent addition.
- E. Adjustments to Mix Design
1. Subject to approval by the Remediation Engineer, the Remediation Contractor may propose mix design modifications based on the characteristics of the material being treated, if in the opinion of the Remediation Engineer, the reagent blend and proportions specified are not adequately addressing changing field conditions. However, the mix design modifications shall be subject to the limitations identified in Sub-Part 1.9(B) of this Section and satisfactory test results demonstrating the ability to achieve the performance criteria. An additional field demonstration may be required by the Remediation Engineer, prior to implementation of the new mix design, if in the opinion of the Remediation Engineer, there is a need to document similar material performance as the ISS bench scale testing.

END OF SECTION

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## SECTION 32 30 00

### SITE RESTORATION

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Complete the restoration as shown on the final grading plans and described herein.
- B. Other areas disturbed, damaged or occupied by the Remediation Contractor shall be restored to conditions equivalent to or better than pre-construction conditions.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety Requirements
- B. SECTION 01 57 26 – Dust Control
- C. SECTION 31 23 23.13 – Backfill
- D. SECTION 32 92 00 – Turf and Grasses
- E. Drawings
- F. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

##### 1.03 REFERENCE STANDARDS

- A. 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Permits
- B. New York State Department of Environmental Conservation, New York Standards and Specifications for Erosion and Sediment Controls, 2005.
- C. Seneca County Soil & Water Conservation District.
- D. American Society of Civil Engineers, Design and Construction of Urban Stormwater Management Systems, 1992.

##### 1.04 SUMMARY

Work to be performed under this Section includes, but is not limited to, the following items, including all labor, materials, equipment, and services necessary and incidental to the proper execution of the Work as shown on the Drawings and as specified in this Section, and related sections:

- A. Remove temporary support of excavations.
- B. Stabilize all disturbed areas within the Limit of Work.

- C. Install a gravel parking lot at the Upland Area as shown on the Drawings.
- D. Install tree specimens along the west property boundary of the Upland Area as shown on the Drawings.
- E. Install permanent seed mixture and plantings (tree specimens) in the Lowland Area and as shown on the Drawings and specified in Section 32 92 00 – Turf and Grasses.
- F. Install permanent seed mixture at the 183 Fall Street residential property as shown on the Drawings and specified in Section 32 92 00 – Turf and Grasses.
- G. Install permanent riparian seed mixture and plantings (live stakes) along the canal bank of the Lowland Area as shown on the Drawings and specified in Section 32 92 00 – Turf and Grasses.
- H. Remove erosion and sediment controls at the completion of Work after stabilization has occurred and vegetation has been established, or as directed.
- I. Install chain link fence and gate as shown on the Drawings.
- J. Remove all materials, supplies, waste, equipment, trash, debris, and temporary facilities at the completion of Work.

## PART 2 – PRODUCTS

### 2.01 GRAVEL

- A. Gravel shall conform to the specifications outlined in Section 31 23 23.13 – Backfill.

### 2.02 SEED

- A. Seed shall conform to the specifications outlined in Section 32 92 00 – Turf and Grasses.

### 2.03 PLANTINGS

- A. Plantings shall conform to the requirements of the Drawings.

### 2.04 FIBER ROLLS

- A. Fiber rolls shall conform to the requirements of the Drawings.

### 2.05 EROSION CONTROL BLANKET

- A. Erosion control blanket shall conform to the requirements of the Drawings.

### 2.06 CHAIN LINK FENCE AND GATE

- A. Chain link fence and gate shall conform to the requirements of the Drawings.



## PART 3 – EXECUTION

### 3.01 STRUCTURAL SUPPORTS AND SUPPORT OF EXCAVATION

- A. Remove structural supports at the 185 Fall Street residential structure, if required.
- B. Remove top of ISS support wall to 4-ft below final grade surface.
- C. At the request of the Owner/Remediation Engineer, replace any damaged items or features to pre-construction conditions or better.

### 3.02 GRAVEL RESTORATION

- A. Install the gravel parking area in the Upland Area as shown on the drawings and Section 31 23 23.13 – Backfill.

### 3.03 VEGETATED RESTORATION

- A. Seed in accordance with the Drawings and Section 32 92 00 – Turf and Grasses.

### 3.04 PLANTING

- A. Install plantings (live stakes and tree specimens) in accordance with the Drawings.

### 3.05 FINAL EROSION AND SEDIMENTATION CONTROLS

- A. Install fiber rolls, as indicated on the Drawings.
- B. Install erosion control blanket as indicated on the Drawings and on all 10 percent and steeper slopes.

### 3.06 CHAIN LINK FENCE AND GATE

- A. Install as shown on the Drawings.

### 3.07 TEMPORARY EROSION AND SEDIMENTATION CONTROLS

- A. When up gradient areas are stabilized, remove temporary erosion and sediment controls.
- B. When backfilling is complete within the canal and turbidity has dissipated, remove the turbidity curtain and associated oil booms.

### 3.08 GENERAL SITE CLEAN UP AND DEMOBILIZATION

- A. After completion of the Work, stabilization of all disturbed areas, and approval of the Remediation Engineer, remove the temporary construction facilities and controls.

- B. Sweep clean the portion of Fall Street abutting the Work to remove any remnant dust or deposited soil/debris after final site cleanup.
- C. After site restoration, removal of temporary facilities and controls, inspection by the Remediation Engineer/Owner, and final repairs associated with project closeout, completely demobilize from the Site.

END OF SECTION

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## SECTION 32 92 00

### TURF AND GRASSES

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Complete the restoration as shown on the final grading plans and described herein.
- B. Other areas disturbed, damaged or occupied by the Remediation Contractor shall be restored to conditions equivalent to or better than pre-construction conditions.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety Requirements
- B. SECTION 01 57 26 – Dust Control
- C. SECTION 31 23 23.13 – Backfill
- D. SECTION 32 30 00 – Restoration
- E. Drawings
- F. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.
- G. New York State Standards and Specifications for Erosion and Sediment Control, November 2016 (NYSDEC SS ESC).

##### 1.03 DESCRIPTION OF WORK

Work to be performed under this Section includes, but is not limited to, the following items, including all labor, materials, equipment, and services necessary and incidental to the proper execution of the Work as shown on the Drawings and as specified in this Section, and related sections:

- A. Stabilize all disturbed areas.
- B. Install permanent seed mixture in top soiled areas.
- C. Apply mulch and tackifier or erosion control blanket in all areas receiving final seed.
- D. Install a dress coat of topsoil and over seed in areas of turf damage.

#### 1.04 SUBMITTALS

- A. Product data for seed mixes.
- B. Product data for fertilizer.
- C. Product data for live stakes.
- D. Seeding and mulching means and methods to be employed.
- E. Manufacturer's Certificates of Compliance for each seed bag delivered to site for use.

### PART 2 – PRODUCTS

#### 2.01 TOPSOIL

- A. Topsoil shall conform to the specifications outlined in Section 31 23 23.13 – Backfill.

#### 2.02 SEED

- A. Seed mixture shall be fresh, clean, new crop of high-quality commercially available turf seed blend as specified below and as approved by the Remediation Engineer. Seed shall be free of noxious weed seed. Seed which has become wet, moldy otherwise damaged will not be acceptable.
- B. The seed shall be furnished and delivered premixed in the proportions specified below in new clean, sealed and labeled containers. All seed shall comply with State and Federal seed laws. Clover shall be pre-inoculated.
- C. Supply a manufacturer's Certificate of Compliance to the specifications by the manufacturers with each shipment of each type of seed mix. Certificates will be attached to the seed bags for inspection. These certificates shall include the guaranteed percentages of purity, weed content and germination of the seed; and the net mass and date of shipment. No seed may be sown until the Remediation Contractor has submitted the certificates.

D. Temporary seed mixture shall consist of:

**Temporary Seeding Species Selection:**

| Seeding Dates                       | Species                           | Lb./1,000 ft <sup>2</sup> | Lb/acre        |
|-------------------------------------|-----------------------------------|---------------------------|----------------|
| March 1 to August 15                | Oats                              | 3                         | 128 (4 Bushel) |
|                                     | Tall Fescue                       | 1                         | 40             |
|                                     | Annual Ryegrass                   | 1                         | 40             |
|                                     | Perennial Ryegrass                | 1                         | 40             |
|                                     | Tall Fescue                       | 1                         | 40             |
|                                     | Annual Ryegrass                   | 1                         | 40             |
|                                     | Annual Ryegrass                   | 1.25                      | 55             |
|                                     | Perennial Ryegrass                | 3.25                      | 142            |
| August 16 <sup>th</sup> to November | Creeping Red Fescue               | 0.4                       | 17             |
|                                     | Kentucky Bluegrass                | 0.4                       | 17             |
|                                     | Rye                               | 3                         | 112 (2 Bushel) |
|                                     | Tall Fescue                       | 1                         | 40             |
|                                     | Annual Ryegrass                   | 1                         | 40             |
|                                     | Wheat                             | 3                         | 120 (2 Bushel) |
|                                     | Tall Fescue                       | 1                         | 40             |
|                                     | Annual Ryegrass                   | 1                         | 40             |
|                                     | Perennial Rye                     | 1                         | 40             |
|                                     | Tall Fescue                       | 1                         | 40             |
|                                     | Annual Ryegrass                   | 1                         | 40             |
|                                     | Annual Ryegrass                   | 1.25                      | 40             |
|                                     | Perennial Ryegrass                | 3.25                      | 40             |
|                                     | Creeping Red Fescue               | 0.4                       | 40             |
|                                     | Kentucky Bluegrass                | 0.4                       |                |
| November 1 to Feb. 29               | Use mulch only or dormant seeding |                           |                |

E. Permanent seed mixture shall consist of:

**Permanent Seeding:**

| Seed Mix                 | Seeding Rate |                   | Notes:                                                    |
|--------------------------|--------------|-------------------|-----------------------------------------------------------|
|                          | Lbs./acre    | Lbs./1,000 sq.ft. |                                                           |
| General Use              |              |                   |                                                           |
| Creeping Red Fescue      | 20-40        | ½-1               | For close mowing & waterways<br>with <2.0 ft/sec velocity |
| Domestic Ryegrass        | 10-20        | ¼-½               |                                                           |
| Kentucky Bluegrass       | 20-40        | ½-1               |                                                           |
| Tall Fescue              | 40-50        | 1-1 ¼             |                                                           |
| Turf-type (dwarf) Fescue | 90           | 2 ¼               |                                                           |

F. Permanent riparian seed mixture shall consist of:

1. Seed Mix:

- 22% Virginia Wildrye, PA Ecotype (*Elymus virginicus*, PA Ecotype)
- 17% Deertongue, 'Tioga' (*Panicum clandestinum* (*Dichanthelium* c.), 'Tioga')
- 10% Lurid (Shallow) Sedge, PA Ecotype (*Carex lurida*, PA Ecotype)
- 10% Fox Sedge, PA Ecotype (*Carex vulpinoidea*, PA Ecotype)
- 10% Big Bluestem, 'Niagara' (*Andropogon gerardii*, 'Niagara')
- 8% Switchgrass, 'Shawnee' (*Panicum virgatum*, 'Shawnee')
- 4% Blue Vervain, PA Ecotype (*Verbena hastata*, PA Ecotype)
- 4% Blunt Broom Sedge, PA Ecotype (*Carex scoparia*, PA Ecotype)
- 3% Soft Rush (*Juncus effusus*)
- 2% Showy Ticktrefoil, PA Ecotype (*Desmodium canadense*, PA Ecotype)
- 2% New England Aster, PA Ecotype (*Aster novae-angliae* (*Symphotrichum* n.), PA Ecotype)
- 2% Swamp Milkweed, PA Ecotype (*Asclepias incarnata*, PA Ecotype)
- 2% Oxeye Sunflower, PA Ecotype (*Heliopsis helianthoides*, PA Ecotype)
- 1% Joe Pye Weed, PA Ecotype (*Eupatorium fistulosum*, PA Ecotype)
- 1% Boneset, PA Ecotype (*Eupatorium perfoliatum*, PA Ecotype)
- 0.7% Wild Bergamot, Fort Indiantown Gap-PA Ecotype (*Monarda fistulosa*, Fort Indiantown Gap-PA Ecotype)
- 0.5% Narrowleaf Blue Eyed Grass (*Sisyrinchium angustifolium*)
- 0.5% Great Blue Lobelia, PA Ecotype (*Lobelia siphilitica*, PA Ecotype)
- 0.2% Slender Mountainmint (*Pycnanthemum tenuifolium*)
- 0.1% Grassleaf Goldenrod, PA Ecotype (*Euthamia graminifolia* (*Solidago* g.), PA Ecotype)

2. Seeding Rate: 20 pound per acre with a cover crop of grain rye at 30 pound per acre.

2.03 FERTILIZER

- A. Per recommendation of the topsoil nutrient analysis completed by the Remediation Engineer.

2.04 STRAW MULCH

- A. Straw mulch shall conform to the specifications outlined in NYSDEC SS ESC.

### PART 3 – EXECUTION

#### 3.01 TOPSOIL

- A. The Remediation Engineer will perform a nutrient analysis of the Topsoil (sample provided by the Remediation Contractor) to inform the selection and application of soil amendments to optimize turf and grass growing conditions. Recommendations for the lime application rate and the type, proportion, and application rate of fertilizer for the given Topsoil as reported in the analysis shall be used by the Remediation Contractor.
- B. Place topsoil according to the Drawings and Section 31 23 23.13 – Backfill.

#### 3.02 SEED BED PREPARATION

- A. After the topsoil is placed and before it is graded to the elevations on the Drawings and rolled, limestone shall be spread evenly over the surface and thoroughly incorporated by disking or heavy raking to mix thoroughly in the seed bed.
- B. Apply lime at a rate determined by the recommendation of the laboratory completing the topsoil nutrient analysis to bring the topsoil pH to a range of 6.0 to 7.0.

#### 3.03 SEEDING

- A. The application of the seed may be performed mechanically or hydraulically in one operation with fertilizer.
- B. Seed mix shall be applied at the minimum rate specified for each mix type.
- C. All seeding shall be performed without mulch incorporated into the mix. Mulching shall be a separate independent application.

#### 3.04 FERTILIZER

- A. Per recommendation of the topsoil nutrient analysis completed by the Remediation Engineer.
  - 1. Default application rate for fertilizer shall be a rate of 5 pounds per 1,000 square feet.
- B. The application of the fertilizer may be performed mechanically or hydraulically in one operation with hydraulic seeding (i.e., hydro seeding).

#### 3.05 STRAW MULCH

- A. Straw mulch shall be applied at a rate of 90-100 pounds per 1,000 square feet. Wood fiber cellulose is not allowed as a substitution.



- B. Straw mulch and tackifier shall be applied immediately following seeding operations (same day) but as a separate operation unless otherwise approved by the Remediation Engineer.
- C. Tackifier shall be installed per manufacturer's instructions and reapplied as necessary until reasonable turf growth is established as determined by the Remediation Engineer.

### 3.06 EROSION CONTROL BLANKET

- A. Biodegradable double net straw fiber erosion control blanket as specified and shown on the Drawings.

### 3.07 PLANTINGS

- A. Install live stakes in accordance with the Drawings.
- B. Install tree specimens in accordance with the Drawings.

### 3.08 CARE AND MAINTENANCE

- A. Provide adequate water as necessary to rapidly establish grass to stabilize the area from erosion.
- B. Maintain seeded areas until a healthy stand of grass has been established as determined by the Remediation Engineer.

END OF SECTION

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## SECTION 33 29 00

### WELL ABANDONMENT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Decommission or abandon groundwater monitoring wells.
- B. The work shall consist of abandoning site groundwater monitoring wells by pulling casing and tremie grouting. The work generally includes:
  - 1. Prepare submittals.
  - 2. Conduct pre-decommissioning inspection to verify the construction and condition of each well.
  - 3. Remove protective casing and existing surface seal.
  - 4. Pull well casing material where possible.
  - 5. Tremie pressure grout well borehole.
  - 6. Install cement-bentonite surface seal.
  - 7. Containerize debris from abandonment activities.
- C. Coordinate disposal of debris.

##### 1.02 RELATED SECTIONS

- A. SECTION 02 00 00 – Existing Conditions
- B. SECTION 02 53 00 – Waste Transportation, Treatment, and Disposal
- C. Drawings
- D. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

##### 1.03 DEFINITIONS AND REFERENCE STANDARDS

- A. The term “monitoring well” or “well” in the specification is used to denote groundwater monitoring wells.
- B. American Society for Testing and Materials, current edition, "Annual Book of ASTM Standards," Vol.04.08, D5299-99(2012)e1, “Standard Guide for Decommissioning of

Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities.”

- C. New York State Department of Environmental Conservation, CP-43: Groundwater Monitoring Well Decommissioning Policy, November 2009.
- D. New York State Department of Environmental Conservation, Division of Environmental Remediation, Groundwater Monitoring Well Decommissioning Procedures, August 2009.

#### 1.04 EXISTING CONDITIONS

- A. See Specification Section 02 00 00 – Existing Conditions for information regarding site conditions.
- B. See well construction logs (where available) included as Attachment 33 29 00 - 1.

#### 1.05 SUBMITTALS

- A. Well decommissioning shall be performed by a registered well driller in New York. Submit the name and experience of qualified well abandonment subcontractor or, if self-performed by the Remediation Engineer, the personnel, qualifications, and description of their prior well abandonment experience.
- B. Documentation in the form of purchase records or similar for the materials, including but not limited to cement, bentonite, admixtures, used in well abandonment.
- C. Submit complete and accurate written records of decommissioning, including type of grouting used, volume of material used, and method of placing grouting material into the well.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Standard Grout Mixture (smooth cement/bentonite/water mixture). Mixture must be free from lumps and uniform throughout. A thick viscous mix consisting of 7.8 gallons of water per 94-lb bag Type I Portland cement and 3.9 pounds powdered bentonite. The use of potentially hazardous materials to decrease or increase grout viscosity (e.g., kerosene) is prohibited.
- B. Portland Cement (Type I).
- C. Powdered Bentonite (Pulverized bentonite sized to 200-mesh screen).
- D. Water, potable.
- E. Concrete for surface seal.

## 2.02 EQUIPMENT

- A. Grout tub, mixer, cement or grout, tremie wands etc.
- B. Various hand tools, as needed
- C. Ruler, engineer's 6 ft. folding
- D. Graduated Tape, 100 ft. length, with weighted end
- E. Water Level Indicator, Slope Indicator brand or equivalent
- F. Logs and Forms
- G. Site Plan Drawing(s), Maps, Boring and Well Installation Logs

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Scope consists of abandoning the groundwater monitoring wells as shown on Drawing C-101.
- B. If construction activities are planned in the vicinity where well abandonment is necessary, either:
  - 1. Protect the wells in place pending mobilization and execution of well abandonment (to prevent loss or damage of well prior to proper abandonment as described herein), or
  - 2. Complete well abandonment in advance of other adjacent construction activities.

### 3.02 PROCEDURE

- A. Locate Well. Locate the subject well in the field, using Drawings, sketches, fixed references or other available documentation. Verify well designation. If necessary, verify and document the location of the well to be decommissioned, referenced by taped distance to three fixed features, or acquire coordinates using global positioning system (GPS) methods or by instrument survey.
- B. Evaluate Well Integrity and Construction
  - 1. Evaluate and document condition of protective well casing and surface seal (padlock missing/broken, well cap missing, staining on well riser observed, concrete surface seal cracked, surface runoff entering well, etc.). Record well construction material (stainless steel, PVC, fiberglass, galvanized steel, black carbon steel, etc.). Measure well diameter, depth to water, and depth to

bottom of well using water level indicator and a weighted graduated tape (the water-level indicator should not be used to sound the depth of the well as the electric probe can be damaged over time if it is repeatedly submerged). Verify information on the respective well record (attached) and note any discrepancies. If well logs are not available, determine screen length and depth, if possible, to determine whether the well construction will provide useful data.

2. Evaluate obstructions present within the well, material accumulated in bottom of well, and presence of dense or light NAPL. The presence of an obstruction or a significant amount (0.5 ft. or greater) of accumulated materials (i.e., silt) in bottom of well shall be removed prior to sealing or over-drilling to remove the obstruction and well materials.
3. Remove and discard any dedicated groundwater sampling devices, including dedicated pump tubing and foot valves, if present.
4. Calculate Volume of Cement-Bentonite Grout Needed. To assure the well is properly plugged and sealed, calculate the estimated volume of cement-bentonite grout required to fill or exceed the volume of hole to be plugged.

C. Prepare Casing for Removal

1. Remove Protective Casing if it is loose or will interfere with well decommissioning. Properly dispose of protective casing.
  - a. If the protective casing cannot be easily removed, proceed with grouting of the well and then remove the casing.
  - b. If the well casing remains attached to the protective casing, cut the well casing at the base of the protective casing before removal.
2. Perforate the bottom of the well casing by puncturing the bottom or using a casing cutter to cut away the screen.

D. Tremie Pressure Grouting

1. Prepare smooth cement/bentonite/water mixture (Standard Grout Mixture).
2. Visually inspect grout tremie hose and ensure it is equipped with a side discharge end pipe (tremie "wand"). Overly flexible hoses that kink, are unable to reach the bottom of the well, or constrict grout flow are not acceptable.
3. Lower grout pipe or tremie hose into the well riser until the bottom is reached, and pump the grout mix down into the well.
4. While pumping, remove the well casing by pulling.

5. Continue to pump grout mix into the borehole until the water present in the well riser is evacuated and the grout mix is flowing out at the ground surface. In no circumstances is the grout to be placed by pouring or dumping down the well riser or open borehole (i.e., in cases where the well materials can be pulled from the borehole).
  6. Additional grout batches may be required. Each additional batch shall be consistent with the original grout batch. Document total quantity of grout used in decommissioning.
  7. Remove the grout pipe (or the tremie hose). Immediately top off the borehole or split well screen and riser with additional grout to approximately 2 ft below ground surface.
- E. If the well screen and riser was not pulled, expose and remove the upper three (3) to (4) feet of well riser at the ground surface. Remove existing protective casings or guard pipes and concrete surface seal, if not previously removed.
- F. Clean and flush all equipment used in the grouting/sealing procedure with clean water, including grout mixer, grout tub, pump, hoses, tremie wand, hollow stem augers or other drilling tools.
- G. Check the grouted borehole during the subsequent 24-hour period for signs of settlement, and top off with additional cement to ground surface.
- H. Top off decommissioned well borehole with a minimum of two (2) ft thick concrete plug installed and tamped at ground surface. Grade disturbed soils to promote rainwater runoff away from decommissioned well location.
- I. Groundwater displaced from the borehole and wash liquid should be managed in accordance with Section 02 70 00 – Construction Water Management.
- J. Complete documentation, including but not limited to well decommissioning records in accordance with NYSDEC requirements.

END OF SECTION

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Well Abandonment-Rev0.docx

## SECTION 35 11 00

### SIGNALING AND CONTROL EQUIPMENT FOR WATERWAYS

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

Furnish all labor, materials, equipment and incidentals necessary to perform all installation, maintenance, removal, cleanup and disposal related to controlling oil sheens in surface water and controlling turbidity during construction as required to perform the Work. The Work shall include, but not necessarily be limited to: installation, maintenance, and removal of all temporary construction-phase sheen and turbidity control systems and features, collection and appropriate disposal of spent control system materials, installation and maintenance of all navigational aids including buoys, and final site cleanup.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety Requirements
- B. SECTION 02 00 00 – Existing Conditions
- C. SECTION 02 53 00 – Waste Transportation, Treatment, and Disposal
- D. SECTION 02 61 23 – Excavation and Management
- E. SECTION 31 23 23.13 – Backfill
- F. SECTION 31 25 00 – Erosion and Sedimentation Controls
- G. SECTION 32 30 00 – Site Restoration
- H. SECTION 35 20 23 – Dredging
- I. Drawings
- J. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

##### 1.03 REFERENCE STANDARDS

- A. HAZWOPER: OSHA Regulation 29 CFR 1910.120.
- B. EPA Regulation 40 CFR 262.34.
- C. Federal Clean Water Act Regulations: 40 CFR Parts 110,116, 117, 122, 401, 403
- D. 6 NYCRR Part 703.
- E. 21 NYCRR Parts 150, 151, and 156.

### SIGNALING AND CONTROL EQUIPMENT FOR WATERWAYS



- F. New York State Navigation Law (NAV) Article 12
- G. Rules and Regulations of the New York State Canal Corporation, February 2011.
- H. New York State Canal Corporation General Design and Construction Requirements for Occupancies, July 2011.
- I. New York State Canal Corporation Occupancy and Work Permit Accommodation Guidelines, July 2011.
- J. U.S. Army Corp of Engineers (USACE), Engineer Manuals EM 1110-2-1003 and EM 1110-2-1002.
- K. USACE and NYSDEC Joint Application for Water-Related Permits.

#### 1.04 COORDINATION

Surface water quality protection equipment shall be located as close to the work as possible so as not to interfere with normal navigation of the Seneca River and Canal. Work within the waterway will be conducted in winter months when the water level is lower and boating traffic is minimal.

#### 1.05 SUBMITTALS

- A. Within 10 days after Notice of Award, Remediation Contractor shall submit to the Remediation Engineer, for approval, a construction-phase surface water quality control plan describing the measures the Remediation Contractor intends to employ to meet applicable permit and regulatory requirements during execution of the Work, including drawings of proposed control systems and technical product literature for all commercial products to be used. This plan may be submitted in conjunction with the Technical Execution Plan required by these Specifications.
- B. Within 10 days after Notice of Award, submit to the Remediation Engineer, for approval, a Shop Drawing of the silt/turbidity/sheen control devices.
- C. Within 10 days after Notice of Award, submit to the Remediation Engineer, for approval and submittal to the Canal Corporation, a temporary traffic control plan for the Canal.
- D. Submit daily surface water and control equipment inspection and monitoring logs to the Remediation Engineer on a weekly basis.

#### 1.06 QUALITY ASSURANCE

- A. Remediation Contractor is responsible for the timely installation and maintenance of control devices, as specified.
- B. The surface water quality control devices shall be installed and maintained in a manner that will contain sheens if present between the shore line and the control devices, and prevent sheens in the Seneca River and Canal that either violate New York Surface

Water Quality Regulations, federal Clean Water Act regulations, or result in degradation of water quality beyond conditions existing in the river prior to construction.

- C. If visible impacts to surface water quality (i.e., sheens or turbidity) occur during construction, immediately inform the Remediation Engineer of such conditions and undertake measures to contain and remove or remediate the impacts. Measures, in addition to those shown on the Drawings, necessary to maintain water quality in the Canal at pre-construction levels shall be installed, maintained, removed, and cleaned up as required by the Remediation Engineer at the expense of the Remediation Contractor.
- D. Inspections
  - 1. Immediately following receipt of materials to the job site, inspect the materials and store them in a clean, dry area where they will not be subject to mechanical damage, exposure to moisture or direct sunlight.
  - 2. During construction, inspect the water quality control devices and visually inspect surface water for evidence of sheens at a minimum frequency of three times per day, including inspections before, during, and after each day's work activities. Inspections shall be noted in a log that indicates the date and time of inspection, the name of inspector, and a summary of observations.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Turbidity Curtains shall consist of synthetic or laminated natural fabric floating barriers designed for use in current flow rates of up to 5 feet per second, such as Tough Guy Type III turbidity barrier manufactured by AER-FLO Canvas Products of Bradenton, Florida, or equivalent approved by the Remediation Engineer. All materials shall be new and undamaged.
- B. 24" Standard Oil Containment boom shall be attached to the turbidity curtain. Product shall be 24" Unprotected Port Standard Oil Containment Boom, as provided by Guardian Environmental Technologies, Tel. 860-350-2200, Fax. 860-350-3776, or approved equal.
- C. Navigations buoys – Remediation Contractor shall supply all navigational aids and buoys to facilitate watercraft navigation around Silt Curtains and Booms. Navigational aids shall comply with all State of New York, Canal Corporation, and Federal Government standards.

## PART 3 – EXECUTION

### 3.01 INSTALLATION

- A. Temporary surface water quality protection measures include those planned and installed to mitigate the impacts of construction activities; required by applicable local,

state, and federal regulations; and those specified herein to mitigate potential impacts to surface water quality.

1. Containment Boom: A floating sheen containment boom shall be installed to contain oil sheens within the Work area. The boom shall contain sheens during all phases of work at the Site. The Remediation Contractor shall install the boom in the canal in advance of construction in the shoreline area and the boom shall remain in place until all construction activities are completed.
2. The Remediation Contractor shall install the boom such that:
  - a. The booms shall have sufficient buoyancy to remain floating at all times while deployed in the Seneca River and Canal and must be effective (fully contain all sheens) during any water level variations. Buoys may be used as necessary to ensure buoyancy of the boom and keep them at the correct locations.
  - b. Conduct field measurements in advance of boom installation to determine the required dimensions of the boom.
  - c. The booms shall be securely anchored to remain in position at all times. Each end of the booms shall be anchored to shore, and intermediate anchors shall be installed along the river bottom.
  - d. The booms shall be installed tight to the shore without gaps at any location during all water levels.
  - e. The booms shall be installed close to the work to limit the area of surface water contained to the minimum necessary to complete the work. The booms shall be maintained as work progresses.
  - f. If necessary to control sheens, multiple lines of booms shall be installed.
3. Silt Curtains: A full-height (river bottom to water surface) floating sheen containment boom/silt curtain (barrier) shall be installed to contain oil sheens, emulsions and sediments within the dredge area limit shown on the Drawings. The barrier shall contain sheens, emulsions and sediments within this area during all remedial construction at the site. Install the barrier in advance of construction and the barrier shall remain in place until all construction activities within the canal are completed.
4. Install the barrier such that:
  - a. The barriers shall have sufficient buoyancy to remain floating at all times while deployed in the Seneca River and Canal and must be effective during high water conditions. Buoys may be used as necessary to ensure buoyancy of the barrier.
  - b. The barriers shall consist of a floating containment boom attached to a silt curtain extending from the high-water surface to the river bottom. The silt curtain depth will depend on the Canal depth as shown on the Drawings. Conduct field measurements in advance of barrier installation to determine the required dimensions of the barrier.

- c. The barriers shall be weighted at the bottom (i.e., at the river bottom) to form a seal with the river bottom during the entire period of construction.
  - d. The barriers shall be securely anchored to remain in position at all times. Each end of the barriers shall be anchored to shore, and intermediate anchors shall be installed along the river bottom.
  - e. The barriers shall be installed tight to the shore without gaps at any location during all water levels.
  - f. The barriers shall be installed close to the work to limit the area of surface water contained to the minimum necessary to complete the work.
- B. As necessary to accommodate current in the Seneca River and Canal, or to equalize hydraulic pressure between the containment area and the remaining river channel, incorporate sections of filter screen or flap gates into the design of the barriers.
- C. Provide for on-site supervision of installation, inspection, maintenance and removal of the booms and curtains.

### 3.02 INSPECTIONS, MONITORING, AND MAINTENANCE

- A. Perform inspections and maintenance of the silt curtains/ booms and also perform all other work necessary to keep the silt curtains/booms operating efficiently during all construction activities.
- B. Make a visual inspection of surface water and the surface water quality control devices a minimum of three times per day and maintain a log documenting the observations. If such inspection reveals that additional measures are needed to contain sheens, promptly install additional devices as needed.
- C. Monitoring
  - 1. Measure surface water turbidity three times per day (prior to the start of work, at midday, and at the end of the day) during dredging activities. Collect measurements at two locations: upstream and downstream of the dredge area.
  - 2. Collect additional turbidity measurements when a high-intensity storm occurs between the routine monitoring events.
  - 3. Measure turbidity using a portable turbidimeter deployed from a small boat. Calibrate the turbidimeter daily per the manufacturer's instruction.
  - 4. Maintain a daily log documenting the turbidity measurements to be submitted to the Remediation Engineer on a weekly basis.
  - 5. If downstream turbidity levels exceed upstream turbidity levels by 100 Nephelometric Turbidity Units (NTUs) stop work, inform the Remediation

Engineer, and inspect the surface water quality control devices. Repair and replace the devices, if necessary.

D. Maintenance

1. Keep all anchor lines secure and properly positioned to maintain efficient operation and positioning of the boom.
2. Collect sheens as necessary to avoid potential water quality impacts or potential failure of the containment booms. Sheens shall be collected by vacuum, absorbent materials or other methods approved by the Remediation Engineer.
3. Immediately contain, collect or otherwise mitigate the migration of sheens that are released from the containment area.
4. Immediately replace any portions of the containment boom that are damaged while the boom is deployed. Damaged sections must be replaced by new sections of containment booms. Use of patched sections is prohibited.
5. Relocate booms as necessary based on flow conditions in the canal or as required by the Remediation Engineer.
6. Immediately replace booms that area excessively impacted with sheens or become ineffective.

3.03 REMOVAL, MATERIALS MANAGEMENT, AND DISPOSAL

- A. Removal: Prevent releases of sheens to the canal during removal of the containment boom.
- B. Materials Management and Disposal: Manage materials collected during removal of the booms as solid waste. Sheens and surface water collected from the boom area will be managed with the construction water. Spent booms shall be placed in appropriate covered drums or roll off containers until their disposal at a permitted solid waste facility.

END OF SECTION

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## SECTION 35 20 23

### DREDGING

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Provide all labor, materials, equipment and incidentals necessary to dredge sediment from the locations and to the grades shown on the Drawings and as specified herein.
- B. Dredging to occur from temporary working pads constructed within the canal to support a long-reach excavator.
- C. The Work shall be conducted with a long-stick excavator fitted with an environmental bucket specifically designed to reduce sediment suspension, as describe herein.
- D. Use alternate dredging bucket for situations where the environmental bucket is not suitable for performing the work as approved by the Remediation Engineer.
- E. The Remediation Contractor is responsible for coordinating dredging production with sediment dewatering capacity, disposal facility acceptance, and all scheduling and coordination with subcontractors. The Remediation Engineer shall collect waste characterization samples (if needed in addition to the existing in-situ sample data), characterize the respective waste stream(s) and complete waste profiles for the Owner approved disposal facility. The Owner and/or Remediation Engineer shall not be responsible for delays in the Work due to characterization results, subcontractor availability or other circumstances.
- F. Identify and buoy the locations of the dredge limits.

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety Requirements
- B. SECTION 02 53 00 – Waste Transportation, Treatment, and Disposal
- C. SECTION 02 61 23 – Excavation and Management
- D. SECTION 31 23 23.13 – Backfill
- E. SECTION 31 25 00 – Erosion and Sedimentation Controls
- F. SECTION 32 30 00 – Site Restoration
- G. SECTION 35 11 00 – Signaling and Control Equipment for Waterways
- H. Drawings

### DREDGING

- I. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

#### 1.03 REFERENCE STANDARDS

- A. HAZWOPER: OSHA Regulation 29 CFR 1910.120.
- B. EPA Regulation 40 CFR 262.34.
- C. Federal Clean Water Act Regulations: 40 CFR Parts 110,116, 117, 122, 401, 403
- D. Rivers and Harbors Act of 1899: 33 USC 403 Section 10.
- E. 21 NYCRR Parts 150, 151, and 156.
- F. Rules and Regulations of the New York State Canal Corporation, February 2011.
- G. New York State Canal Corporation General Design and Construction Requirements for Occupancies, July 2011.
- H. New York State Canal Corporation Occupancy and Work Permit Accommodation Guidelines, July 2011.
- I. U.S. Army Corp of Engineers (USACE), Engineer Manuals EM 1110-2-1003 and EM 1110-2-1002.
- J. USACE and NYSDEC Joint Application for Water-Related Permits.

#### 1.04 SUBMITTALS

- A. Submit manufacturer's literature on the type of equipment proposed for use.
- B. As part of the Technical Execution Plan, submit a Dredge Plan including detailed procedures to be used during dredging. The work plan should address survey control, progress of work, tracking dredged and un dredged areas, removal of debris and obstructions, control and verification of dredge depth, tracking loads and disposal of dredged sediment.

#### PART 2 – PRODUCTS

Not applicable.

#### PART 3 – EXECUTION

##### 3.01 PRE-DREDGE REQUIREMENTS

- A. Work may not begin in the Seneca River and Canal until the applicable permits and permissions have been received from the New York State Canal Corporation, as communicated to the Remediation Contractor by the Remediation Engineer. The Design Engineer will complete the applicable permits.



- B. Contact Dig Safely New York (1-800-962-7962) at least 2 full work days but no more than 10 days prior to the start of work on Canal Corporation property.

### 3.02 DREDGE EQUIPMENT AND PROCEDURES

- A. Prior to beginning dredging work, install required turbidity and waterway controls per Section 35 11 00 – Signaling and Control Equipment for Waterways and erosion and sedimentation controls per Section 31 25 00 – Erosion and Sedimentation Controls.
- B. Dredging shall be by mechanical means using a long-stick excavator with an environmental clamshell bucket. The environmental bucket shall be a gasketed clamshell, with a proven field performance record, which shall preclude loss of material between point of excavation and placement in the dewatering pad/sediment storage container. The environmental bucket shall have welded top steel covers and rubber seals specifically designed and installed by the bucket manufacture. It shall have vertical side plates that overlap or some method to reduce sediment loss at closure; act as an enclosure to eliminate redeposits of soil from the bucket; vents that open during lowering; seal indicator switches; and depth penetration transducers. The bucket shall produce a near level cut.
- C. To reduce turbidity, adhere to the following procedure:
  - 1. Swing to the dredge location.
  - 2. Slowly lower the fully opened bucket at the dredge location.
  - 3. Stop at the required vertical depth cut line.
  - 4. Close the bucket.
  - 5. Confirm bucket closure via seal indicator lights.
  - 6. Slowly lift the bucket.
  - 7. Swing the closed bucket into position over the dewatering pad/sediment container.
  - 8. Slowly open bucket to fully discharge spoils.
  - 9. Wash the bucket in wash tank.
  - 10. Repeat cycle.
- D. The bucket shall not be overfilled to prohibit subsequent overflow.
- E. Run-back of water will not be permitted.
- F. The Remediation Contractor shall have available at all times an alternate dredge bucket for use at specific locations where the environmental bucket is not suitable for the materials encountered. Use of the alternate bucket will be limited to specific locations

approved by the Remediation Engineer. Payment for use of the alternate bucket shall be included in the price for dredging.

- G. Begin dredging in Dredge Area D1. Dredging in Area D1 shall progress from the outboard dredge limits as shown on the Drawings and progress inboard toward the near shore dredge limits as necessary based on visual observation and direction by the Remediation Engineer.
- H. Following the completion of dredging operations in Dredge Area D1, restore Dredge Area D1 per Section 32 30 00 – Site Restoration, then progress to the next Dredge Area.
- I. Begin dredging in Dredge Area D2 following the relocation of the double silt curtains and oil booms.
- J. Repeat at subsequent Dredge Areas D3 through D9.

### 3.03 DREDGE MATERIAL MANAGEMENT

- A. Place entire contents of dredge/sediment removal bucket into sediment dewatering area. Inspect sediment dewatering area on a daily basis to ensure the water tightness.
- B. Material tracking, material handling, and disposal shall be in accordance with Section 02 53 00 – Waste Transportation, Treatment, and Disposal.
- C. Segregate and store other debris, as required by the disposal facilities, in containers for off-site disposal.
- D. Cover stockpiles if inactive.
- E. Do not spill container contents while transporting to shore, dewatering, or loading for on-site or off-site transportation.
- F. The Remediation Contractor shall be responsible to remediate any spills that result from the Remediation Contractor's work. The remediation shall be performed at no cost to the Owner.

### 3.04 MATERIAL DEWATERING

- A. Sediment dewatering shall be in accordance with Section 31 23 19 – Dewatering.

### 3.05 DREDGE LOCATIONS

- A. Conduct dredging at the locations and to the grades shown on the Drawings. Material will generally be dredged to bedrock.
- B. Dredge locations shall be laid out by a licensed land surveyor or licensed hydrographer. Place temporary markers or other means, as required, to relocate dredge areas.
- C. Conform with the allowable horizontal positioning accuracy requirements for dredging in EM 1110-2-1003. The positioning system used shall be capable of meeting or

exceeding the accuracy requirements and shall not exceed the allowable ranges where indicated. The Remediation Contractor may be required to demonstrate to the Remediation Engineer that its positioning system is capable of meeting or exceeding the accuracy requirements in EM 1110-2-1003.

- D. Depth measurements, including depth observation precision and resolution, shall meet the vertical accuracy requirements for dredging as prescribed in EM 1110-2-1003.

### 3.06 SIDE SLOPES

- A. Side slopes shall generally be at 2 horizontal to 1 vertical, except where steeper slopes are required due to existing topographic contours.

### 3.07 QUALITY CONTROL/QUALITY ASSURANCE

- A. Verify the vertical and horizontal limits of dredging in accordance with Section 01 71 23 – Field Engineering prior to each phase of work and at the conclusion of the work.
- B. If, based on visual observation by the Remediation Engineer, additional dredging is required to achieve sediment removal within the limits of dredging, the work shall be performed by the Remediation Contractor at no additional expense to the Owner. The Remediation Contractor shall be reimbursed for the dredged material at the unit price stated on the bid form.
- C. Provide the Owner, Remediation Engineer and NYS Canal Corporation complete access to observe the all dredging activities data during the progress of the Work.

### 3.08 SURFACE WATER QUALITY PROTECTION

- A. Protect surface water quality in accordance with Section 31 25 00 – Erosion and Sedimentation Control and Section 35 11 00 – Signaling and Control Equipment for Waterways. Install all turbidity and oil control equipment prior to the start of any work.

### 3.09 CREW BOAT

- A. Provide and maintain a boat for installation and maintenance of the turbidity curtain and layout and measurement of dredge work. The boat shall be motorized, have a weight carrying capacity of at least 1000 pounds, and be supplied with all required safety equipment. Supply fuel for the boat. The boat shall be available for the entire duration of the work.

END OF SECTION

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## SECTION 44 32 00

### VAPOR AND ODOR CONTROL

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. Implement engineering controls and modify work procedures/equipment as necessary to reduce fugitive vapors and odors as described in this Section. Implement work zone air monitoring to ensure health and safety protection of site workers during performance of the Work, and to prevent nuisance conditions. Ambient air monitoring at the perimeter of the Site will be conducted by the Remediation Engineer to ensure protection of the public and the environment.
- B. Emissions from the site remedial construction activities may include odors and vapors. Remediation Contractor shall implement adequate controls to minimize these emissions in accordance with the following plans:
  - 1. Community Air Monitoring Plan
  - 2. Site specific Health and Safety Plan prepared by the Remediation Contractor
  - 3. Erosion and Sediment Control Drawings including C-300, C-301, C-401, C-700, C-701, C-702, C-703

##### 1.02 RELATED SECTIONS

- A. SECTION 01 35 29 – Health and Safety Requirements
- B. SECTION 01 50 00 – Temporary Facilities and Controls
- C. SECTION 01 57 26 – Dust Control
- D. SECTION 01 60 00 – Product Requirements
- E. SECTION 02 00 00 – Existing Conditions
- F. SECTION 02 51 29 – Decontamination Procedures
- G. SECTION 02 61 13 – Piping Removal and Management
- H. SECTION 02 61 23 – Excavation and Management
- I. Drawings
- J. Other Sections of the Specifications, not referenced above, shall also apply to the extent required for the proper performance of the Work.

### 1.03 REGULATIONS

- A. Seneca Falls Code Section 300-26 Performance Standards:
  - 1. Part B: No use within any district shall emit an odor that is unreasonably offensive as measured at the property line of the use.

### 1.04 AIR MONITORING

- A. Community Ambient Air Monitoring: The Remediation Engineer will perform perimeter air monitoring at the site during intrusive activities to assess potential off-site exposures and risk. Real-time screening data (using a photoionization detector (PID)) will be collected and available to the Remediation Contractor. However, this does not address the Remediation Contractor's responsibility to perform air monitoring for the Remediation Contractor's on-site workers as required in this Section and Section 01 35 29 – Health and Safety Requirements. If site specific action limits are exceeded, as determined by data collected by the Remediation Engineer and/or the Remediation Contractor, work will be stopped, and the Remediation Contractor will apply engineering controls until effective in reducing fugitive emissions to concentrations below the action limits in the Community Air Monitoring Plan and/or Site-specific HASPs. Adjustments in work procedures by the Remediation Contractor to achieve compliance with these emissions standards shall be made at no cost to the Remediation Engineer or Owner.
- B. The Remediation Contractor is required to perform work zone air monitoring within the work area in accordance with their HASP.

### 1.05 SUBMITTALS

- A. Submit an Odor and Vapor Control Plan that details the proposed control means and methods as part of the Technical Execution Plan

## PART 2 – PRODUCTS

### 2.01 ODOR AND VAPOR CONTROLS

The Remediation Contractor shall maintain an adequate supply of the products listed below on-site for daily use. Product submittals to Remediation Contractor are required prior to use and shall include manufacturers' recommended use/installation practices.

- A. Odor suppressant, such as BioSolve or approved equivalent
- B. Plastic sheeting or anchored tarps
- C. Vapor Suppressant Foam, such as RUSMAR AC-645 Short Duration Foam or approved equivalent

- D. Soil tackifiers

### PART 3 – EXECUTION

#### 3.01 CONTROL OF AIR EMISSIONS

- A. The control of air emissions during all phases of work shall be the sole responsibility of the Remediation Contractor. Nuisance levels of air emissions shall not be exceeded in any of the perimeter air monitoring stations.
- B. If any of the parameters in Section 1.03 Part A above or listed in the Community Air Monitoring Plan (CAMP) are exceeded, the Remediation Contractor shall immediately suspend work and implement air emission control measures. Prior to resuming work, the Remediation Contractor shall modify work procedures that will result in reduced air emissions.
- C. The Remediation Contractor shall implement emission control measures to reduce nuisance levels of odors and emissions at all times and perform additional measures as requested by the Remediation Engineer.
- D. The Remediation Contractor shall utilize plastic sheeting, odor control foam, or other similar means to control air emissions during the performance of this work.
  - 1. Emission control supplies shall be ready for use during all material handling operations.
  - 2. Emission control measures shall be implemented on portions of excavation areas that are inactive regardless of the potential for air emissions or odors.
  - 3. At the conclusion of work each day, the entire area of excavation shall be completely covered with emission controls suitable for controlling odors for an extended time, i.e. tarps or soil cover.
- E. Air emission control products used shall be compatible with the requirements of the disposal facilities, or segregated prior to off-site disposal.

END OF SECTION

## **APPENDIX C**

### **Pre-Design Investigation Report**

**REPORT ON  
PRE-DESIGN INVESTIGATION  
SENECA FALLS FORMER MGP SITE, SITE NO. 8-50-010  
SENECA FALLS, NEW YORK**

by Haley & Aldrich of New York  
Rochester, New York

for New York State Department of Environmental Conservation  
Albany, New York

File No. 34507-023  
March 2016







HALEY & ALDRICH OF NEW YORK  
200 Town Centre Drive  
Suite 2  
Rochester, NY 14623  
585.359.9000

11 March 2016  
File No. 34507-023

New York State Department of Environmental Conservation  
Division of Environmental Remediation  
Remedial Bureau C, 11th Floor  
625 Broadway  
Albany, New York 12233-7014

Attention: Mr. Douglas MacNeal, P.E.

Subject: Pre-Design Investigation Report  
Seneca Falls Former MGP Site, Site No. 8-50-010  
Seneca Falls, New York

Dear Mr. MacNeal:

On behalf of New York State Electric & Gas (NYSEG), Haley & Aldrich of New York (Haley & Aldrich) is pleased to present this Pre-Design Investigation (PDI) Report for the Seneca Falls Former Manufactured Gas Plant (MGP) Site located in Seneca Falls, New York. The work was completed in accordance with the PDI Work Plan dated 20 October 2015 (revised version) and conditionally approved by the New York State Department of Environmental Conservation on 15 October 2015.

Sincerely yours,  
HALEY & ALDRICH OF NEW YORK

A handwritten signature in black ink, appearing to read 'Doug Allen'.

Douglas C. Allen, P.G.  
Senior Project Manager

A handwritten signature in black ink, appearing to read 'Colin Sweeney'.

Colin Sweeney  
Vice President

Enclosures

c: RG&E; Attn: Jeremy Wolf

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# 1. Introduction

New York State Electric & Gas (NYSEG) retained Haley & Aldrich of New York (Haley & Aldrich) to complete a Pre-Design Investigation (PDI) and prepare this PDI Report for the Seneca Falls Former MGP Site located in Seneca Falls, New York (Figure 1). The PDI was completed in accordance with the PDI Work Plan dated 20 October 2015. The PDI Work Plan was approved by the New York State Department of Environmental Conservation (NYSDEC) in an electronic message dated 15 October 2015. A final version of the PDI Work Plan, with modifications requested by NYSDEC in the 15 October 2015 approval, was submitted to NYSDEC on 20 October 2015.

## 1.1 PURPOSE

The PDI was completed to collect additional data necessary to prepare Remedial Design documents.

## 1.2 SITE DESCRIPTION

The Seneca Falls Former MGP Site is located at 187 Fall Street in Seneca Falls, New York. The Site is bordered to the east by residential properties (181-185 Fall Street), to the south by the Seneca River and Canal (a Class C surface water), to the west by a gasoline filling station (193 Fall Street), and to the north by Fall Street (Figure 2). The northern portion of the Site (the Upland Area) which includes a paved vehicle parking area and building slab is separated from the southern portion of the Site (the Lowland Area) by a steep slope. The residential property which abuts the Upland Area to the east, 185 Fall Street, is currently vacant and owned by NYSEG.

The Site is located in a mixed residential and commercial portion of Seneca Falls Village and is currently used to park used cars in accordance with a lease agreement between NYSEG and a neighboring used car dealer. The Site and adjacent properties are zoned as “Highway Commercial”, which includes various commercial uses. Residential use within this zoning designation is allowed for properties where residential use pre-dated the current zoning ordinance.

## 1.3 BACKGROUND

Based on the outcome of Remedial Investigation (RI) activities completed in 2007, 2008, and 2009, Haley & Aldrich prepared a Feasibility Study (FS) report in 2015 to identify and evaluate remedial alternatives to address potential exposure pathways to MGP-related materials that were identified during the RI. The potential exposure pathways included the following:

- On-site (Upland and Lowland Areas): Complete exposure pathways to surface soil were identified for current and future scenarios: an on-site utility worker, trespasser, or Rochester Gas and Electric (RG&E)/NYSEG employee occasionally visiting the Site. A complete exposure pathway to surface soil was identified for a future construction worker under the scenario that a new building is constructed at the Site. Complete exposure pathways to subsurface soil were identified for current and future utility workers, and for a future construction worker under the scenario that a new building is constructed at the Site.
- Off-site Residence at 185 Fall Street: Complete exposure pathways to surface soil and subsurface soil were identified for a current and future resident or construction worker.

- For the Seneca River and Canal: Complete exposure pathways to sediment were identified for current and future trespassers and boaters.

To address the current and future exposure pathways, the NYSDEC-approved FS recommended In-Situ-Solidification/Stabilization (ISS) of impacted soil in the Upland Area, capping of impacted soils in the Lowland Area, excavation and off-site treatment/disposal of surface and subsurface soil at 185 Fall Street, dredging of impacted Seneca River and Canal sediments, institutional controls, and monitored natural attenuation (MNA) of impacted groundwater. This recommended remedial alternative was approved by NYSDEC in a Record of Decision (ROD) issued on 31 March 2015.

#### **1.4 OBJECTIVES**

The objectives of the PDI field activities completed at the Site included the following:

- Develop a comprehensive Site plan with ground surface topography, underground utilities, and the limits of federal and state wetlands (if present) to support the Remedial Design and future remediation construction;
- Collect Upland Area soil samples and Seneca River and Canal sediment samples for waste characterization purposes and disposal facility pre-approval; and,
- Collect Upland Area soil samples for ISS bench scale testing and geotechnical parameter testing to support the Remedial Design.

#### **1.5 REPORT ORGANIZATION**

Following this introductory section, the PDI Report is organized as follows:

- Section 2 describes the PDI field activities and laboratory analyses;
- Section 3 describes the PDI observations, field surveys, and analytical results;
- Section 4 presents the conclusions and recommendation for additional work; and,
- Section 5 describes the report limitations.

## 2. Pre-Design Investigation Scope of Work

The field and laboratory tasks completed to fulfill the PDI objectives are described below.

### 2.1 UPDATED SITE SURVEY

Haley & Aldrich contracted with a licensed land surveyor, Hoffman Land Surveying and Geomatics, Inc. (Hoffman Land Surveying) of Ontario, New York, to obtain an updated comprehensive survey of the Site and adjacent features necessary to support the Remedial Design. The survey included topography, property lines, ordinary high water along the Seneca River and Canal, a bathymetric survey of the proposed remediation area in the Seneca River and Canal, and the Fall Street right-of-way as well as underground and overhead electrical lines. Prior to the survey, underground utilities were located (as practicable) and marked in the field by Trec Environmental, Inc. (Trec) of Spencerport, New York.

Haley & Aldrich also completed a wetlands survey along the Seneca River and Canal to flag federal and state wetlands, if any, in the vicinity of the proposed remediation. The outcome of the wetlands delineation was documented in a wetland and stream delineation report (with supporting figures, photos and data forms) describing the delineation methodology, and the number, size, and characteristics of the wetlands and streams identified within the boundaries of the Site and 193 Fall Street Lowland Area where remediation construction is planned.

### 2.2 MONITORING WELL ABANDONMENT

Monitoring well MW-08-02, installed inside the below-grade former gas holder, was abandoned by Parratt-Wolff, Inc. prior to test pit activities due to the location of one test pit (TP-15-03) excavated adjacent to the well. MW-08-02 was abandoned in accordance with NYSDEC CP-43 Groundwater Monitoring Well Decommissioning Policy. The 2-inch PVC well was perforated at the bottom then pulled from the ground while simultaneously applying a cement-bentonite grout to the inside of the well. The void left by the removed PVC well materials was backfilled with grout to ground surface.

### 2.3 SEDIMENT AND SOIL SAMPLING

Haley & Aldrich obtained soil and sediment samples to the support the Remedial Design and facilitate future remediation construction activities. The PDI sample locations are summarized in Table I and shown on Figure 2 and included the following:

- Waste Characterization Sediment Samples: Five sediment samples (SE-15-01 through SE-15-05) were collected from the Seneca River and Canal for waste characterization laboratory testing to establish acceptance by a disposal facility (Seneca Meadows, Inc. in Waterloo, New York). The sediment sample locations were accessed from the shoreline and collected with a hand auger by Haley & Aldrich staff. Samples were placed in laboratory-supplied glassware and submitted to TestAmerica Analytical Laboratory of Amherst, New York (TestAmerica) for chemical analysis of waste characterization parameters including Toxicity Characteristic Leaching Procedure (TCLP) volatile organic compounds (VOCs), TCLP semi-volatile organic compounds (SVOCs), TCLP RCRA metals, polychlorinated biphenyls (PCBs), reactive cyanide, reactive sulfide, flashpoint, percent solids, paint filter (free liquids), and pH/corrosivity.

- Waste Characterization Soil Samples: Six samples of representative soil from the Upland Area of the Site and the vacant 185 Fall Street property were collected for waste characterization laboratory testing to establish acceptance by a disposal facility (Seneca Meadows). The samples were collected from five test pits (TP-15-01 through TP-15-05) completed in the Upland Area of the Site and 185 Fall Street backyard. The test pits were completed by Parratt-Wolff, Inc. of East Syracuse, New York (Parratt-Wolff) utilizing a Deere 135D track-mounted excavator. Test pits located on the former building concrete floor slab were saw-cut prior to excavation. Waste characterization soil samples were submitted to TestAmerica for chemical analysis including TCLP VOCs, TCLP SVOCs, TCLP RCRA metals, PCBs, reactive cyanide, reactive sulfide, flashpoint, percent solids, paint filter (free liquids) and pH/corrosivity.
- Bench Scale Samples: Approximately 15 gallons of homogenized soil were collected for ISS bench scale testing from the four test pits (TP-15-01 through TP-15-04) completed on the Upland Area of the Site. The soil was shipped to Timely Engineering Soil Test, LLC (Timely) in Tucker, Georgia for ISS bench scale testing.
- Geotechnical Samples: Unit weight and grain size distribution analyses were completed for the three bench scale samples submitted to Timely.

The five test pits were logged in the field to provide further information regarding subsurface conditions. The test pit methodology, field sample collection, worker health and safety, and community air monitoring was completed in accordance with the NYSDEC-approved Preliminary Site Assessment Work Plan dated September 2007 and Remedial Investigation Work Plan dated June 2009, which include the Field Sampling Plan, Quality Assurance Project Plan, Community Air Monitoring Plan, and site-specific Health & Safety Plan. Sediment samples were collected with manual coring methods in accordance with the methodology described in the Remedial Investigation Work Plan dated June 2009.

## 2.4 BENCH SCALE TESTING

Timely completed bench scale treatability testing using soil obtained from the Upland Area of the Site to determine an effective mix design (reagent type(s) and additive rate) for the ISS. The purpose of the design phase bench scale testing was to demonstrate feasibility and provide information to the remedial contractor bidders about reagent needs. The bench scale treatability testing program included:

- Measure the moisture content and density of the homogenized untreated soil;
- Prepare trial batches of 3:1 granulated ground blast furnace slag (GGBFS) to Portland Type I/II cement at additive rates of 6%, 9% and 12%. Note that the additive rates were revised from the PDI Work Plan due to the fine-grained nature of the soil observed during test pit operations, and to provide a better range of additive rates for the bench scale testing;
- Measure grout viscosity and slump for the three trial batches, which is useful to understand field mixing properties and field quality control;
- Unconfined compression strength of the three trial batches at 14 and 28 days curing, along with an additional test at 61 days; and,
- Permeability testing of the three trial batches at 28 days curing.

### **3. Field Observations and Results**

#### **3.1 TOPOGRAPHIC SURVEY**

Subsurface utilities were located and marked in the field by Trec on 18 November 2015. Ground surface topography, subsurface utility locations, and other Site features were surveyed by Hoffman Land Surveying on 19 and 20 November 2015. The Seneca River and Canal bathymetric survey in the proposed work area was completed by Hoffman Land Surveying on 12 and 19 December 2015. The survey plan is provided as Appendix A.

#### **3.2 WETLANDS DELINEATION**

Wetlands and stream delineation was completed by Haley & Aldrich on 29 October 2015. The study area included the Upland Area of the Former MGP Site, and the lowland portions of the Former MGP Site and 193 Fall Street where remediation construction is planned. No wetlands were observed during the field study, and no state-regulated wetlands were mapped in close proximity to the study area. A wetlands delineation report is provided as Appendix B.

#### **3.3 SEDIMENT AND SOIL SAMPLING**

Field observations and laboratory results for soil and sediment are described below.

##### **3.3.1 Sediment Observations**

Sediment coring was completed by Haley & Aldrich staff on 18 November 2015. Sediment coring locations are shown on Figure 2 and sediment core observations are summarized on Table II. Key observations included the following:

- Soft sediment was encountered at each of the five sediment coring locations. Brick material was observed in sediment cores SE-15-01 and SE-15-02;
- Clinker-like material (CLM) was observed in sediment core SE-15-02; and,
- Tar-like material (TLM) was observed within the top 1 foot (relative to the mudline) of sediment at location SE-15-04.

##### **3.3.2 Test Pit Observations**

Test pits were completed by Parratt-Wolff on 19 and 20 November 2015. Completed test pit locations are shown on Figure 2 and test pit observations are summarized on Table III. Key observations included the following:

- For test pits completed on-site (TP-15-01 through TP-15-04), the depth to glacial till varied from 3.5 to 7 feet below ground surface (ft bgs). Fill material including apparent building demolition debris (brick, glass, etc.) was observed above the glacial till at all test pit locations;



- Wood fragments, which appeared to be broken lumber, with TLM were observed at approximately 5 ft bgs at test pit TP-15-01 completed in the northeast corner of the former building floor slab;
- A concrete structure was observed at test pit TP-15-02, located in the northern portion of the parking area adjacent to the building floor slab. The structure was circular with standing water to a depth of at least 15 ft bgs. No odor or sheen was noted in the standing water;
- CLM and ash-like material (ALM) was observed in the fill material at test pit location TP-15-04 completed on the eastern side of the former building floor slab;
- Black staining was observed within the fill material at on-site test pit locations TP-15-01, TP-15-02, and TP-15-04;
- Water was observed entering test pit TP-15-03 at a depth of approximately 8 ft bgs, completed within the apparent footprint of the former below-grade gas holder; and,
- A layer of white-colored material, potentially decomposed concrete or mortar, was observed from 1.5 to 2 ft bgs at test pit TP-15-05 completed in the backyard of 185 Fall Street. This layer was underlain by fill material with black staining, demolition debris, CLM, and ALM to the top of glacial till which was observed at 4 ft bgs.

Test pit logs are included as Appendix C.

### **3.3.3 Waste Characterization Sample Results**

Waste characterization analytical results for soil and sediment are summarized on Table IV. Samples submitted for waste characterization purposes included the following:

- One composite sample was collected from each test pit from the fill material within 2 feet of ground surface (five samples total);
- One composite sample was collected from test pit TP-15-03, completed inside the apparent former below grade gas holder, from a depth of 6 to 8 ft bgs, to further characterize holder contents; and,
- One composite sample was collected from each sediment sampling location (five samples total).

Laboratory analytical reports are provided as Appendix D.

### **3.3.4 Treatability Testing and Geotechnical Sample Results**

Treatability testing and geotechnical sample results are summarized on Table V. The laboratory results for the three batch samples submitted for testing indicated the following:

- The moisture content, wet density, and dry density of the homogenized untreated soil was 15.2%, 124.4 pounds per cubic foot (pcf), and 108.0 pcf, respectively;

- Three trial batches of 3:1 GGBFS to Portland cement were prepared with additive rates of 6%, 9% and 12%;
- The slump for the 6%, 9%, and 12% additive rate batches was 3.75 inches, 4.0 inches, and 4.25 inches, respectively;
- After a curing period of 28 days, the 6%, 9%, and 12% additive rate batches achieved unconfined compressive strengths of 9 pounds per square inch (psi), 35 psi, and 66 psi, respectively;
- To further evaluate test batch performance, the unconfined compressive strength was measured for the 9% and 12% additive rate batches after a curing period of 61 days. The unconfined compressive strengths were 44 psi and 80 psi, respectively; and,
- The permeability values of the 6%, 9%, and 12% additive rate batches after 28 days of curing were  $9.0 \times 10^{-7}$  centimeters per second (cm/sec),  $5.2 \times 10^{-7}$  cm/sec, and  $3.0 \times 10^{-7}$  cm/sec, respectively.

The laboratory treatability testing report is provided as Appendix E.

### **3.4 INVESTIGATION DERIVED WASTE MANAGEMENT**

No investigation derived waste (IDW) was produced during the PDI field work.

#### **4. Conclusions and Recommendations**

The PDI provided adequate field and laboratory information to complete the Remedial Design (RD) in accordance with the NYSDEC-approved remedial alternative. No additional field investigations are recommended at this time.

## **5. Limitations**

This report has been prepared for the exclusive use of NYSEG in connection with the Seneca Falls Former MGP Site located at 187 Fall Street in Seneca Falls, New York. The conclusions and recommendations provided by Haley & Aldrich are based solely on the scope of work conducted and the sources of information referenced in this report.

## References

1. Haley & Aldrich of New York, 2007. Preliminary Site Assessment Work Plan, September 2007.
2. Haley & Aldrich of New York, 2009. Remedial Investigation Work Plan, June 2009.
3. NYSDEC, 2010. "DER-10 Technical Guidance – Site Investigation and Remediation", May 2010.
4. Haley & Aldrich of New York, 2013. Remedial Investigation Report, April 2013.
5. Haley & Aldrich of New York, 2015. Feasibility Study, January 2015.
6. New York State Department of Environmental Conservation, 2015. Record of Decision, March 2015.
7. Haley & Aldrich of New York, 2015. Pre-Design Investigation Work Plan, October 2015.

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**TABLE I**  
**INVESTIGATION LOCATIONS AND RATIONALE**  
PRE-DESIGN INVESTIGATION SUMMARY REPORT  
SENECA FALLS FORMER MGP SITE  
SENECA FALLS, NEW YORK

| Exploration Identification | Exploration Type | Location Description                                            | Rational                                                                                                                                                      | Target Exploration Depth                      | Actual Exploration Depth and Description                            | Laboratory Analyses/Methods <sup>1</sup> |                                   |
|----------------------------|------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------|------------------------------------------|-----------------------------------|
|                            |                  |                                                                 |                                                                                                                                                               |                                               |                                                                     | Waste Characterization                   | Treatability Testing <sup>2</sup> |
| TP-15-01                   | Test Pit         | On-site, northeastern portion of the former building floor slab | Collect soil samples for waste characterization and treatability testing, observe subsurface conditions in the vicinity of the "Former Gas Fitter" building.  | Top of glacial till                           | Terminated at 9 feet bgs in glacial till                            | 1                                        | Yes                               |
| TP-15-02                   | Test Pit         | On-site, northern portion of the asphalt parking lot            | Collect soil samples for waste characterization and treatability testing, observe subsurface conditions in the vicinity of the "Former Coal Shed" building.   | Top of glacial till                           | Terminated at 7 feet bgs in glacial till                            | 1                                        | Yes                               |
| TP-15-03                   | Test Pit         | On-site within former below-grade gas holder                    | Collect soil samples for waste characterization and treatability testing, observe subsurface conditions in the vicinity of the former below-grade gas holder. | Equipment maximum depth or test pit stability | Terminated at 10 feet bgs in apparent fill or reworked glacial till | 2                                        | Yes                               |
| TP-15-04                   | Test Pit         | On-site, eastern portion of the former building floor slab      | Collect soil samples for waste characterization and treatability testing, observe subsurface conditions in the vicinity of the "Former Coal Shed" building.   | Top of glacial till                           | Terminated at 9 feet bgs in glacial till                            | 1                                        | Yes                               |
| TP-15-05                   | Test Pit         | 185 Fall Street backyard                                        | Collect soil samples for waste characterization and treatability testing, observe subsurface conditions in 185 Fall Street backyard.                          | Top of glacial till                           | Terminated at 5 feet bgs in glacial till                            | 1                                        | No                                |
| SE-15-01                   | Sediment Core    | Seneca River adjacent to 193 Fall Street shoreline              | Collect representative sediment samples for waste characterization                                                                                            | Hand auger refusal                            | Terminated 1.9 feet below top of sediment                           | 1                                        | No                                |
| SE-15-02                   | Sediment Core    | Seneca River adjacent to 193 Fall Street shoreline              | Collect representative sediment samples for waste characterization                                                                                            | Hand auger refusal                            | Terminated 2.1 feet below top of sediment                           | 1                                        | No                                |

**TABLE I**  
**INVESTIGATION LOCATIONS AND RATIONALE**  
PRE-DESIGN INVESTIGATION SUMMARY REPORT  
SENECA FALLS FORMER MGP SITE  
SENECA FALLS, NEW YORK

| Exploration Identification | Exploration Type | Location Description                                                | Rational                                                           | Target Exploration Depth | Actual Exploration Depth and Description  | Laboratory Analyses/Methods <sup>1</sup> |                                   |
|----------------------------|------------------|---------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------|-------------------------------------------|------------------------------------------|-----------------------------------|
|                            |                  |                                                                     |                                                                    |                          |                                           | Waste Characterization                   | Treatability Testing <sup>2</sup> |
| SE-15-03                   | Sediment Core    | Seneca River adjacent to 193 Fall Street shoreline                  | Collect representative sediment samples for waste characterization | Hand auger refusal       | Terminated 2.0 feet below top of sediment | 1                                        | No                                |
| SE-15-04                   | Sediment Core    | Seneca River adjacent to 193 Fall Street and Site property boundary | Collect representative sediment samples for waste characterization | Hand auger refusal       | Terminated 2.5 feet below top of sediment | 1                                        | No                                |
| SE-15-05                   | Sediment Core    | Seneca River adjacent to Site                                       | Collect representative sediment samples for waste characterization | Hand auger refusal       | Terminated 1.9 feet below top of sediment | 1                                        | No                                |

- Notes:**
- 1. Laboratory analysis/methods:  
Waste Characterization included TCLP VOCs, TCLP SVOCs, TCLP RCRA metals, PCBs, reactive cyanide and sulfide, flashpoint, percent solids, paint filter and pH/corrosivity;  
Treatability Testing included moisture content, grain size, and bulk density; and grout viscosity, slump, compressive strength, and permeability testing of three trial batches.
  - 2. Three treatability testing samples consisted of homogenized soils from four test pits.
  - 3. "feet bgs" indicates feet below ground surface.

**TABLE II**  
**SEDIMENT FIELD OBSERVATIONS SUMMARY**  
 PRE-DESIGN INVESTIGATION SUMMARY REPORT  
 SENECA FALLS FORMER MGP SITE  
 SENECA FALLS, NEW YORK

| Exploration Identification | Exploration Location                                                | Approximate Top of Sediment Elevation (feet msl) | Maximum Exploration Depth                           | Exploration Observations                                                                   |
|----------------------------|---------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------|
| SE-15-01                   | Seneca River adjacent to 193 Fall Street shoreline                  | 427.1                                            | Water depth - 1.5 feet<br>Sediment depth - 1.9 feet | Silty/soft bottom conditions. Brick debris observed in sediment core.                      |
| SE-15-02                   | Seneca River adjacent to 193 Fall Street shoreline                  | 426.8                                            | Water depth - 1.6 feet<br>Sediment depth - 2.1 feet | Silty/soft bottom conditions. Some brick debris observed in sediment core, along with CLM. |
| SE-15-03                   | Seneca River adjacent to 193 Fall Street shoreline                  | 426.3                                            | Water depth - 2.1 feet<br>Sediment depth - 2.0 feet | Gravel/sandy bottom conditions.                                                            |
| SE-15-04                   | Seneca River adjacent to 193 Fall Street and Site property boundary | 426.7                                            | Water depth - 1.7 feet<br>Sediment depth - 2.5 feet | Silty/soft bottom conditions. TLM observed within the top 1 foot of sediment core.         |
| SE-15-05                   | Seneca River adjacent to Site shoreline                             | 426.6                                            | Water depth - 1.9 feet<br>Sediment depth - 1.9 feet | Silty/soft bottom conditions.                                                              |

**Notes:**

1. "Sediment Depth" refers to depth below mudline.
2. "TLM" indicates tar-like material.
3. "CLM" indicates clinker-like material.



TABLE III  
TEST PIT FIELD OBSERVATIONS SUMMARY  
PRE-DESIGN INVESTIGATION SUMMARY REPORT  
SENECA FALLS FORMER MGP SITE  
SENECA FALLS, NEW YORK

| Exploration Identification | Exploration Location                                            | Approximate Ground Surface Elevation (feet msl) | Maximum Exploration Depth (feet bgs) | Exploration Observations                                                                                                                                                                                                                                                                                                                                                                                                             | Maximum PID Detection (ppmv) | Maximum PID Detection Interval (feet bgs) |
|----------------------------|-----------------------------------------------------------------|-------------------------------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------------------|
| TP-15-01                   | On-site, northeastern portion of the former building floor slab | 456.5                                           | 9                                    | Concrete floor slab and subbase material to 0.6 feet bgs. Fill observed from 0.6 to 6 feet bgs. Black stained gravelly silt with sand and petroleum-like odor at 3 feet bgs. Wood fragment with TLM observed on east side of test pit at 5 feet bgs. Building demolition debris and red brick from 2.5 to 6 feet bgs. Glacial till observed from 6 to 9 feet bgs.                                                                    | 12.3                         | 5.5                                       |
| TP-15-02                   | On-site, northern portion of the parking lot                    | 456.5                                           | 7                                    | Asphalt and subbase material to 0.6 feet bgs. Fill observed from 0.6 to 3.5 feet bgs. Black stained sand with building demolition debris, red brick, glass, and tile from 0.6 to 3.5 ft bgs. Circular concrete structure observed at 5 feet bgs on western side of excavation, approximately 4 feet diameter, filled with water to a depth of at least 15 feet bgs (no sheen or odor). Glacial till observed from 3.5 to 7 feet bgs. | ND                           | NA                                        |
| TP-15-03                   | On-site within former below-grade gas holder                    | 456.5                                           | 10                                   | Concrete floor slab and subbase material to 0.6 feet bgs. Fill observed from 0.6 to 6 feet bgs. Apparent fill or reworked glacial till observed from 8 to 10 feet bgs. Water observed entering the test pit at 8 feet bgs.                                                                                                                                                                                                           | ND                           | NA                                        |
| TP-15-04                   | On-site, eastern portion of the former building floor slab      | 456.5                                           | 9                                    | Concrete floor slab and subbase material to 0.6 feet bgs. Fill observed from 0.6 to 7 feet bgs. Black stained gravelly silt with CLM and ALM from 4 to 7 feet bgs. Glacial till observed from 7 to 9 feet bgs.                                                                                                                                                                                                                       | ND                           | NA                                        |
| TP-15-05                   | 185 Fall Street backyard                                        | 447.5                                           | 5                                    | Topsoil observed to 1.5 feet bgs. Layer of white-colored material (possible crushed concrete) observed from 1.5 to 2 feet bgs. Fill observed from 2 to 4 feet bgs. Black stained sand with silt, brick and building demolition debris, broken clay pipe, and CLM and ALM observed from 2 to 4 feet bgs. Glacial till observed from 4 to 5 feet bgs.                                                                                  | ND                           | NA                                        |

Notes:  
1. "feet bgs" indicates feet below ground surface.  
2. "ALM" indicates ash-like material.  
3. "CLM" indicates clinker-like material.  
4. "TLM" indicates tar-like material.  
5. "ND" indicates not detected.  
6. "NA" indicates not applicable.

TABLE IV  
SOIL AND SEDIMENT SAMPLE ANALYTICAL RESULTS  
PRE-DESIGN INVESTIGATION SUMMARY REPORT  
SENECA FALLS FORMER MGP SITE  
SENECA FALLS, NEW YORK

| Location<br>Sample Date<br>Sample Type<br>Sample Depth (bgs)<br>Sample Name | RCRA<br>Toxicity<br>Characteristic<br>Threshold | SE-15-01<br>11/18/2015<br>N<br>0 - 1.9 (ft)<br>SE1501-111815-1100 | SE-15-02<br>11/18/2015<br>N<br>0 - 2.1 (ft)<br>SE1502-111815-1130 | SE-15-03<br>11/18/2015<br>N<br>0 - 2 (ft)<br>SE1503-111815-1300 | SE-15-04<br>11/18/2015<br>N<br>0 - 2.5 (ft)<br>SE1504-111815-1215 | SE-15-05<br>11/18/2015<br>N<br>0 - 1.9 (ft)<br>SE1505-111815-1330 | TP-15-01<br>11/19/2015<br>N<br>0.6 - 2 (ft)<br>TP1501-111915-1440 | TP-15-02<br>11/19/2015<br>N<br>0.6 - 2 (ft)<br>TP1502-111915-1320 | TP-15-03<br>11/19/2015<br>N<br>0.6 - 2 (ft)<br>TP1503-111915-1530 | TP-15-03<br>11/19/2015<br>N<br>6 - 8 (ft)<br>TP1503-111915-1545 | TP-15-04<br>11/19/2015<br>N<br>0.6 - 2 (ft)<br>TP1504-111915-1145 |
|-----------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------|
| <b>Inorganic Compounds (mg/kg)</b>                                          |                                                 |                                                                   |                                                                   |                                                                 |                                                                   |                                                                   |                                                                   |                                                                   |                                                                   |                                                                 |                                                                   |
| Reactive Cyanide                                                            | -                                               | < 9.8                                                             | < 9.8                                                             | < 9.7                                                           | < 9.6                                                             | < 9.5                                                             | < 10                                                              | < 10                                                              | < 10                                                              | < 10                                                            | < 10                                                              |
| <b>TCLP Inorganic Compounds (mg/L)</b>                                      |                                                 |                                                                   |                                                                   |                                                                 |                                                                   |                                                                   |                                                                   |                                                                   |                                                                   |                                                                 |                                                                   |
| Arsenic                                                                     | 5                                               | 0.0092 J                                                          | 0.012 J                                                           | 0.0071 J                                                        | 0.011 J                                                           | 0.0069 J                                                          | < 0.015                                                           | 0.012 J                                                           | < 0.015                                                           | < 0.015                                                         | < 0.015                                                           |
| Barium                                                                      | 100                                             | 0.47 J                                                            | 0.65 J                                                            | 0.94 J                                                          | 0.86 J                                                            | 0.54 J                                                            | 0.41 J                                                            | 0.8 J                                                             | 0.43 J                                                            | 0.39 J                                                          | 0.29 J                                                            |
| Cadmium                                                                     | 1                                               | 0.0012 J                                                          | 0.0026                                                            | 0.0011 J                                                        | 0.0071                                                            | 0.0085                                                            | 0.00071 J                                                         | 0.0038                                                            | 0.00093 J                                                         | 0.0023                                                          | 0.00063 J                                                         |
| Chromium                                                                    | 5                                               | < 0.02                                                            | < 0.02                                                            | < 0.02                                                          | < 0.02                                                            | < 0.02                                                            | < 0.02                                                            | < 0.02                                                            | < 0.02                                                            | < 0.02 ^                                                        | < 0.02                                                            |
| Lead                                                                        | 5                                               | 0.41                                                              | 1.4                                                               | 0.3                                                             | 0.31                                                              | 0.017 J                                                           | 0.0051 J                                                          | 0.059                                                             | 0.0082 J                                                          | < 0.02                                                          | 0.0034 J                                                          |
| Mercury                                                                     | 0.2                                             | < 0.0002                                                          | < 0.0002                                                          | < 0.0002                                                        | < 0.0002                                                          | < 0.0002                                                          | < 0.0002                                                          | 0.00044                                                           | < 0.0002                                                          | < 0.0002                                                        | < 0.0002                                                          |
| Selenium                                                                    | 1                                               | < 0.025                                                           | < 0.025                                                           | < 0.025                                                         | < 0.025                                                           | < 0.025                                                           | < 0.025                                                           | < 0.025                                                           | < 0.025                                                           | < 0.025                                                         | < 0.025                                                           |
| Silver                                                                      | 5                                               | < 0.006                                                           | < 0.006                                                           | < 0.006                                                         | < 0.006                                                           | < 0.006                                                           | < 0.006                                                           | < 0.006                                                           | < 0.006                                                           | < 0.006                                                         | < 0.006                                                           |
| <b>Other (Deg F)</b>                                                        |                                                 |                                                                   |                                                                   |                                                                 |                                                                   |                                                                   |                                                                   |                                                                   |                                                                   |                                                                 |                                                                   |
| Flash Point Closed Cup                                                      | -                                               | > 176                                                             | > 176                                                             | > 176                                                           | > 176                                                             | > 176                                                             | > 176                                                             | > 176                                                             | > 176                                                             | > 176                                                           | > 176                                                             |
| <b>Other (mg/kg)</b>                                                        |                                                 |                                                                   |                                                                   |                                                                 |                                                                   |                                                                   |                                                                   |                                                                   |                                                                   |                                                                 |                                                                   |
| Reactive Sulfide                                                            | -                                               | < 9.8                                                             | < 9.8                                                             | < 9.7                                                           | < 9.6                                                             | < 9.5                                                             | < 10                                                              | < 10                                                              | < 10                                                              | < 10                                                            | < 10                                                              |
| <b>Other (ml/100g)</b>                                                      |                                                 |                                                                   |                                                                   |                                                                 |                                                                   |                                                                   |                                                                   |                                                                   |                                                                   |                                                                 |                                                                   |
| Free Liquid                                                                 | -                                               | PASS                                                              | FAIL                                                              | PASS                                                            | PASS                                                              | PASS                                                              | PASS                                                              | PASS                                                              | PASS                                                              | PASS                                                            | FAIL                                                              |
| <b>Other (su)</b>                                                           |                                                 |                                                                   |                                                                   |                                                                 |                                                                   |                                                                   |                                                                   |                                                                   |                                                                   |                                                                 |                                                                   |
| pH (lab)                                                                    | -                                               | 7.47 HF                                                           | 8.01 HF                                                           | 8.26 HF                                                         | 7.69 HF                                                           | 7.74 HF                                                           | 8.28 HF                                                           | 8.23 HF                                                           | 7.7 HF                                                            | 8.44 HF                                                         | 7.63 HF                                                           |
| <b>PCBs (mg/kg)</b>                                                         |                                                 |                                                                   |                                                                   |                                                                 |                                                                   |                                                                   |                                                                   |                                                                   |                                                                   |                                                                 |                                                                   |
| Aroclor-1016 (PCB-1016)                                                     | -                                               | < 0.41                                                            | < 0.34                                                            | < 0.31                                                          | < 0.39                                                            | < 0.33                                                            | < 0.22                                                            | < 0.26                                                            | < 0.24                                                            | < 0.27                                                          | < 0.21                                                            |
| Aroclor-1221 (PCB-1221)                                                     | -                                               | < 0.41                                                            | < 0.34                                                            | < 0.31                                                          | < 0.39                                                            | < 0.33                                                            | < 0.22                                                            | < 0.26                                                            | < 0.24                                                            | < 0.27                                                          | < 0.21                                                            |
| Aroclor-1232 (PCB-1232)                                                     | -                                               | < 0.41                                                            | < 0.34                                                            | < 0.31                                                          | < 0.39                                                            | < 0.33                                                            | < 0.22                                                            | < 0.26                                                            | < 0.24                                                            | < 0.27                                                          | < 0.21                                                            |
| Aroclor-1242 (PCB-1242)                                                     | -                                               | < 0.41                                                            | < 0.34                                                            | < 0.31                                                          | < 0.39                                                            | < 0.33                                                            | < 0.22                                                            | < 0.26                                                            | < 0.24                                                            | < 0.27                                                          | < 0.21                                                            |
| Aroclor-1248 (PCB-1248)                                                     | -                                               | < 0.41                                                            | < 0.34                                                            | < 0.31                                                          | < 0.39                                                            | < 0.33                                                            | < 0.22                                                            | < 0.26                                                            | < 0.24                                                            | < 0.27                                                          | < 0.21                                                            |
| Aroclor-1254 (PCB-1254)                                                     | -                                               | < 0.41                                                            | < 0.34                                                            | < 0.31                                                          | < 0.39                                                            | < 0.33                                                            | < 0.22                                                            | < 0.26                                                            | < 0.24                                                            | < 0.27                                                          | < 0.21                                                            |
| Aroclor-1260 (PCB-1260)                                                     | -                                               | < 0.41                                                            | < 0.34                                                            | < 0.31                                                          | < 0.39                                                            | < 0.33                                                            | < 0.22                                                            | < 0.26                                                            | < 0.24                                                            | < 0.27                                                          | < 0.21                                                            |
| <b>TCLP Semi-Volatile Organic Compounds (mg/L)</b>                          |                                                 |                                                                   |                                                                   |                                                                 |                                                                   |                                                                   |                                                                   |                                                                   |                                                                   |                                                                 |                                                                   |
| 1,4-Dichlorobenzene                                                         | 7.5                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| 2,4,5-Trichlorophenol                                                       | 400                                             | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           |
| 2,4,6-Trichlorophenol                                                       | 2                                               | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           |
| 2,4-Dinitrotoluene                                                          | 0.13                                            | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           |
| 2-Methylphenol                                                              | 200                                             | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           |
| 3-Methylphenol                                                              | 200                                             | < 0.01                                                            | 0.00088 J                                                         | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| 4-Methylphenol                                                              | 200                                             | < 0.01                                                            | 0.00088 J                                                         | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| Hexachlorobenzene                                                           | 0.13                                            | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           |
| Hexachlorobutadiene                                                         | 0.5                                             | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           |
| Hexachloroethane                                                            | 3                                               | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           |
| Nitrobenzene                                                                | 2                                               | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                           | < 0.005                                                         | < 0.005                                                           |
| Pentachlorophenol                                                           | 100                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| Pyridine                                                                    | 5                                               | < 0.025                                                           | < 0.025                                                           | < 0.025                                                         | < 0.025                                                           | < 0.025                                                           | < 0.025                                                           | 0.0013 JB                                                         | 0.0011 JB                                                         | 0.0017 JB                                                       | 0.0012 JB                                                         |
| <b>TCLP Volatile Organic Compounds (mg/L)</b>                               |                                                 |                                                                   |                                                                   |                                                                 |                                                                   |                                                                   |                                                                   |                                                                   |                                                                   |                                                                 |                                                                   |
| 1,1-Dichloroethene                                                          | 0.7                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| 1,2-Dichloroethane                                                          | 0.5                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| 2-Butanone (Methyl Ethyl Ketone)                                            | 200                                             | < 0.05                                                            | < 0.05                                                            | < 0.05                                                          | < 0.05                                                            | < 0.05                                                            | < 0.05 *                                                          | < 0.05 *                                                          | < 0.05 *                                                          | < 0.05 *                                                        | < 0.05 *                                                          |
| Benzene                                                                     | 0.5                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | 0.033                                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| Carbon tetrachloride                                                        | 0.5                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| Chlorobenzene                                                               | 100                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| Chloroform (Trichloromethane)                                               | 6                                               | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| Tetrachloroethene                                                           | 0.7                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| Trichloroethene                                                             | 0.5                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |
| Vinyl chloride                                                              | 0.2                                             | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                            | < 0.01                                                          | < 0.01                                                            |

TABLE IV  
SOIL AND SEDIMENT SAMPLE ANALYTICAL R  
PRE-DESIGN INVESTIGATION SUMMARY REP  
SENECA FALLS FORMER MGP SITE  
SENECA FALLS, NEW YORK

|                                            |                    |                    |
|--------------------------------------------|--------------------|--------------------|
|                                            | Location           | TP-15-05           |
|                                            | Sample Date        | 11/20/2015         |
|                                            | Sample Type        | N                  |
|                                            | Sample Depth (bgs) | 0 - 2 (ft)         |
|                                            | Sample Name        | TP1505-112015-0900 |
| Inorganic Compounds (mg/kg)                |                    |                    |
| Reactive Cyanide                           |                    | < 10               |
| TCLP Inorganic Compounds (mg/L)            |                    |                    |
| Arsenic                                    |                    | 0.0095 J           |
| Barium                                     |                    | 0.91 J             |
| Cadmium                                    |                    | 0.0042             |
| Chromium                                   |                    | < 0.02 ^           |
| Lead                                       |                    | 0.16               |
| Mercury                                    |                    | < 0.0002           |
| Selenium                                   |                    | < 0.025            |
| Silver                                     |                    | < 0.006            |
| Other (Deg F)                              |                    |                    |
| Flash Point Closed Cup                     |                    | > 176              |
| Other (mg/kg)                              |                    |                    |
| Reactive Sulfide                           |                    | < 10               |
| Other (ml/100g)                            |                    |                    |
| Free Liquid                                |                    | PASS               |
| Other (su)                                 |                    |                    |
| pH (lab)                                   |                    | 8.61 HF            |
| PCBs (mg/kg)                               |                    |                    |
| Aroclor-1016 (PCB-1016)                    |                    | < 0.27             |
| Aroclor-1221 (PCB-1221)                    |                    | < 0.27             |
| Aroclor-1232 (PCB-1232)                    |                    | < 0.27             |
| Aroclor-1242 (PCB-1242)                    |                    | < 0.27             |
| Aroclor-1248 (PCB-1248)                    |                    | < 0.27             |
| Aroclor-1254 (PCB-1254)                    |                    | < 0.27             |
| Aroclor-1260 (PCB-1260)                    |                    | < 0.27             |
| TCLP Semi-Volatile Organic Compounds (mg/L |                    |                    |
| 1,4-Dichlorobenzene                        |                    | < 0.01             |
| 2,4,5-Trichlorophenol                      |                    | < 0.005            |
| 2,4,6-Trichlorophenol                      |                    | < 0.005            |
| 2,4-Dinitrotoluene                         |                    | < 0.005            |
| 2-Methylphenol                             |                    | < 0.005            |
| 3-Methylphenol                             |                    | < 0.01             |
| 4-Methylphenol                             |                    | < 0.01             |
| Hexachlorobenzene                          |                    | < 0.005            |
| Hexachlorobutadiene                        |                    | < 0.005            |
| Hexachloroethane                           |                    | < 0.005            |
| Nitrobenzene                               |                    | < 0.005            |
| Pentachlorophenol                          |                    | < 0.01             |
| Pyridine                                   |                    | 0.0014 JB          |
| TCLP Volatile Organic Compounds (mg/L)     |                    |                    |
| 1,1-Dichloroethene                         |                    | < 0.01             |
| 1,2-Dichloroethane                         |                    | < 0.01             |
| 2-Butanone (Methyl Ethyl Ketone)           |                    | < 0.05 *           |
| Benzene                                    |                    | < 0.01             |
| Carbon tetrachloride                       |                    | < 0.01             |
| Chlorobenzene                              |                    | < 0.01             |
| Chloroform (Trichloromethane)              |                    | < 0.01             |
| Tetrachloroethene                          |                    | < 0.01             |
| Trichloroethene                            |                    | < 0.01             |
| Vinyl chloride                             |                    | < 0.01             |

Notes:  
1. <: Result is not detected above the indicated reporting limit.  
2. Results in **bold** are detected.  
3. Lab qualifiers defined as follows:  
    B: Compound was found in the blank and sample.  
    HF: Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.  
    J: Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.  
    \*: LCS or LCSD is outside acceptance limits.  
    ^: ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.  
4. TCLP: Toxicity characteristic leaching procedure.  
5. Detected results were screened against the RCRA Toxicity Characteristic Threshold for Hazardous Waste.  
Shaded cells indicate the detected value is above the RCRA Toxicity Characteristic Threshold.

**TABLE V****TREATABILITY TESTING RESULTS**

PRE-DESIGN INVESTIGATION SUMMARY REPORT

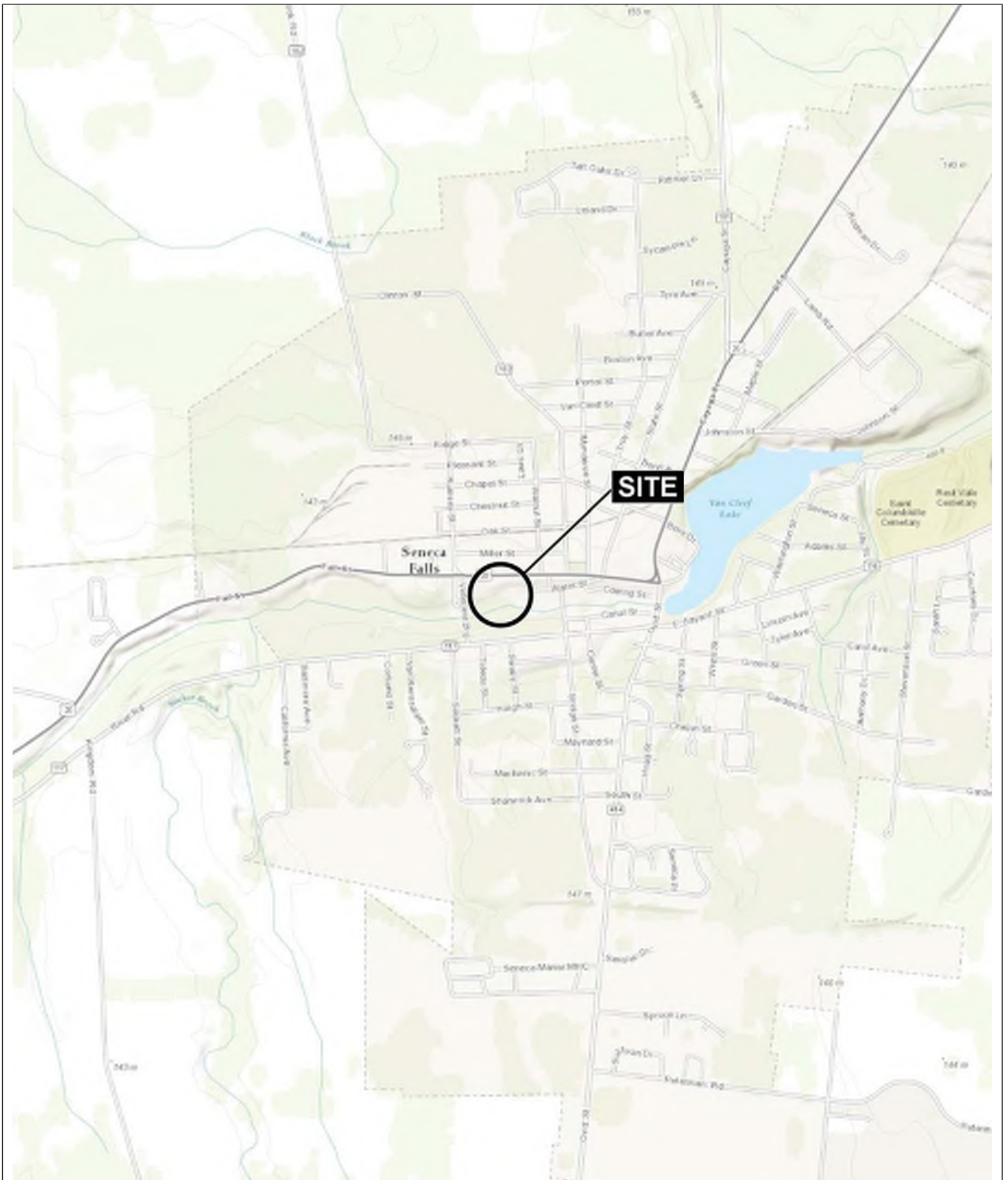
SENECA FALLS FORMER MGP SITE

SENECA FALLS, NEW YORK

| Batch Additive Rate | Curing Age (days) | Slump (inches) | Viscosity (seconds) | Swell (%) | Unconfined Compressive Strength (psi) | Moisture Content (%) | Wet Density (pcf) | Dry Density (pcf) | Hydraulic Conductivity (cm/sec) |
|---------------------|-------------------|----------------|---------------------|-----------|---------------------------------------|----------------------|-------------------|-------------------|---------------------------------|
| Untreated           | -                 | -              | -                   | -         | -                                     | 15.2                 | 124.4             | 108.0             | -                               |
| 6%                  | 0                 | 3.75           | 33                  | 15.7      | -                                     | -                    | -                 | -                 | -                               |
|                     | 14                | -              | -                   | -         | -                                     | -                    | -                 | -                 | -                               |
|                     | 28                | -              | -                   | -         | 9                                     | 25.2 / 25.6          | 122.1 / 122.6     | 97.2 / 97.9       | 9.0X10 <sup>-7</sup>            |
| 9%                  | 0                 | 4.00           | 34                  | 18.5      | -                                     | -                    | -                 | -                 | -                               |
|                     | 14                | -              | -                   | -         | 23                                    | 24.7 / 25.6          | 122.0 / 122.5     | 97.1 / 98.2       | 6.4X10 <sup>-7</sup>            |
|                     | 28                | -              | -                   | -         | 35                                    | 24.4 / 25.8          | 121.6 / 122.5     | 96.6 / 98.5       | 5.2X10 <sup>-7</sup>            |
|                     | 61                | -              | -                   | -         | 44                                    | 25.2                 | 121.6             | 97.1              | -                               |
| 12%                 | 0                 | 4.25           | 36                  | 21.2      | -                                     | -                    | -                 | -                 | -                               |
|                     | 14                | -              | -                   | -         | 40                                    | 24.6 / 25.3          | 121.2 / 121.4     | 96.7 / 97.4       | 3.7X10 <sup>-7</sup>            |
|                     | 28                | -              | -                   | -         | 66                                    | 23.8 / 25.1          | 120.1 / 121.4     | 97.0 / 97.0       | 3.0X10 <sup>-7</sup>            |
|                     | 61                | -              | -                   | -         | 80                                    | 24.7                 | 121.1             | 97.1              | -                               |

**Notes:**

1. "psi" = pounds per square inch.
2. "pcf" = pounds per cubic foot.
3. "cm/sec" = centimeters per second.
4. "-" = not tested.
5. Multiple results are due to duplicate tests run on different molds.
6. % swell of material was measured after mixing relative to unit weight of received soil.



MAP SOURCE: ESRI

SITE COORDINATES: 42°54'35"N, 76°48'14"W

**HALEY  
ALDRICH**

SENECA FALLS FORMER MGP  
187 FALL STREET  
SENECA FALLS, NEW YORK

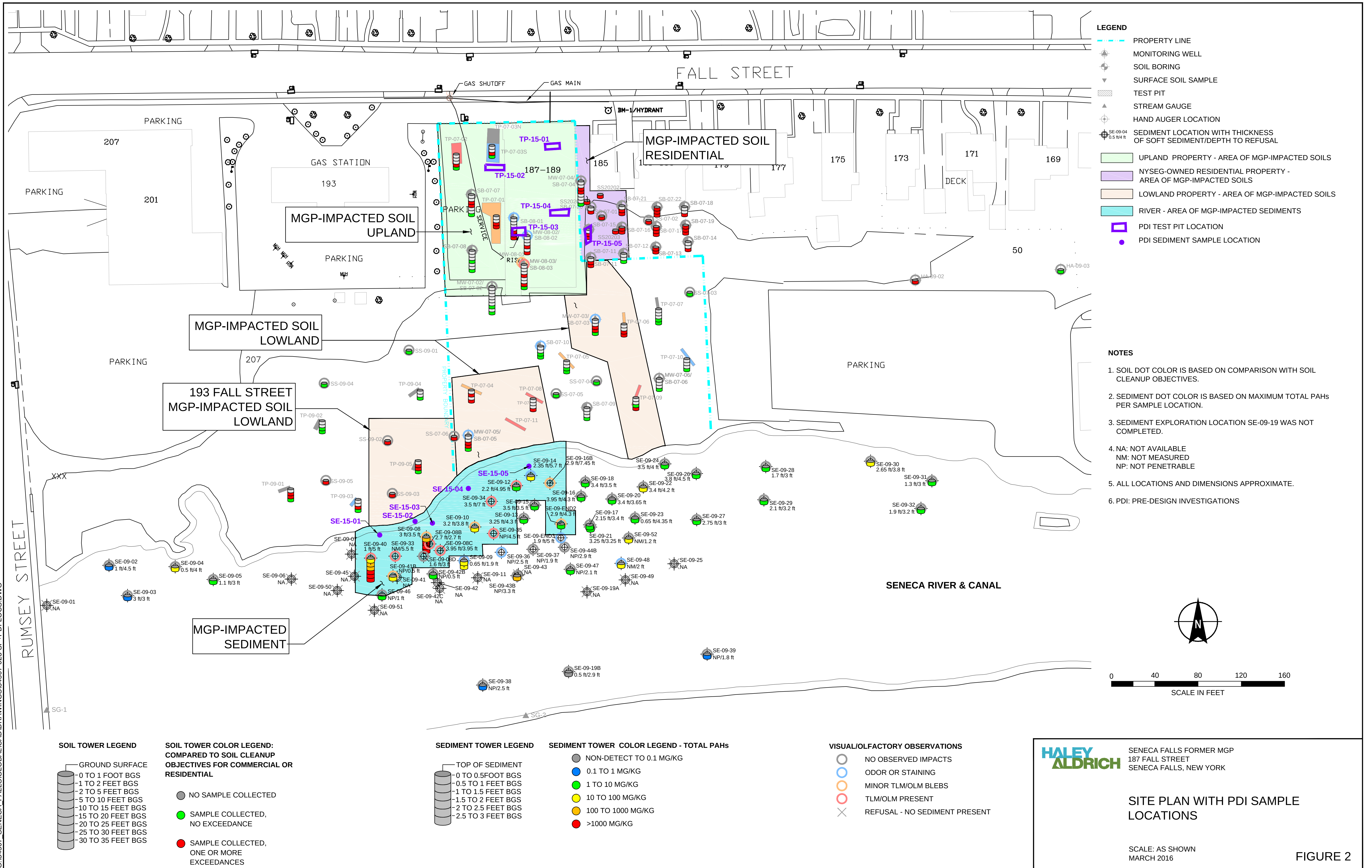
## PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT  
MARCH 2016

FIGURE 1



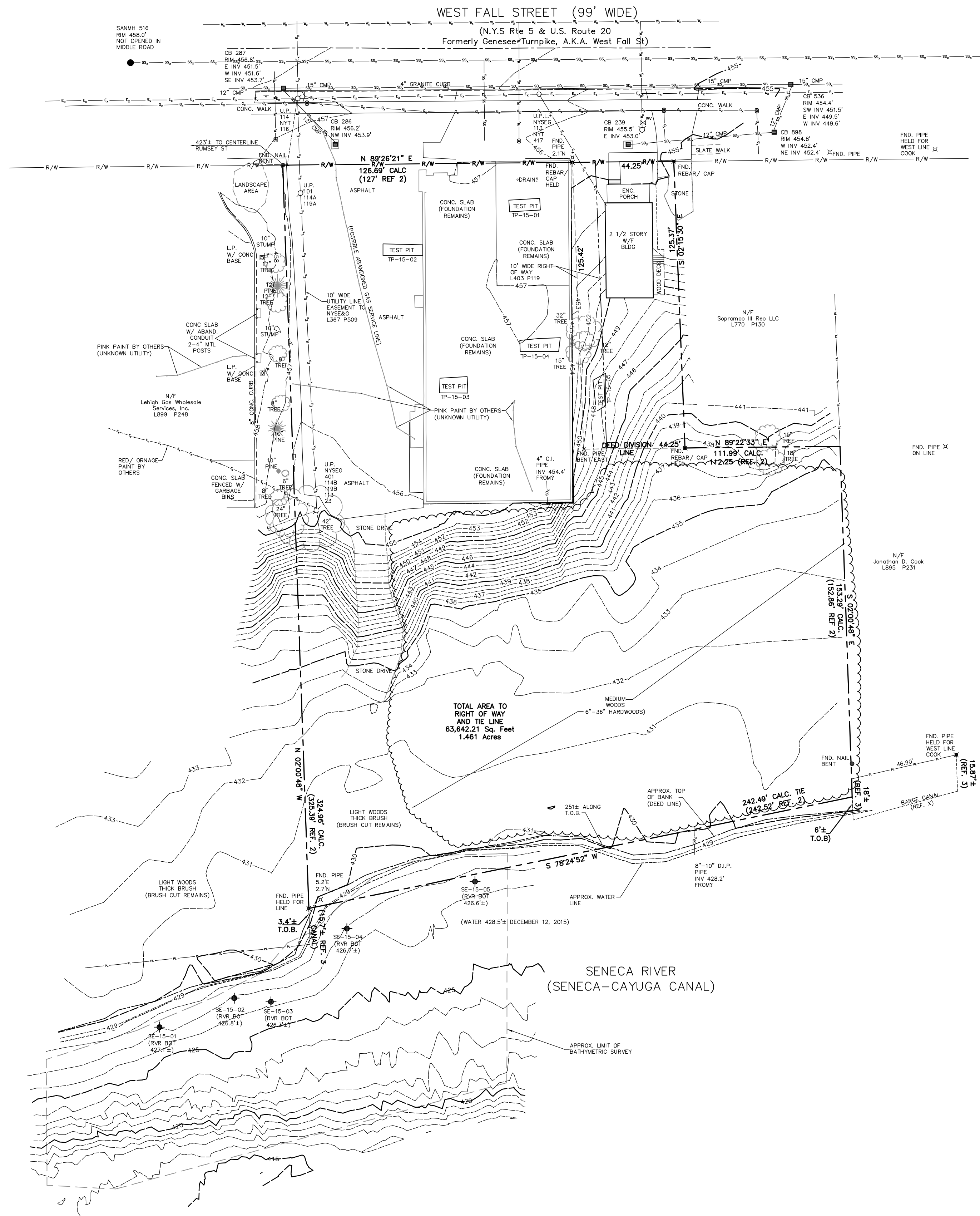
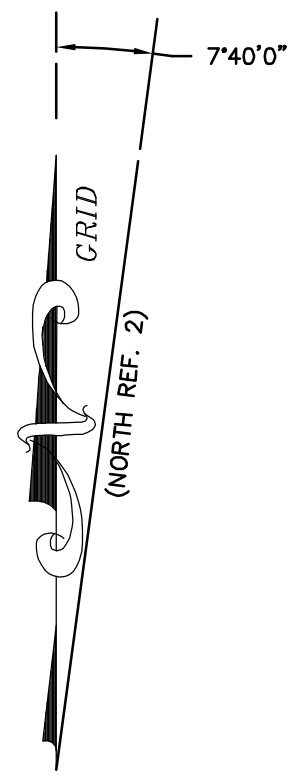




## **APPENDIX A**

### **Site Survey Plan**





**SITE NOTES:**

- 1) Features shown hereon are based on a survey performed November 19 & 20 and December 12 & 19, 2015.
- 2) Communication, Electric, Water, Unidentified, Drainage and Sanitary are shown based on point markings and/or pins by others observed during the field survey and features observed during the field survey. These locations are considered approximate and require verification.
- 4) Coordinates shown reference NY State Plane Coordinates, NAD83, New York Central Zone, in US Survey feet through ties to exiting control provided by H&A.
- 5) Elevations shown reference existing control provided by H&A, established by others. It appears to be based on the North American Vertical Datum 1988 (NAVD88).
- 6) River Bottom contours were obtained through sonar methods utilizing RTK, GPS and should be considered approximate and for general bottom grade. River bottom was irregular and bottom was silt and vegetated.
- 7) Bearings shown hereon based on grid coordinates per note 4 above.
- 8) Sanitary and water service lines shown running toward foundation remains within the public right of way are based on markings by others and considered approximate. Lines to foundation remains was not apparent or observable during the field survey.

**REFERENCES:**

- 1) Map entitled "SURVEY MAP of the premises of WALTER J. & CATHERINE M. SMITHOOVER" by Donald D. Shepherd, dated February 1, 1990, being project No. SF9001-02 and filed in the SCCO February 23, 1990 as MC 70-130.
- 2) Map entitled "SURVEY MAP of the premises of ROGER E. LEWIS REALTY, INC." by Donald D. Shepherd, dated July 11, 1996, being project No. SF9611-07 and filed in the SCCO September 6, 1996 as MC 96-261.
- 3) Map entitled "Lands of Federal Home Loan Mortgage Corporation" by Charles E. Carroll dated August 17, 2011, being project No. SF6.262 and filed in the SCCO August 29, 2011 as MC 11-206.
- 4) Map entitled "Boundary Survey" by Eardman Anthony dated August 9, 2012, being project No. 19397.01.
- 8) Other deeds listed hereon.

**TITLE:**

This Survey was completed with the aid of an abstract by title search for easements by Monroe Abstract & Title Corporation, Abstract No. 22492, Acct. No. 54906 dated October 24, 1989. An updated abstract of title was not provided. Parcel is subject to any easements, restrictions and encumbrances that research beyond that completed may show.

**RIGHT OF WAY:**

The Right of Way of NY Route 5 & US Route 20 is 99' per referenced noted. Right of Way Shown based on evidence recovered and references noted.

**NOTES:**

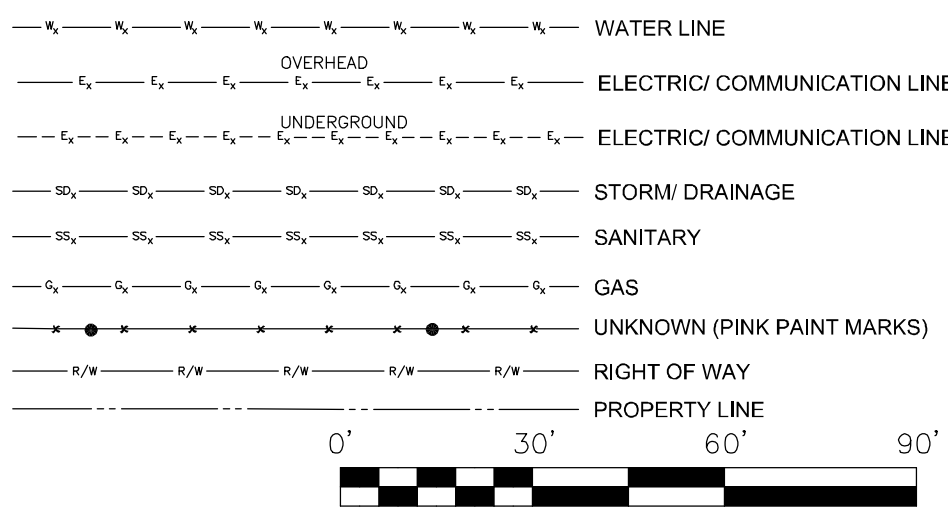
Survey completed without the benefit of an Abstract of Title and is therefore subject to any easement, restrictions, Covenants and right of way of record.

**EASEMENTS:**

Parcel is subject to any easement, restrictions, covenants and right of way of record.

**LEGEND:**

- |                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>MONITORING WELL</li><li>DRAINAGE MANHOLE</li><li>SANITARY MANHOLE</li><li>UNKNOWN MAHOLE</li><li>SOIL BORING</li><li>PAINT MARKINGS (UTILITY BY OTHERS)</li><li>UTILITY POLE</li><li>LIGHT POLE</li><li>HYDRANT</li><li>WATER VALVE</li><li>WATER SERVICE VALVE</li><li>GAS LINE OR SERVICE VALVE</li><li>SIGN</li><li>CATCHBASIN</li></ul> | <b>ABBREVIATIONS:</b> <ul style="list-style-type: none"><li>SV - SOIL VAPOR</li><li>SB - SOIL BORING</li><li>MW - MONITORING WELL</li><li>ENVIR. - ENVIRONMENTAL</li><li>CL - CENTER</li><li>MEAS. - MEASURE</li><li>COMB. - COMBINED</li><li>FF - FINISHED FLOOR</li><li>ELE. - ELECTRIC</li><li>NIF - NOW OR FORMERLY</li><li>CONC. - CONCRETE</li><li>UP - UTILITY POLE</li><li>HYDRANT - UTILITY POLE WITH LIGHT</li><li>EP - EDGE OF PAVEMENT</li><li>(TYP.) - TYPICAL</li><li>APPRX. - APPROXIMATE</li><li>FND. - FOUND.</li><li>T.O.B. - TOP OF BANK</li></ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



**TOPOGRAPHIC AND GEOTECHNICAL SURVEY**

|                   |                  |                                                                                     |
|-------------------|------------------|-------------------------------------------------------------------------------------|
| DRAWN<br>LH       | DATE<br>02/05/16 | FORMER NYSEG COGEN<br>FACILITY<br>187-189 & 185<br>FALLS STREET<br>SENECA FALLS, NY |
| APPROVED          | DATE             |                                                                                     |
| SCALE<br>1" = 30' | SHEET<br>SV-1    | PROJECT NO.<br>15-029                                                               |

|            |       |     |
|------------|-------|-----|
| REVISIONS: | DATE: | BY: |
|------------|-------|-----|

EDUCATION LAW:  
IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW SECTION 7209.2 FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR SURVEYOR TO ALTER THIS DOCUMENT IN ANY WAY. IF ALTERED, THE PERSON WHO ALTERED THE PLANS SHALL COMPLY WITH THE REQUIREMENTS OF NEW YORK STATE EDUCATION LAW SECTION 7209.2.

FEATURES SHOWN HEREON ARE BASED ON A FIELD SURVEY PERFORMED IN DECEMBER 2015.

THIS SURVEY WAS PREPARED FOR THE PARTIES AND PURPOSES INDICATED HEREON. ANY EXTENSION OF THIS USE BEYOND THE PURPOSE AGREED TO BETWEEN THE CLIENT AND THE SURVEYOR EXCEEDS THE SCOPE OF THIS ENGAGEMENT.

CLIENT:  
HALEY AND ALDRICH OF NEW YORK  
200 TOWN CENTRE DRIVE  
SUITE 2  
ROCHESTER, N.Y. 14623



## **APPENDIX B**

### **Wetlands Delineation Report**



Haley & Aldrich of New York  
200 Town Centre Drive  
Suite 2  
Rochester, NY 14623  
585.359.9000

18 January 2016  
File No. 34507-023

TO: Doug Allen, Haley & Aldrich  
Jim Pippin, Haley & Aldrich

FROM: Jon Becker, Haley & Aldrich

SUBJECT: Wetland and Stream Delineation Letter Report  
Seneca Falls Former MGP Site

## **1. INTRODUCTION**

This Wetland and Stream Delineation Report summarizes the results of field work performed by Haley & Aldrich of New York (Haley & Aldrich) to locate and identify wetlands and waterbodies within and immediately adjacent to New York State Electric & Gas Corporation's (NYSEG) Seneca Falls Former Manufactured Gas Plant (MGP) site (the Study Area). The Study Area consists of approximately 1.2 acres and is located between the south side of Fall Street and north side of the Seneca River and Canal within the Village of Seneca Falls, Seneca County, New York as shown on Figure 1.

## **2. METHODOLOGY**

Prior to field investigations, a desktop review of publicly available data sources was conducted. Data consulted included, U.S. Geological Survey topographic quadrangle maps, NYS Department of Environmental Conservation (NYSDEC) Freshwater Wetland Maps, National Wetland Inventory (NWI) maps, Natural Resources Conservation Service (NRCS) County Soil survey, Federal Emergency Management Agency (FEMA) Flood Insurance maps, and the National Hydrography dataset.

The field delineation was performed on 29 October 2015 within the Study Area to identify wetlands and streams. The delineation was performed in accordance with criteria set forth in the U.S. Army Corps of Engineers (USACE) 1987 Corps of Engineers Wetland Delineation Manual (1987) and the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0).

Hydrophytic vegetation was assessed by identifying plant species and their assigned wetland indicator rating of obligate, facultative wet, facultative, facultative upland, and upland. Hydric soil was determined by soil features such as color matrix, hue, evidence of redox features which may include indicators like saturation, gleyed matrix, mottling, hydrogen sulfide odor, and organic/peat layers present. Hydrology was determined based on a number of indicators based on the USACE manual.

Additional surface waters, including stream channels and drainage ways, were investigated and characterized. To the extent practicable, these waters were investigated to determine drainage patterns and potential connections to other Waters of the U.S.

### **3. SITE SETTING**

The Study Area encompasses approximately 1.2 acres on two (2) parcels and comprises a former MGP site that borders the Seneca River and Canal within the Village of Seneca Falls, New York (see Figure 1). Topography at the site can be characterized as sloping from Fall Street to a remnant floodplain shelf. According to FEMA mapping the 100 year floodplain is defined by the boundaries of the Seneca River to the south of the Study Area. The formerly developed portion of the former MGP site is occupied by a building floor slab along with a paved parking lot immediately west of the floor slab. This portion of the Study Area is generally flat with an elevation of approximately 456 feet above sea level that steeply slopes south to the remnant floodplain shelf. The remnant shelf located in lower portion of the Study Area has a gentle slope to the south towards the Seneca River and Canal, ranging in elevation from approximately 430 to 433 feet above sea level. Surface drainage (at a macro scale) is believed to be to the south toward the Seneca River and Canal.

According to EPA Watershed mapping, the Study Area is located in the Finger Lakes watershed which is further broken down into the Seneca watershed. According to NYSDEC freshwater wetland mapping, there are no state regulated wetlands mapped within close proximity to the Study Area. According to NWI mapping, only Seneca River (R2UBH) is mapped within close proximity to the Study Area (see Figure 2). The Seneca River is mapped by NYSDEC as a Class C stream.

Mapped soil types within the Study Area (see Figure 2) include Schoharie silty clay loam (ShB). This soil type consists of very deep, moderately well drained soils that are formed in clayey lacustrine sediments.

### **4. WETLANDS AND STREAMS**

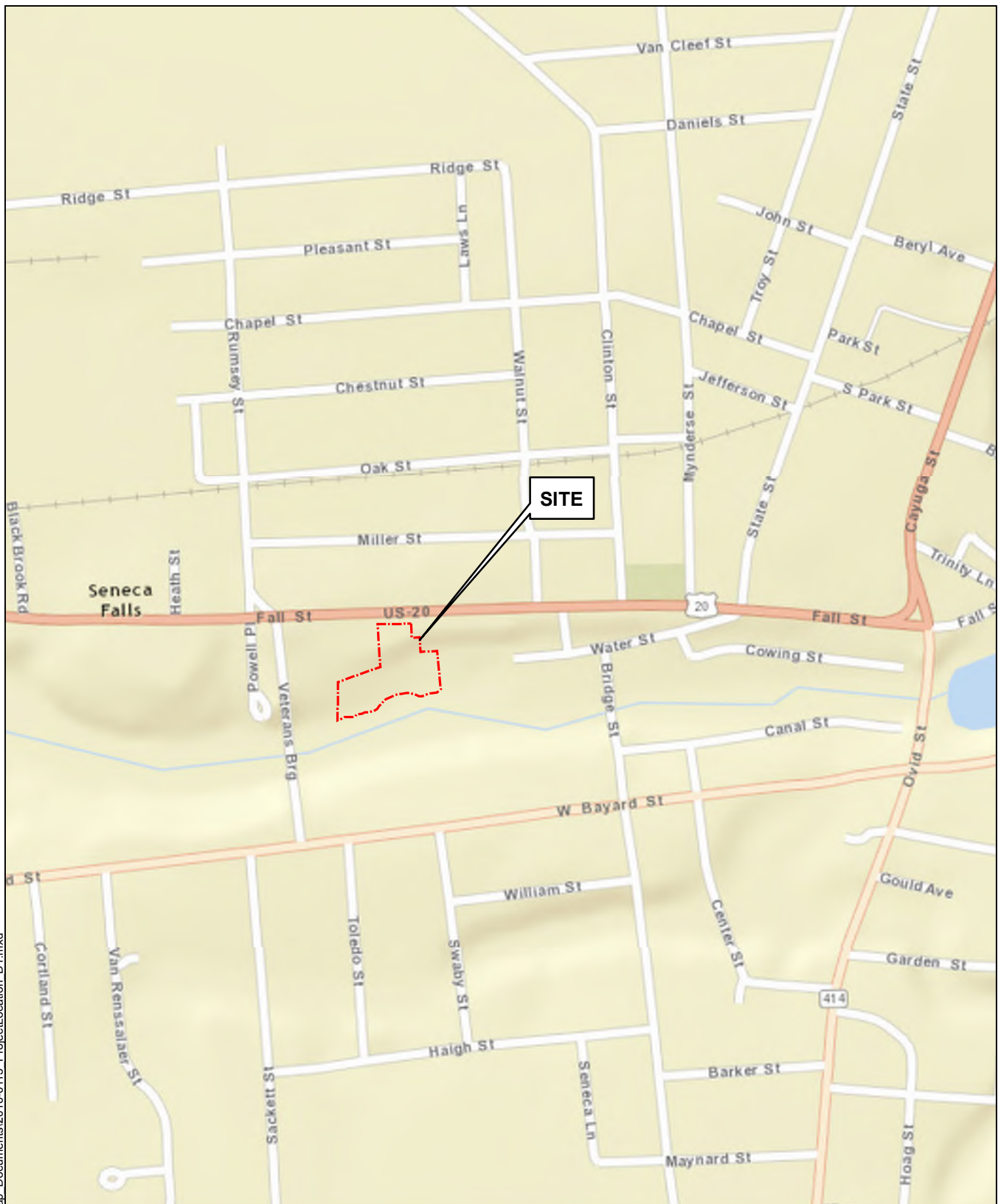
The wetland and stream delineation within the Study Area was completed by a qualified Haley & Aldrich wetland scientist on 29 October 2015. Field data forms are provided as Attachment 1 and photographs are provided as Attachment 2. There were no wetlands nor any evidence of hydrology observed within the Study Area. Land cover within the Study Area was found to be predominantly a mixed mesophytic forest. Vegetation within the Study Area was dominated by upland canopy species such as black locust (*Robinia pseudoacacia*) and black walnut (*Juglans nigra*). The shrub layer was found to be dominated by red maple (*Acer rubrum*) saplings, staghorn sumac (*Rhus typhina*), and tartarian honeysuckle (*Lonicera tatarica*). Within the past year the site had been logged which has opened the Study Area up to allow for a large presence of raspberry (*Rubus spp.*) bushes. Also observed in the herbaceous layer was a large presence of garlic mustard (*Alliaria petiolate*), goldenrod spp. (*Solidago spp.*), wild grape (*Vitis vinifera*), and pockets of canary reed grass (*Phalaris arundinacea*).

Upland soils encountered within the Study Area consisted of a fine grained silt loam having a hue of 10YR 3/3. Minor amounts (approximately 5%) of gravel consisting primarily of sandstone were observed throughout the soil sample.

The Seneca River and Canal flows easterly and has an unconsolidated bottom that appears to be heavily silted. Along the Study Area the river is approximately 200 feet wide with no definable bank structure.

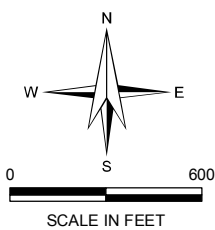
## REFERENCES

1. Cowardin, L.M., et al. 1979. *Classification of wetlands and deepwater habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Washington D.C. 131 pp.
2. Edinger, G.J., et al. 2002. *Ecological Communities of New York State, Second Edition*. New York Heritage Program, NYS Department of Environmental Conservation, Albany, NY, 134 pp.
3. Reschke, Carol. 1990. *Ecological Communities of New York State*. New York Heritage Program, NYS Department of Environmental Conservation, Latham, NY 96 pp. and maps.
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8. New York State Department of Environmental Conservation (NYSDEC) website, (<http://www.dec.state.ny.us/>)
9. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. (<http://websoilsurvey.nrcs.usda.gov/>)



#### LEGEND

--- STUDY AREA



BASE MAPPING SOURCE: ESRI (IMAGERY DATED 2013)

**HALEY  
ALDRICH**

SENECA FALLS FORMER MGP SITE  
NEW YORK STATE ELECTRIC & GAS CORPORATION  
VILLAGE OF SENECA FALLS, SENECA COUNTY, NEW YORK

#### AERIAL OVERVIEW

SCALE: AS SHOWN  
JANUARY 2016

FIGURE 1

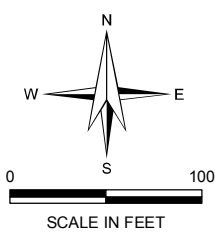


G:\34507 Seneca Falls\GlobalGIS\Map Documents\2016-0113 AerialOverview D1.mxd



## LEGEND

- ◆ PHOTO LOCATION
- - - STUDY AREA
- . - DELINEATED STREAM EDGE
- ▨ NWI WETLAND
- DELINEATION FLAG POINT



BASE MAPPING SOURCE: ESRI (IMAGERY DATED 2013)

**HALEY  
ALDRICH**

SENECA FALLS FORMER MGP SITE  
NEW YORK STATE ELECTRIC & GAS CORPORATION  
VILLAGE OF SENECA FALLS, SENECA COUNTY, NEW YORK

## AERIAL OVERVIEW

SCALE: AS SHOWN  
JANUARY 2016

FIGURE 2

Attachment 1  
Wetland Determination and Stream Inventory Data Forms



# Stream Inventory Data Form

## Project Information

Project Name:

Observer Name:

Project Number:

Date:

Map Sheet Number:

State: N

GPS Point No(s).

Weather:

Associated Data  
Sheet No(s). A

Stream Location:  
(Address, nearest  
road, structure etc.)

## Stream Information

Stream Name:

Stream Width:

Perceptible Flow: Yes ☒ No ☐

Water Width:

Direction of Flow: EAS  
Perennial ☐

Bank to Bank:

Flow Type: Intermittent ☐

Bankfull Width:

E hemeral ☐

Channel Substrate

Probed Stream  
Depth: \_\_\_\_\_ inches

Observed Water Quality:

### Aquatic Habitat

- ☐ Sand Bar  
☐ Sand Gravel Beach Bar  
☐ Mud Bar  
☐ Overhanging  
☐ Trees/Shrubs  
☐ Cobble Riffles  
☐ Deep Ponds/Holes  
☐ Aquatic Vegetation  
☐ Other

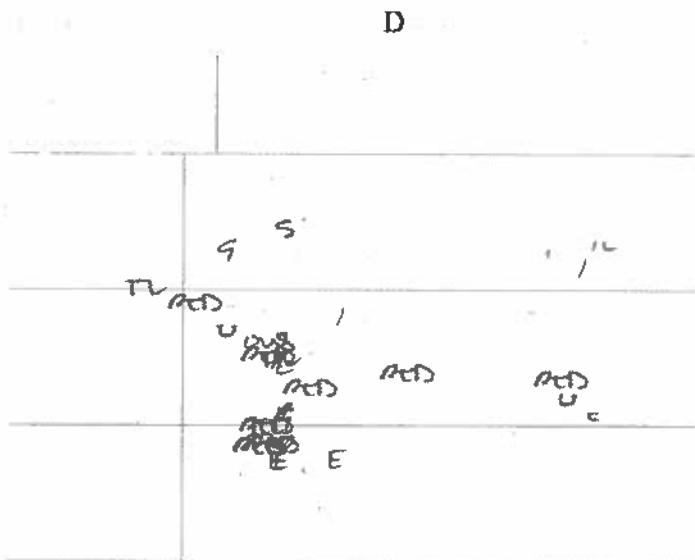
### Wildlife Observed (Species)

- ☐ Waterfowl  
☒ Fish  
☐ Turtles  
☐ Frogs  
☐ Invertebrates  
☐ Salamanders  
☐ Other:

### Observed Use:

- ☐ Drinking  
☐ Irrigation  
☐ Swimming  
☒ Fishing  
☐ Drainage  
☐ Boating  
☐ Other:

|                   |          |                    |  |
|-------------------|----------|--------------------|--|
| Left Bank Height: |          | Right Bank Height  |  |
|                   |          | Right Bank Slope:  |  |
|                   | <u>4</u> | Erosion Potential: |  |
|                   | <u>1</u> |                    |  |



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2 11 5 A  
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2 19th A Pl

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F. 21

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HONOLULU 11 5 A

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STAG 11  
STAG 11 5 A

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11  
11

WILD GRAPE 11 5 A

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Attachment 2  
Delineation Photo Log

**ATTACHMENT 2  
DELINEATION PHOTO LOG**

NYSEG SENECA FALLS FORMER MGP SITE, VILLAGE OF SENECA FALLS, SENECA COUNTY, NEW YORK  
FILE NO. 34507-023

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***Photo 1***

View looking southeast towards Seneca River from Fall Street.



***Photo 2***

View looking south towards Seneca River from southwestern corner of concrete parking lot.



**ATTACHMENT 2  
DELINEATION PHOTO LOG**

NYSEG SENECA FALLS FORMER MGP SITE, VILLAGE OF SENECA FALLS, SENECA COUNTY, NEW YORK  
FILE NO. 34507-023

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***Photo 3***

View looking southwest from western corner of Study Area.



***Photo 4.***

View looking west along Seneca River from western edge of Study Area.



**ATTACHMENT 2  
DELINEATION PHOTO LOG**

NYSEG SENECA FALLS FORMER MGP SITE, VILLAGE OF SENECA FALLS, SENECA COUNTY, NEW YORK  
FILE NO. 34507-023

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***Photo 5***

View looking south towards Seneca River from approximate center of Study Area.



***Photo 6***

View looking east from middle of Study Area.

**ATTACHMENT 2  
DELINEATION PHOTO LOG**

NYSEG SENECA FALLS FORMER MGP SITE, VILLAGE OF SENECA FALLS, SENECA COUNTY, NEW YORK  
FILE NO. 34507-023

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***Photo 7.***

View looking east from the eastern portion of the Study Area.

## **APPENDIX C**

### **Test Pit Logs**

HA-TESTPIT-07-1 HA-LIB09-BOS\_MAN\_GLB HA-TP07-1.GDT G:\34507\_SENECA\_FALLS\2023\FIELD\GINT\2016-0115-HA-TEST PITS TP-15-01\_TP15-05.GPJ Jan 26, 16

| <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: left;"> </div> <div style="text-align: center; flex-grow: 1;"> <h2 style="margin: 0;">TEST PIT LOG</h2> </div> <div style="text-align: right;"> <b>Test Pit No. TP-15-01</b> </div> </div>                                                                                                                                                                                                                               |                 |                                 |                                                                                                                                          |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------|----------|--------|-------------|-----------|-----------|------------|----------|
| <div style="display: flex; justify-content: space-between;"> <div style="width: 65%;"> <b>Project</b> SENECA FALLS FORMER MGP SITE<br/> <b>Location</b> SENECA FALLS, NEW YORK<br/> <b>Client</b> ROCHESTER GAS &amp; ELECTRIC CORP.<br/> <b>Contractor</b> PARRATT-WOLFF<br/> <b>Equipment Used</b> DEERE 135D EXCAVATOR                 </div> <div style="width: 30%;"> <b>File No.</b> 34507-023<br/> <b>H&amp;A Rep</b> R. Lydell<br/> <b>Date</b> 19 Nov 2015<br/> <b>Weather</b> 50°F, cloudy                 </div> </div> |                 |                                 |                                                                                                                                          |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
| <b>Ground El.:</b> 456.6 (est.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | <b>Location:</b> See Plan       |                                                                                                                                          | <b>Groundwater depths/entry rates (in./min.):</b> N/A                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
| <b>El. Datum:</b> NAVD 88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                                 |                                                                                                                                          |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
| Depth (ft)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sample ID       | Stratum Change Elev./Depth (ft) | USCS Symbol                                                                                                                              | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION<br><small>(color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations<br/>GEOLOGIC INTERPRETATION)</small> | Gravel                                                                                                                                                                                                                                            |                                                                                               | Sand     |          |        | Field Tests |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                                                                                          |                                                                                                                                                                                                                                                                                      | % Coarse                                                                                                                                                                                                                                          | % Fine                                                                                        | % Coarse | % Medium | % Fine | % Fines     | Dilatancy | Toughness | Plasticity | Strength |
| 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | S1<br>0.5 - 2.0 | 456.2<br>0.4                    |                                                                                                                                          | -CONCRETE-<br>PID=0.0 ppm                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | 456.0<br>0.6                    |                                                                                                                                          | -SUBBASE-<br>PID=0.0 ppm                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 | SP                                                                                                                                       | Orange brown poorly graded SAND (SP), mps < 1 mm, no odor, moist/dry                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                   |                                                                                               | 5        | 85       | 5      | 5           |           |           |            |          |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                                                                                          | -FILL-<br>PID=0.0 ppm                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | 454.1<br>2.5                    | ML                                                                                                                                       | Black stained gravelly SILT with sand (ML), mps 3 in., petroleum-like odor, moist/dry<br><br>Brick and debris throughout<br><br>Wood fragments with TLM on east side of excavation                                                                                                   | 5                                                                                                                                                                                                                                                 | 10                                                                                            | 5        | 10       | 5      | 65          |           |           |            |          |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                                                                                          | -FILL-<br>PID=12.3 ppm                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 | 450.6<br>6.0                    | MH                                                                                                                                       | Red-brown SILT with sand (MH), mps < 1/2 in., no odor, moist/dry<br>PID=0.0 ppm                                                                                                                                                                                                      | 5                                                                                                                                                                                                                                                 | 5                                                                                             | 10       | 5        | 75     |             |           |           |            |          |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                                                                                          | -GLACIAL TILL-<br>PID=0.0 ppm                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | 447.6<br>9.0                    |                                                                                                                                          | PID=0.0 ppm                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                                                                                          | BOTTOM OF EXPLORATION 9.0 FT                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |
| <b>Obstructions:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                                 | <b>Remarks:</b><br>Sample I.D.: TP1501-111915-1440 0.5-2.0 ft.<br>ISS Sample TP1501 2.0-6.0 ft.                                          |                                                                                                                                                                                                                                                                                      | <b>Field Tests</b>                                                                                                                                                                                                                                |                                                                                               |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                                                                                          |                                                                                                                                                                                                                                                                                      | Dilatancy      R - Rapid   S - Slow   N - None<br>Toughness      L - Low   M - Medium   H - High<br>Plasticity      N - Nonplastic   L - Low   M - Medium   H - High<br>Dry Strength   N - None   L - Low   M - Medium   H - High   V - Very High |                                                                                               |          |          |        |             |           |           |            |          |
| <b>Standing Water in Completed Pit</b><br>at depth _____ ft<br>measured after _____ hours elapsed                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 | <b>Boulders</b><br>Diameter (in.)   Number   Approx. Vol. (cu.ft)<br>12 to 24                      =<br>over 24                        = |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                   | <b>Test Pit Dimensions (ft)</b><br>Pit Length x Width (ft)<br>Pit Depth (ft)              9.0 |          |          |        |             |           |           |            |          |
| NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                                                                                          |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                   |                                                                                               |          |          |        |             |           |           |            |          |



HA-TESTPIT-07-1 HA-LIB09-BOS\_MAN\_GLB HA-TP07-1.GDT G:\34507\_SENECA\_FALLS\2016-0115-HAL-TEST PITS TP15-01\_TP15-05.GPJ Jan 26, 16

| <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: left;"> </div> <div style="text-align: center;"> <h2 style="margin: 0;">TEST PIT LOG</h2> </div> <div style="text-align: right;"> <b>Test Pit No. TP-15-02</b> </div> </div>                                                                                                                                                                                                                                             |                 |                                 |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------|----------------------|--------|-------------------------|-----------|-----------|------------|----------|
| <div style="display: flex; justify-content: space-between;"> <div style="width: 65%;"> <b>Project</b> SENECA FALLS FORMER MGP SITE<br/> <b>Location</b> SENECA FALLS, NEW YORK<br/> <b>Client</b> ROCHESTER GAS &amp; ELECTRIC CORP.<br/> <b>Contractor</b> PARRATT-WOLFF<br/> <b>Equipment Used</b> DEERE 135D EXCAVATOR                 </div> <div style="width: 30%;"> <b>File No.</b> 34507-023<br/> <b>H&amp;A Rep</b> R. Lydell<br/> <b>Date</b> 19 Nov 2015<br/> <b>Weather</b> 50°F, cloudy                 </div> </div> |                 |                                 |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
| <b>Ground El.:</b> 456.6 (est.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | <b>Location:</b> See Plan       |                                                                | <b>Groundwater depths/entry rates (in./min.):</b> N/A                                                                                                                                                                                                                                |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
| <b>El. Datum:</b> NAVD 88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                                 |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
| Depth (ft)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sample ID       | Stratum Change Elev./Depth (ft) | USCS Symbol                                                    | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION<br><small>(color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations<br/>GEOLOGIC INTERPRETATION)</small> | Gravel                                                                                                                                                                                                     |        | Sand                            |                      |        | Field Tests             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                |                                                                                                                                                                                                                                                                                      | % Coarse                                                                                                                                                                                                   | % Fine | % Coarse                        | % Medium             | % Fine | % Fines                 | Dilatancy | Toughness | Plasticity | Strength |
| 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 | 456.2                           |                                                                | -ASPHALT- PID=0.0 ppm                                                                                                                                                                                                                                                                |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | 0.4                             |                                                                | -SUBBASE PID=0.0 ppm                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | S1<br>0.5 - 2.0 | 456.0                           | SP                                                             | Black stained poorly graded SAND (SP), mps < 1 mm, no odor, moist/dry, brick and debris throughout, occasional glass and tile<br>PID=0.0 ppm                                                                                                                                         |                                                                                                                                                                                                            |        | 10                              | 80                   | 5      | 5                       |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | 0.6                             |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                | -FILL- PID=0.0 ppm                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | 453.1                           |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 | 3.5                             | MH                                                             | Red-brown SILT with sand (MH), mps < 1/2 in., no odor, moist/dry<br>-GLACIAL TILL- PID=0.0 ppm                                                                                                                                                                                       |                                                                                                                                                                                                            | 5      | 5                               | 10                   | 5      | 75                      |           |           |            |          |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 | 449.6                           |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | 7.0                             |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                | <b>BOTTOM OF EXPLORATION 7.0 FT</b><br><br>West side of excavation 5 ft bgs concrete structure with water.<br>Concrete structure approximately 4.0 ft in diameter.<br>Water at least 15.0 ft deep. Possible former MGP structure.                                                    |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |
| <b>Obstructions:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                                 | <b>Remarks:</b><br>Sample I.D.: TP1502-111915-1320 0.5-2.0 ft. |                                                                                                                                                                                                                                                                                      | <b>Field Tests</b>                                                                                                                                                                                         |        |                                 |                      |        |                         |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                |                                                                                                                                                                                                                                                                                      | Dilatancy R - Rapid S - Slow N - None<br>Toughness L - Low M - Medium H - High<br>Plasticity N - Nonplastic L - Low M - Medium H - High<br>Dry Strength N - None L - Low M - Medium H - High V - Very High |        |                                 |                      |        |                         |           |           |            |          |
| <b>Standing Water in Completed Pit</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                                 |                                                                | <b>Boulders</b>                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        | <b>Test Pit Dimensions (ft)</b> |                      |        |                         |           |           |            |          |
| at depth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 | ft                              |                                                                | Diameter (in.)                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                            | Number |                                 | Approx. Vol. (cu.ft) |        | Pit Length x Width (ft) |           |           |            |          |
| measured after                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 | hours elapsed                   |                                                                | 12 to 24                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                            | =      |                                 |                      |        | Pit Depth (ft) 7.0      |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                | over 24                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                            | =      |                                 |                      |        |                         |           |           |            |          |
| NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |        |                                 |                      |        |                         |           |           |            |          |

# TEST PIT LOG

**Test Pit No. TP-15-03**

|                       |                                |
|-----------------------|--------------------------------|
| <b>Project</b>        | SENECA FALLS FORMER MGP SITE   |
| <b>Location</b>       | SENECA FALLS, NEW YORK         |
| <b>Client</b>         | ROCHESTER GAS & ELECTRIC CORP. |
| <b>Contractor</b>     | PARRATT-WOLFF                  |
| <b>Equipment Used</b> | DEERE 135D EXCAVATOR           |

|                    |              |
|--------------------|--------------|
| <b>File No.</b>    | 34507-023    |
| <b>H&amp;A Rep</b> | R. Lydell    |
| <b>Date</b>        | 19 Nov 2015  |
| <b>Weather</b>     | 50°F, cloudy |

**Ground El.:** 456.6 (est.)  
**El. Datum:** NAVD 88

**Location:** See Plan

**Groundwater depths/entry rates (in./min.):** Water entering excavation at 8.0 ft bgs

[illegible]

## Obstructions:

## Remarks:

Sample I.D.: TP1503-111915-1530 0.5 - 2.0 ft  
TP1503-111915-1545 6.0 - 8.0 ft.  
ISS Sample: TP1503 2.0 - 8.0 ft.

## Field Tests

|              |                |            |            |                        |
|--------------|----------------|------------|------------|------------------------|
| Dilatancy    | R - Rapid      | S - Slow   | N - None   |                        |
| Toughness    | L - Low        | M - Medium | H - High   |                        |
| Plasticity   | N - Nonplastic | L - Low    | M - Medium | H - High               |
| Dry Strength | N - None       | L - Low    | M - Medium | H - High V - Very High |

### Standing Water in Completed Pit

at depth \_\_\_\_\_ ft  
 measured after \_\_\_\_\_ hours elapsed

## Boulders

| <u>Diameter (in.)</u> | <u>Number</u> | <u>Approx. Vol. (cu.ft)</u> |
|-----------------------|---------------|-----------------------------|
| 12 to 24              |               | =                           |
| over 24               |               | =                           |

### Test Pit Dimensions (ft)

|                         |      |
|-------------------------|------|
| Pit Length x Width (ft) |      |
| Pit Depth (ft)          | 10.0 |

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HA-TESTPIT-07-1 HA-LIB09-BOS\_MAN\_GLB HA-TP07-1.GDT G:\34507\_SENECA\_FALLS\2023\FIELD\GINT\2016-0115-HA-TESTPITS\TP15-01\_TP15-05.GPJ Jan 26, 16

| <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: left;"> </div> <div style="text-align: center;"> <h1 style="margin: 0;">TEST PIT LOG</h1> </div> <div style="text-align: right;"> <b>Test Pit No. TP-15-04</b> </div> </div>                                                                                                                                                                                                                                             |                 |                                 |                                                                                                      |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------|----------|--------|-------------|-----------|-----------|------------|----------|
| <div style="display: flex; justify-content: space-between;"> <div style="width: 65%;"> <b>Project</b> SENECA FALLS FORMER MGP SITE<br/> <b>Location</b> SENECA FALLS, NEW YORK<br/> <b>Client</b> ROCHESTER GAS &amp; ELECTRIC CORP.<br/> <b>Contractor</b> PARRATT-WOLFF<br/> <b>Equipment Used</b> DEERE 135D EXCAVATOR                 </div> <div style="width: 30%;"> <b>File No.</b> 34507-023<br/> <b>H&amp;A Rep</b> R. Lydell<br/> <b>Date</b> 19 Nov 2015<br/> <b>Weather</b> 50°F, cloudy                 </div> </div> |                 |                                 |                                                                                                      |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |
| <b>Ground El.:</b> 456.6 (est.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | <b>Location:</b> See Plan       |                                                                                                      | <b>Groundwater depths/entry rates (in./min.):</b> N/A                                                                                                                                                                                                                                |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |
| <b>El. Datum:</b> NAVD 88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                                 |                                                                                                      |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |
| Depth (ft)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sample ID       | Stratum Change Elev./Depth (ft) | USCS Symbol                                                                                          | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION<br><small>(color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations<br/>GEOLOGIC INTERPRETATION)</small> | Gravel                                                                                                                                                                                                     |                                 | Sand     |          |        | Field Tests |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                                                      |                                                                                                                                                                                                                                                                                      | % Coarse                                                                                                                                                                                                   | % Fine                          | % Coarse | % Medium | % Fine | % Fines     | Dilatancy | Toughness | Plasticity | Strength |
| 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | S1<br>0.0 - 1.5 | 456.2<br>0.4                    | SP                                                                                                   | -CONCRETE-<br>PID=0.0 ppm                                                                                                                                                                                                                                                            |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | 456.0<br>0.6                    |                                                                                                      | -SUBBASE-<br>PID=0.0 ppm                                                                                                                                                                                                                                                             |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                                                      | Orange-brown poorly graded SAND (SP), mps < 1 mm, no odor, moist/dry<br>PID=0.0 ppm                                                                                                                                                                                                  |                                                                                                                                                                                                            |                                 | 5        | 85       | 5      | 5           |           |           |            |          |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                                                      | -FILL-<br>PID=0.0 ppm                                                                                                                                                                                                                                                                |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 | 452.6<br>4.0                    | ML                                                                                                   | Black stained gravelly SILT with sand (ML), mps 3 in., no odor, moist/dry<br>PID=0.0 ppm<br><br>CLM and ALM throughout<br>PID=0.0 ppm                                                                                                                                                | 5                                                                                                                                                                                                          | 10                              | 5        | 10       | 5      | 65          | S         | L         | N          | L        |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                                                      | -FILL-<br>PID=0.0 ppm                                                                                                                                                                                                                                                                |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | 449.6<br>7.0                    | MH                                                                                                   | Red-brown SILT with sand (MH), mps < 1/2 in., no odor, moist/dry<br>PID=0.0 ppm                                                                                                                                                                                                      |                                                                                                                                                                                                            | 5                               | 5        | 10       | 5      | 75          | N         | M         | L          | M        |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                                                      | -GLACIAL TILL-<br>PID=0.0 ppm                                                                                                                                                                                                                                                        |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | 447.6<br>9.0                    |                                                                                                      | BOTTOM OF EXPLORATION 9.0 FT                                                                                                                                                                                                                                                         |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |
| <b>Obstructions:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                                 | <b>Remarks:</b><br>Sample I.D.: TP1504-111915-1145 0.5 - 2.0 ft.<br>ISS Sample: TP1504 2.0 - 7.0 ft. |                                                                                                                                                                                                                                                                                      | <b>Field Tests</b>                                                                                                                                                                                         |                                 |          |          |        |             |           |           |            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                 |                                                                                                      |                                                                                                                                                                                                                                                                                      | Dilatancy R - Rapid S - Slow N - None<br>Toughness L - Low M - Medium H - High<br>Plasticity N - Nonplastic L - Low M - Medium H - High<br>Dry Strength N - None L - Low M - Medium H - High V - Very High |                                 |          |          |        |             |           |           |            |          |
| <b>Standing Water in Completed Pit</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                                 | <b>Boulders</b>                                                                                      |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            | <b>Test Pit Dimensions (ft)</b> |          |          |        |             |           |           |            |          |
| at depth _____ ft                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 | Diameter (in.) _____                                                                                 |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            | Pit Length x Width (ft)         |          |          |        |             |           |           |            |          |
| measured after _____ hours elapsed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 |                                 | 12 to 24 _____<br>over 24 _____                                                                      |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            | Pit Depth (ft) 9.0              |          |          |        |             |           |           |            |          |
| NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                 |                                                                                                      |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                            |                                 |          |          |        |             |           |           |            |          |

# TEST PIT LOG

**Test Pit No. TP-15-05**

|                       |                                |
|-----------------------|--------------------------------|
| <b>Project</b>        | SENECA FALLS FORMER MGP SITE   |
| <b>Location</b>       | SENECA FALLS, NEW YORK         |
| <b>Client</b>         | ROCHESTER GAS & ELECTRIC CORP. |
| <b>Contractor</b>     | PARRATT-WOLFF                  |
| <b>Equipment Used</b> | DEERE 135D EXCAVATOR           |

|                    |             |
|--------------------|-------------|
| <b>File No.</b>    | 34507-023   |
| <b>H&amp;A Rep</b> | R. Lydell   |
| <b>Date</b>        | 20 Nov 2015 |
| <b>Weather</b>     | 45°F, clear |

**Ground El.:** 456.6 (est.)  
**El. Datum:** NAVD 88

**Location:** See Plan

**Groundwater depths/entry rates (in./min.):** N/A

| Depth (ft) | Sample ID       | Stratum Change Elev./ Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION<br><br>(color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations<br>GEOLOGIC INTERPRETATION) | Gravel   |        | Sand     |          |        |         | Field Tests |           |            |          |
|------------|-----------------|----------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------|----------|----------|--------|---------|-------------|-----------|------------|----------|
|            |                 |                                  |             |                                                                                                                                                                                                                                                                          | % Coarse | % Fine | % Coarse | % Medium | % Fine | % Fines | Dilatancy   | Toughness | Plasticity | Strength |
| 0          | S1<br>0.0 - 2.0 |                                  | SP- SM      | Brown poorly graded SAND with silt (SP-SM), mps 2 in., no odor, moist/dry<br><br>-TOPSOIL-<br><br>PID=0.0 ppm                                                                                                                                                            | 5        | 5      | 10       | 60       | 10     | 10      |             |           |            |          |
| 1          |                 | 455.1<br>1.5                     |             | White layer, no odor<br>Possible crushed concrete/construction debris<br><br>PID=0.0 ppm                                                                                                                                                                                 |          |        |          |          |        |         |             |           |            |          |
| 2          |                 | 454.6<br>2.0                     | SP- SM      | Black stained poorly graded SAND with silt (SP-SM), mps < 1/2 in., no odor, brick and construction material throughout<br><br>Occasional clay pipe, CLM and ALM<br><br>-FILL-                                                                                            |          | 10     | 20       | 50       | 10     | 10      |             |           |            |          |
| 3          |                 |                                  |             |                                                                                                                                                                                                                                                                          |          |        |          |          |        |         |             |           |            |          |
| 4          |                 | 452.6<br>4.0                     | MH          | Red-brown SILT with sand (MH), mps < 1/2 in., no odor, moist/dry<br><br>-GLACIAL TILL-                                                                                                                                                                                   |          | 5      | 5        | 10       | 5      | 75      |             |           |            |          |
| 5          |                 | 451.6<br>5.0                     |             | BOTTOM OF EXPLORATION 5.0 FT                                                                                                                                                                                                                                             |          |        |          |          |        |         |             |           |            |          |

Obstructions:

Remarks:

Sample I.D.: TP1505-112015-0900 0 - 2.0 ft.

## Field Tests

|              |                |            |            |                        |
|--------------|----------------|------------|------------|------------------------|
| Dilatancy    | R - Rapid      | S - Slow   | N - None   |                        |
| Toughness    | L - Low        | M - Medium | H - High   |                        |
| Plasticity   | N - Nonplastic | L - Low    | M - Medium | H - High               |
| Dry Strength | N - None       | L - Low    | M - Medium | H - High V - Very High |

### Standing Water in Completed Pit

at depth \_\_\_\_\_ ft  
measured after \_\_\_\_\_ hours elapsed

## Boulders

| <u>Diameter (in.)</u> | <u>Number</u> | <u>Approx. Vol. (cu.ft)</u> |
|-----------------------|---------------|-----------------------------|
| 12 to 24              |               | =                           |
| over 24               |               | =                           |

**Test Pit Dimensions (ft)**

Pit Length x Width (ft)  
Pit Depth (ft) 5.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.



## **APPENDIX D**

### **Soil and Sediment Analytical Results**

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-91340-1

Client Project/Site: RG&E Seneca Falls MGP Site

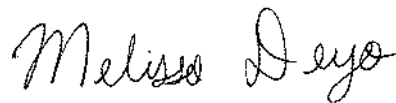
For:

Haley & Aldrich, Inc.

3 Bedford Farms Drive

Beford, New Hampshire 03110

Attn: Douglas C. Allen



Authorized for release by:

12/3/2015 4:02:08 PM

Melissa Deyo, Project Manager I

(716)504-9874

[melissa.deyo@testamericainc.com](mailto:melissa.deyo@testamericainc.com)

### LINKS

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[www.testamericainc.com](http://www.testamericainc.com)

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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## Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

### Qualifiers

#### GC/MS Semi VOA

| Qualifier | Qualifier Description                                                                                          |
|-----------|----------------------------------------------------------------------------------------------------------------|
| J         | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

#### GC Semi VOA

| Qualifier | Qualifier Description               |
|-----------|-------------------------------------|
| X         | Surrogate is outside control limits |

#### Metals

| Qualifier | Qualifier Description                                                                                          |
|-----------|----------------------------------------------------------------------------------------------------------------|
| J         | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

#### General Chemistry

| Qualifier | Qualifier Description                                                                                |
|-----------|------------------------------------------------------------------------------------------------------|
| HF        | Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. |

### Glossary

| Abbreviation   | These commonly used abbreviations may or may not be present in this report.                                 |
|----------------|-------------------------------------------------------------------------------------------------------------|
| α              | Listed under the "D" column to designate that the result is reported on a dry weight basis                  |
| %R             | Percent Recovery                                                                                            |
| CFL            | Contains Free Liquid                                                                                        |
| CNF            | Contains no Free Liquid                                                                                     |
| DER            | Duplicate error ratio (normalized absolute difference)                                                      |
| Dil Fac        | Dilution Factor                                                                                             |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC            | Decision level concentration                                                                                |
| MDA            | Minimum detectable activity                                                                                 |
| EDL            | Estimated Detection Limit                                                                                   |
| MDC            | Minimum detectable concentration                                                                            |
| MDL            | Method Detection Limit                                                                                      |
| ML             | Minimum Level (Dioxin)                                                                                      |
| NC             | Not Calculated                                                                                              |
| ND             | Not detected at the reporting limit (or MDL or EDL if shown)                                                |
| PQL            | Practical Quantitation Limit                                                                                |
| QC             | Quality Control                                                                                             |
| RER            | Relative error ratio                                                                                        |
| RL             | Reporting Limit or Requested Limit (Radiochemistry)                                                         |
| RPD            | Relative Percent Difference, a measure of the relative difference between two points                        |
| TEF            | Toxicity Equivalent Factor (Dioxin)                                                                         |
| TEQ            | Toxicity Equivalent Quotient (Dioxin)                                                                       |

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Job ID: 480-91340-1

### Laboratory: TestAmerica Buffalo

#### Narrative

#### Job Narrative 480-91340-1

#### Receipt

The samples were received on 11/19/2015 2:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.6° C and 0.9° C.

#### GC/MS VOA

Method(s) 8260C: The following samples were diluted due to the nature of the TCLP matrix: SE1501-111815-1100 (480-91340-1), SE1502-111815-1130 (480-91340-2), SE1504-111815-1215 (480-91340-3), SE1503-111815-1300 (480-91340-4) and SE1505-111815-1330 (480-91340-5). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-277733 recovered above the upper control limit for Carbon Tetrachloride and 1,1-Dichloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: SE1501-111815-1100 (480-91340-1), SE1502-111815-1130 (480-91340-2), SE1504-111815-1215 (480-91340-3), SE1503-111815-1300 (480-91340-4) and SE1505-111815-1330 (480-91340-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC/MS Semi VOA

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 480-276397 was outside the method criteria for the following analyte(s): Pentachlorophenol. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC Semi VOA

Method(s) 8082A: Decachlorobiphenyl surrogate recovery for the following sample was outside control limits: SE1504-111815-1215 (480-91340-3). Matrix interference is suspected and Tetrachloro-m-xylene was within control limits; therefore, re-extraction and re-analysis were not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### General Chemistry

Method(s) 9045C, 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: SE1501-111815-1100 (480-91340-1), SE1502-111815-1130 (480-91340-2), SE1504-111815-1215 (480-91340-3), SE1503-111815-1300 (480-91340-4) and SE1505-111815-1330 (480-91340-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 480-275832 and analytical batch 480-276163.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Client Sample ID: SE1501-111815-1100

## Lab Sample ID: 480-91340-1

| Analyte     | Result | Qualifier | NONE   | NONE    | Unit      | Dil Fac | D | Method | Prep Type |
|-------------|--------|-----------|--------|---------|-----------|---------|---|--------|-----------|
| Free Liquid | passed |           |        |         | mL/100g   | 1       |   | 9095B  | Total/NA  |
| Analyte     | Result | Qualifier | RL     | MDL     | Unit      | Dil Fac | D | Method | Prep Type |
| Arsenic     | 0.0092 | J         | 0.015  | 0.0056  | mg/L      | 1       |   | 6010C  | TCLP      |
| Barium      | 0.47   | J         | 1.0    | 0.10    | mg/L      | 1       |   | 6010C  | TCLP      |
| Cadmium     | 0.0012 | J         | 0.0020 | 0.00050 | mg/L      | 1       |   | 6010C  | TCLP      |
| Lead        | 0.41   |           | 0.020  | 0.0030  | mg/L      | 1       |   | 6010C  | TCLP      |
| Analyte     | Result | Qualifier | RL     | RL      | Unit      | Dil Fac | D | Method | Prep Type |
| Flashpoint  | >176.0 |           | 50.0   | 50.0    | Degrees F | 1       |   | 1010A  | Total/NA  |
| pH          | 7.47   | HF        | 0.100  | 0.100   | SU        | 1       |   | 9045D  | Total/NA  |

## Client Sample ID: SE1502-111815-1130

## Lab Sample ID: 480-91340-2

| Analyte        | Result  | Qualifier | NONE   | NONE    | Unit      | Dil Fac | D | Method | Prep Type |
|----------------|---------|-----------|--------|---------|-----------|---------|---|--------|-----------|
| Free Liquid    | failed  |           |        |         | mL/100g   | 1       |   | 9095B  | Total/NA  |
| Analyte        | Result  | Qualifier | RL     | MDL     | Unit      | Dil Fac | D | Method | Prep Type |
| 3-Methylphenol | 0.00088 | J         | 0.010  | 0.00040 | mg/L      | 1       |   | 8270D  | TCLP      |
| 4-Methylphenol | 0.00088 | J         | 0.010  | 0.00036 | mg/L      | 1       |   | 8270D  | TCLP      |
| Arsenic        | 0.012   | J         | 0.015  | 0.0056  | mg/L      | 1       |   | 6010C  | TCLP      |
| Barium         | 0.65    | J         | 1.0    | 0.10    | mg/L      | 1       |   | 6010C  | TCLP      |
| Cadmium        | 0.0026  |           | 0.0020 | 0.00050 | mg/L      | 1       |   | 6010C  | TCLP      |
| Lead           | 1.4     |           | 0.020  | 0.0030  | mg/L      | 1       |   | 6010C  | TCLP      |
| Analyte        | Result  | Qualifier | RL     | RL      | Unit      | Dil Fac | D | Method | Prep Type |
| Flashpoint     | >176.0  |           | 50.0   | 50.0    | Degrees F | 1       |   | 1010A  | Total/NA  |
| pH             | 8.01    | HF        | 0.100  | 0.100   | SU        | 1       |   | 9045D  | Total/NA  |

## Client Sample ID: SE1504-111815-1215

## Lab Sample ID: 480-91340-3

| Analyte     | Result | Qualifier | NONE   | NONE    | Unit      | Dil Fac | D | Method | Prep Type |
|-------------|--------|-----------|--------|---------|-----------|---------|---|--------|-----------|
| Free Liquid | passed |           |        |         | mL/100g   | 1       |   | 9095B  | Total/NA  |
| Analyte     | Result | Qualifier | RL     | MDL     | Unit      | Dil Fac | D | Method | Prep Type |
| Benzene     | 0.033  |           | 0.010  | 0.0041  | mg/L      | 10      |   | 8260C  | TCLP      |
| Arsenic     | 0.011  | J         | 0.015  | 0.0056  | mg/L      | 1       |   | 6010C  | TCLP      |
| Barium      | 0.86   | J         | 1.0    | 0.10    | mg/L      | 1       |   | 6010C  | TCLP      |
| Cadmium     | 0.0071 |           | 0.0020 | 0.00050 | mg/L      | 1       |   | 6010C  | TCLP      |
| Lead        | 0.31   |           | 0.020  | 0.0030  | mg/L      | 1       |   | 6010C  | TCLP      |
| Analyte     | Result | Qualifier | RL     | RL      | Unit      | Dil Fac | D | Method | Prep Type |
| Flashpoint  | >176.0 |           | 50.0   | 50.0    | Degrees F | 1       |   | 1010A  | Total/NA  |
| pH          | 7.69   | HF        | 0.100  | 0.100   | SU        | 1       |   | 9045D  | Total/NA  |

## Client Sample ID: SE1503-111815-1300

## Lab Sample ID: 480-91340-4

| Analyte     | Result | Qualifier | NONE   | NONE    | Unit    | Dil Fac | D | Method | Prep Type |
|-------------|--------|-----------|--------|---------|---------|---------|---|--------|-----------|
| Free Liquid | passed |           |        |         | mL/100g | 1       |   | 9095B  | Total/NA  |
| Analyte     | Result | Qualifier | RL     | MDL     | Unit    | Dil Fac | D | Method | Prep Type |
| Arsenic     | 0.0071 | J         | 0.015  | 0.0056  | mg/L    | 1       |   | 6010C  | TCLP      |
| Barium      | 0.94   | J         | 1.0    | 0.10    | mg/L    | 1       |   | 6010C  | TCLP      |
| Cadmium     | 0.0011 | J         | 0.0020 | 0.00050 | mg/L    | 1       |   | 6010C  | TCLP      |
| Lead        | 0.30   |           | 0.020  | 0.0030  | mg/L    | 1       |   | 6010C  | TCLP      |

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Client Sample ID: SE1503-111815-1300 (Continued)

## Lab Sample ID: 480-91340-4

| Analyte    | Result | Qualifier | RL    | RL    | Unit      | Dil Fac | D | Method | Prep Type |
|------------|--------|-----------|-------|-------|-----------|---------|---|--------|-----------|
| Flashpoint | >176.0 |           | 50.0  | 50.0  | Degrees F | 1       |   | 1010A  | Total/NA  |
| pH         | 8.26   | HF        | 0.100 | 0.100 | SU        | 1       |   | 9045D  | Total/NA  |

## Client Sample ID: SE1505-111815-1330

## Lab Sample ID: 480-91340-5

| Analyte     | Result | Qualifier | NONE   | NONE    | Unit      | Dil Fac | D | Method | Prep Type |
|-------------|--------|-----------|--------|---------|-----------|---------|---|--------|-----------|
| Free Liquid | passed |           |        |         | mL/100g   | 1       |   | 9095B  | Total/NA  |
| Analyte     | Result | Qualifier | RL     | MDL     | Unit      | Dil Fac | D | Method | Prep Type |
| Arsenic     | 0.0069 | J         | 0.015  | 0.0056  | mg/L      | 1       |   | 6010C  | TCLP      |
| Barium      | 0.54   | J         | 1.0    | 0.10    | mg/L      | 1       |   | 6010C  | TCLP      |
| Cadmium     | 0.0085 |           | 0.0020 | 0.00050 | mg/L      | 1       |   | 6010C  | TCLP      |
| Lead        | 0.017  | J         | 0.020  | 0.0030  | mg/L      | 1       |   | 6010C  | TCLP      |
| Analyte     | Result | Qualifier | RL     | RL      | Unit      | Dil Fac | D | Method | Prep Type |
| Flashpoint  | >176.0 |           | 50.0   | 50.0    | Degrees F | 1       |   | 1010A  | Total/NA  |
| pH          | 7.74   | HF        | 0.100  | 0.100   | SU        | 1       |   | 9045D  | Total/NA  |

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1501-111815-1100**

**Date Collected: 11/18/15 11:00**

**Date Received: 11/19/15 02:15**

**Lab Sample ID: 480-91340-1**

**Matrix: Solid**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND     |           | 0.010 | 0.0021 | mg/L |   |          | 12/02/15 13:53 | 10      |
| 2-Butanone (MEK)     | ND     |           | 0.050 | 0.013  | mg/L |   |          | 12/02/15 13:53 | 10      |
| Benzene              | ND     |           | 0.010 | 0.0041 | mg/L |   |          | 12/02/15 13:53 | 10      |
| Carbon tetrachloride | ND     |           | 0.010 | 0.0027 | mg/L |   |          | 12/02/15 13:53 | 10      |
| Chlorobenzene        | ND     |           | 0.010 | 0.0075 | mg/L |   |          | 12/02/15 13:53 | 10      |
| Chloroform           | ND     |           | 0.010 | 0.0034 | mg/L |   |          | 12/02/15 13:53 | 10      |
| Tetrachloroethene    | ND     |           | 0.010 | 0.0036 | mg/L |   |          | 12/02/15 13:53 | 10      |
| Trichloroethene      | ND     |           | 0.010 | 0.0046 | mg/L |   |          | 12/02/15 13:53 | 10      |
| Vinyl chloride       | ND     |           | 0.010 | 0.0090 | mg/L |   |          | 12/02/15 13:53 | 10      |
| 1,1-Dichloroethene   | ND     |           | 0.010 | 0.0029 | mg/L |   |          | 12/02/15 13:53 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 117       |           | 66 - 137 |          | 12/02/15 13:53 | 10      |
| 4-Bromofluorobenzene (Surr)  | 82        |           | 73 - 120 |          | 12/02/15 13:53 | 10      |
| Toluene-d8 (Surr)            | 92        |           | 71 - 126 |          | 12/02/15 13:53 | 10      |
| Dibromofluoromethane (Surr)  | 117       |           | 60 - 140 |          | 12/02/15 13:53 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND     |           | 0.010  | 0.00046 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| 2,4-Dinitrotoluene    | ND     |           | 0.0050 | 0.00045 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| 2,4,5-Trichlorophenol | ND     |           | 0.0050 | 0.00048 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| 2,4,6-Trichlorophenol | ND     |           | 0.0050 | 0.00061 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| 2-Methylphenol        | ND     |           | 0.0050 | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| 3-Methylphenol        | ND     |           | 0.010  | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| 4-Methylphenol        | ND     |           | 0.010  | 0.00036 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| Hexachlorobenzene     | ND     |           | 0.0050 | 0.00051 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| Hexachlorobutadiene   | ND     |           | 0.0050 | 0.00068 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| Hexachloroethane      | ND     |           | 0.0050 | 0.00059 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| Nitrobenzene          | ND     |           | 0.0050 | 0.00029 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| Pentachlorophenol     | ND     |           | 0.010  | 0.0022  | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| Pyridine              | ND     |           | 0.025  | 0.00041 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:02 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 91        |           | 52 - 132 | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| 2-Fluorobiphenyl            | 91        |           | 48 - 120 | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| 2-Fluorophenol (Surr)       | 49        |           | 20 - 120 | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| Nitrobenzene-d5 (Surr)      | 80        |           | 46 - 120 | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| p-Terphenyl-d14 (Surr)      | 99        |           | 67 - 150 | 11/20/15 12:54 | 11/23/15 14:02 | 1       |
| Phenol-d5 (Surr)            | 36        |           | 16 - 120 | 11/20/15 12:54 | 11/23/15 14:02 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte  | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | 0.0092 | J         | 0.015  | 0.0056  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:08 | 1       |
| Barium   | 0.47   | J         | 1.0    | 0.10    | mg/L |   | 11/20/15 11:10 | 11/21/15 02:08 | 1       |
| Cadmium  | 0.0012 | J         | 0.0020 | 0.00050 | mg/L |   | 11/20/15 11:10 | 11/21/15 02:08 | 1       |
| Chromium | ND     |           | 0.020  | 0.010   | mg/L |   | 11/20/15 11:10 | 11/21/15 02:08 | 1       |
| Lead     | 0.41   |           | 0.020  | 0.0030  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:08 | 1       |
| Selenium | ND     |           | 0.025  | 0.0087  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:08 | 1       |
| Silver   | ND     |           | 0.0060 | 0.0017  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:08 | 1       |

TestAmerica Buffalo



# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1501-111815-1100**

**Lab Sample ID: 480-91340-1**

**Date Collected: 11/18/15 11:00**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.00020 | 0.00012 | mg/L |   | 11/20/15 11:30 | 11/20/15 15:49 | 1       |

## General Chemistry

| Analyte     | Result | Qualifier | NONE | NONE | Unit    | D | Prepared | Analyzed       | Dil Fac |
|-------------|--------|-----------|------|------|---------|---|----------|----------------|---------|
| Free Liquid | passed |           |      |      | mL/100g |   |          | 11/23/15 10:40 | 1       |

| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/21/15 17:47 | 1       |
| Cyanide, Reactive | ND     |           | 9.8   | 9.8   | mg/Kg     |   | 11/19/15 05:15 | 11/19/15 14:47 | 1       |
| Sulfide, Reactive | ND     |           | 9.8   | 9.8   | mg/Kg     |   | 11/19/15 05:15 | 11/19/15 14:36 | 1       |
| pH                | 7.47   | HF        | 0.100 | 0.100 | SU        |   |                | 11/23/15 20:00 | 1       |

**Client Sample ID: SE1501-111815-1100**

**Lab Sample ID: 480-91340-1**

**Date Collected: 11/18/15 11:00**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

**Percent Solids: 54.4**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte  | Result | Qualifier | RL   | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|------|-------|-------|---|----------------|----------------|---------|
| PCB-1016 | ND     |           | 0.41 | 0.081 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:15 | 1       |
| PCB-1221 | ND     |           | 0.41 | 0.081 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:15 | 1       |
| PCB-1232 | ND     |           | 0.41 | 0.081 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:15 | 1       |
| PCB-1242 | ND     |           | 0.41 | 0.081 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:15 | 1       |
| PCB-1248 | ND     |           | 0.41 | 0.081 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:15 | 1       |
| PCB-1254 | ND     |           | 0.41 | 0.19  | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:15 | 1       |
| PCB-1260 | ND     |           | 0.41 | 0.19  | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:15 | 1       |

| Surrogate              | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| Tetrachloro-m-xylene   | 89        |           | 60 - 154 | 11/20/15 08:12 | 11/21/15 02:15 | 1       |
| DCB Decachlorobiphenyl | 67        |           | 65 - 174 | 11/20/15 08:12 | 11/21/15 02:15 | 1       |

**Client Sample ID: SE1502-111815-1130**

**Lab Sample ID: 480-91340-2**

**Date Collected: 11/18/15 11:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND     |           | 0.010 | 0.0021 | mg/L |   |          | 12/02/15 14:21 | 10      |
| 2-Butanone (MEK)     | ND     |           | 0.050 | 0.013  | mg/L |   |          | 12/02/15 14:21 | 10      |
| Benzene              | ND     |           | 0.010 | 0.0041 | mg/L |   |          | 12/02/15 14:21 | 10      |
| Carbon tetrachloride | ND     |           | 0.010 | 0.0027 | mg/L |   |          | 12/02/15 14:21 | 10      |
| Chlorobenzene        | ND     |           | 0.010 | 0.0075 | mg/L |   |          | 12/02/15 14:21 | 10      |
| Chloroform           | ND     |           | 0.010 | 0.0034 | mg/L |   |          | 12/02/15 14:21 | 10      |
| Tetrachloroethene    | ND     |           | 0.010 | 0.0036 | mg/L |   |          | 12/02/15 14:21 | 10      |
| Trichloroethene      | ND     |           | 0.010 | 0.0046 | mg/L |   |          | 12/02/15 14:21 | 10      |
| Vinyl chloride       | ND     |           | 0.010 | 0.0090 | mg/L |   |          | 12/02/15 14:21 | 10      |
| 1,1-Dichloroethene   | ND     |           | 0.010 | 0.0029 | mg/L |   |          | 12/02/15 14:21 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 113       |           | 66 - 137 |          | 12/02/15 14:21 | 10      |
| 4-Bromofluorobenzene (Surr)  | 82        |           | 73 - 120 |          | 12/02/15 14:21 | 10      |
| Toluene-d8 (Surr)            | 92        |           | 71 - 126 |          | 12/02/15 14:21 | 10      |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1502-111815-1130**

**Lab Sample ID: 480-91340-2**

**Date Collected: 11/18/15 11:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP (Continued)

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 117       |           | 60 - 140 |          | 12/02/15 14:21 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result  | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|---------|-----------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND      |           | 0.010  | 0.00046 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| 2,4-Dinitrotoluene    | ND      |           | 0.0050 | 0.00045 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| 2,4,5-Trichlorophenol | ND      |           | 0.0050 | 0.00048 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| 2,4,6-Trichlorophenol | ND      |           | 0.0050 | 0.00061 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| 2-Methylphenol        | ND      |           | 0.0050 | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| 3-Methylphenol        | 0.00088 | J         | 0.010  | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| 4-Methylphenol        | 0.00088 | J         | 0.010  | 0.00036 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| Hexachlorobenzene     | ND      |           | 0.0050 | 0.00051 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| Hexachlorobutadiene   | ND      |           | 0.0050 | 0.00068 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| Hexachloroethane      | ND      |           | 0.0050 | 0.00059 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| Nitrobenzene          | ND      |           | 0.0050 | 0.00029 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| Pentachlorophenol     | ND      |           | 0.010  | 0.0022  | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| Pyridine              | ND      |           | 0.025  | 0.00041 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:29 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 105       |           | 52 - 132 | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| 2-Fluorobiphenyl            | 102       |           | 48 - 120 | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| 2-Fluorophenol (Surr)       | 58        |           | 20 - 120 | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| Nitrobenzene-d5 (Surr)      | 92        |           | 46 - 120 | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| p-Terphenyl-d14 (Surr)      | 107       |           | 67 - 150 | 11/20/15 12:54 | 11/23/15 14:29 | 1       |
| Phenol-d5 (Surr)            | 40        |           | 16 - 120 | 11/20/15 12:54 | 11/23/15 14:29 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte  | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | 0.012  | J         | 0.015  | 0.0056  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:11 | 1       |
| Barium   | 0.65   | J         | 1.0    | 0.10    | mg/L |   | 11/20/15 11:10 | 11/21/15 02:11 | 1       |
| Cadmium  | 0.0026 |           | 0.0020 | 0.00050 | mg/L |   | 11/20/15 11:10 | 11/21/15 02:11 | 1       |
| Chromium | ND     |           | 0.020  | 0.010   | mg/L |   | 11/20/15 11:10 | 11/21/15 02:11 | 1       |
| Lead     | 1.4    |           | 0.020  | 0.0030  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:11 | 1       |
| Selenium | ND     |           | 0.025  | 0.0087  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:11 | 1       |
| Silver   | ND     |           | 0.0060 | 0.0017  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:11 | 1       |

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.00020 | 0.00012 | mg/L |   | 11/20/15 11:30 | 11/20/15 15:51 | 1       |

## General Chemistry

| Analyte           | Result | Qualifier | NONE  | NONE  | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Free Liquid       | failed |           |       |       | mL/100g   |   |                | 11/23/15 10:40 | 1       |
| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/21/15 17:47 | 1       |
| Cyanide, Reactive | ND     |           | 9.8   | 9.8   | mg/Kg     |   | 11/19/15 05:15 | 11/19/15 14:51 | 1       |
| Sulfide, Reactive | ND     |           | 9.8   | 9.8   | mg/Kg     |   | 11/19/15 05:15 | 11/19/15 14:36 | 1       |
| pH                | 8.01   | HF        | 0.100 | 0.100 | SU        |   |                | 11/23/15 20:00 | 1       |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1502-111815-1130**

**Lab Sample ID: 480-91340-2**

**Date Collected: 11/18/15 11:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

**Percent Solids: 71.1**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte  | Result | Qualifier | RL   | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|------|-------|-------|---|----------------|----------------|---------|
| PCB-1016 | ND     |           | 0.34 | 0.066 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:31 | 1       |
| PCB-1221 | ND     |           | 0.34 | 0.066 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:31 | 1       |
| PCB-1232 | ND     |           | 0.34 | 0.066 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:31 | 1       |
| PCB-1242 | ND     |           | 0.34 | 0.066 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:31 | 1       |
| PCB-1248 | ND     |           | 0.34 | 0.066 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:31 | 1       |
| PCB-1254 | ND     |           | 0.34 | 0.16  | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:31 | 1       |
| PCB-1260 | ND     |           | 0.34 | 0.16  | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:31 | 1       |

| Surrogate              | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| Tetrachloro-m-xylene   | 79        |           | 60 - 154 | 11/20/15 08:12 | 11/21/15 02:31 | 1       |
| DCB Decachlorobiphenyl | 65        |           | 65 - 174 | 11/20/15 08:12 | 11/21/15 02:31 | 1       |

**Client Sample ID: SE1504-111815-1215**

**Lab Sample ID: 480-91340-3**

**Date Collected: 11/18/15 12:15**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result       | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND           |           | 0.010 | 0.0021 | mg/L |   |          | 12/02/15 14:48 | 10      |
| 2-Butanone (MEK)     | ND           |           | 0.050 | 0.013  | mg/L |   |          | 12/02/15 14:48 | 10      |
| <b>Benzene</b>       | <b>0.033</b> |           | 0.010 | 0.0041 | mg/L |   |          | 12/02/15 14:48 | 10      |
| Carbon tetrachloride | ND           |           | 0.010 | 0.0027 | mg/L |   |          | 12/02/15 14:48 | 10      |
| Chlorobenzene        | ND           |           | 0.010 | 0.0075 | mg/L |   |          | 12/02/15 14:48 | 10      |
| Chloroform           | ND           |           | 0.010 | 0.0034 | mg/L |   |          | 12/02/15 14:48 | 10      |
| Tetrachloroethene    | ND           |           | 0.010 | 0.0036 | mg/L |   |          | 12/02/15 14:48 | 10      |
| Trichloroethene      | ND           |           | 0.010 | 0.0046 | mg/L |   |          | 12/02/15 14:48 | 10      |
| Vinyl chloride       | ND           |           | 0.010 | 0.0090 | mg/L |   |          | 12/02/15 14:48 | 10      |
| 1,1-Dichloroethene   | ND           |           | 0.010 | 0.0029 | mg/L |   |          | 12/02/15 14:48 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 113       |           | 66 - 137 |          | 12/02/15 14:48 | 10      |
| 4-Bromofluorobenzene (Surr)  | 83        |           | 73 - 120 |          | 12/02/15 14:48 | 10      |
| Toluene-d8 (Surr)            | 90        |           | 71 - 126 |          | 12/02/15 14:48 | 10      |
| Dibromofluoromethane (Surr)  | 114       |           | 60 - 140 |          | 12/02/15 14:48 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND     |           | 0.010  | 0.00046 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| 2,4-Dinitrotoluene    | ND     |           | 0.0050 | 0.00045 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| 2,4,5-Trichlorophenol | ND     |           | 0.0050 | 0.00048 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| 2,4,6-Trichlorophenol | ND     |           | 0.0050 | 0.00061 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| 2-Methylphenol        | ND     |           | 0.0050 | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| 3-Methylphenol        | ND     |           | 0.010  | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| 4-Methylphenol        | ND     |           | 0.010  | 0.00036 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| Hexachlorobenzene     | ND     |           | 0.0050 | 0.00051 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| Hexachlorobutadiene   | ND     |           | 0.0050 | 0.00068 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| Hexachloroethane      | ND     |           | 0.0050 | 0.00059 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| Nitrobenzene          | ND     |           | 0.0050 | 0.00029 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| Pentachlorophenol     | ND     |           | 0.010  | 0.0022  | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| Pyridine              | ND     |           | 0.025  | 0.00041 | mg/L |   | 11/20/15 12:54 | 11/23/15 14:55 | 1       |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1504-111815-1215**

**Lab Sample ID: 480-91340-3**

**Date Collected: 11/18/15 12:15**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 99        |           | 52 - 132 | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| 2-Fluorobiphenyl            | 93        |           | 48 - 120 | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| 2-Fluorophenol (Surr)       | 54        |           | 20 - 120 | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| Nitrobenzene-d5 (Surr)      | 85        |           | 46 - 120 | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| p-Terphenyl-d14 (Surr)      | 107       |           | 67 - 150 | 11/20/15 12:54 | 11/23/15 14:55 | 1       |
| Phenol-d5 (Surr)            | 37        |           | 16 - 120 | 11/20/15 12:54 | 11/23/15 14:55 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte  | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | 0.011  | J         | 0.015  | 0.0056  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:24 | 1       |
| Barium   | 0.86   | J         | 1.0    | 0.10    | mg/L |   | 11/20/15 11:10 | 11/21/15 02:24 | 1       |
| Cadmium  | 0.0071 |           | 0.0020 | 0.00050 | mg/L |   | 11/20/15 11:10 | 11/21/15 02:24 | 1       |
| Chromium | ND     |           | 0.020  | 0.010   | mg/L |   | 11/20/15 11:10 | 11/21/15 02:24 | 1       |
| Lead     | 0.31   |           | 0.020  | 0.0030  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:24 | 1       |
| Selenium | ND     |           | 0.025  | 0.0087  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:24 | 1       |
| Silver   | ND     |           | 0.0060 | 0.0017  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:24 | 1       |

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.00020 | 0.00012 | mg/L |   | 11/20/15 11:30 | 11/20/15 15:53 | 1       |

## General Chemistry

| Analyte           | Result | Qualifier | NONE  | NONE  | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Free Liquid       | passed |           |       |       | mL/100g   |   |                | 11/23/15 10:40 | 1       |
| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/21/15 17:47 | 1       |
| Cyanide, Reactive | ND     |           | 9.6   | 9.6   | mg/Kg     |   | 11/19/15 05:15 | 11/19/15 14:53 | 1       |
| Sulfide, Reactive | ND     |           | 9.6   | 9.6   | mg/Kg     |   | 11/19/15 05:15 | 11/19/15 14:36 | 1       |
| pH                | 7.69   | HF        | 0.100 | 0.100 | SU        |   |                | 11/23/15 20:00 | 1       |

**Client Sample ID: SE1504-111815-1215**

**Lab Sample ID: 480-91340-3**

**Date Collected: 11/18/15 12:15**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

**Percent Solids: 59.8**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte                | Result    | Qualifier | RL       | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|-------|-------|---|----------------|----------------|---------|
| PCB-1016               | ND        |           | 0.39     | 0.075 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:47 | 1       |
| PCB-1221               | ND        |           | 0.39     | 0.075 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:47 | 1       |
| PCB-1232               | ND        |           | 0.39     | 0.075 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:47 | 1       |
| PCB-1242               | ND        |           | 0.39     | 0.075 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:47 | 1       |
| PCB-1248               | ND        |           | 0.39     | 0.075 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:47 | 1       |
| PCB-1254               | ND        |           | 0.39     | 0.18  | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:47 | 1       |
| PCB-1260               | ND        |           | 0.39     | 0.18  | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 02:47 | 1       |
| Surrogate              | %Recovery | Qualifier | Limits   |       |       |   | Prepared       | Analyzed       | Dil Fac |
| Tetrachloro-m-xylene   | 70        |           | 60 - 154 |       |       |   | 11/20/15 08:12 | 11/21/15 02:47 | 1       |
| DCB Decachlorobiphenyl | 53        | X         | 65 - 174 |       |       |   | 11/20/15 08:12 | 11/21/15 02:47 | 1       |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1503-111815-1300**

**Lab Sample ID: 480-91340-4**

**Date Collected: 11/18/15 13:00**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND     |           | 0.010 | 0.0021 | mg/L |   |          | 12/02/15 15:16 | 10      |
| 2-Butanone (MEK)     | ND     |           | 0.050 | 0.013  | mg/L |   |          | 12/02/15 15:16 | 10      |
| Benzene              | ND     |           | 0.010 | 0.0041 | mg/L |   |          | 12/02/15 15:16 | 10      |
| Carbon tetrachloride | ND     |           | 0.010 | 0.0027 | mg/L |   |          | 12/02/15 15:16 | 10      |
| Chlorobenzene        | ND     |           | 0.010 | 0.0075 | mg/L |   |          | 12/02/15 15:16 | 10      |
| Chloroform           | ND     |           | 0.010 | 0.0034 | mg/L |   |          | 12/02/15 15:16 | 10      |
| Tetrachloroethene    | ND     |           | 0.010 | 0.0036 | mg/L |   |          | 12/02/15 15:16 | 10      |
| Trichloroethene      | ND     |           | 0.010 | 0.0046 | mg/L |   |          | 12/02/15 15:16 | 10      |
| Vinyl chloride       | ND     |           | 0.010 | 0.0090 | mg/L |   |          | 12/02/15 15:16 | 10      |
| 1,1-Dichloroethene   | ND     |           | 0.010 | 0.0029 | mg/L |   |          | 12/02/15 15:16 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 114       |           | 66 - 137 |          | 12/02/15 15:16 | 10      |
| 4-Bromofluorobenzene (Surr)  | 84        |           | 73 - 120 |          | 12/02/15 15:16 | 10      |
| Toluene-d8 (Surr)            | 92        |           | 71 - 126 |          | 12/02/15 15:16 | 10      |
| Dibromofluoromethane (Surr)  | 117       |           | 60 - 140 |          | 12/02/15 15:16 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND     |           | 0.010  | 0.00046 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| 2,4-Dinitrotoluene    | ND     |           | 0.0050 | 0.00045 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| 2,4,5-Trichlorophenol | ND     |           | 0.0050 | 0.00048 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| 2,4,6-Trichlorophenol | ND     |           | 0.0050 | 0.00061 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| 2-Methylphenol        | ND     |           | 0.0050 | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| 3-Methylphenol        | ND     |           | 0.010  | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| 4-Methylphenol        | ND     |           | 0.010  | 0.00036 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| Hexachlorobenzene     | ND     |           | 0.0050 | 0.00051 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| Hexachlorobutadiene   | ND     |           | 0.0050 | 0.00068 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| Hexachloroethane      | ND     |           | 0.0050 | 0.00059 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| Nitrobenzene          | ND     |           | 0.0050 | 0.00029 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| Pentachlorophenol     | ND     |           | 0.010  | 0.0022  | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| Pyridine              | ND     |           | 0.025  | 0.00041 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:21 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 104       |           | 52 - 132 | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| 2-Fluorobiphenyl            | 101       |           | 48 - 120 | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| 2-Fluorophenol (Surr)       | 54        |           | 20 - 120 | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| Nitrobenzene-d5 (Surr)      | 87        |           | 46 - 120 | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| p-Terphenyl-d14 (Surr)      | 103       |           | 67 - 150 | 11/20/15 12:54 | 11/23/15 15:21 | 1       |
| Phenol-d5 (Surr)            | 38        |           | 16 - 120 | 11/20/15 12:54 | 11/23/15 15:21 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte  | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | 0.0071 | J         | 0.015  | 0.0056  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:28 | 1       |
| Barium   | 0.94   | J         | 1.0    | 0.10    | mg/L |   | 11/20/15 11:10 | 11/21/15 02:28 | 1       |
| Cadmium  | 0.0011 | J         | 0.0020 | 0.00050 | mg/L |   | 11/20/15 11:10 | 11/21/15 02:28 | 1       |
| Chromium | ND     |           | 0.020  | 0.010   | mg/L |   | 11/20/15 11:10 | 11/21/15 02:28 | 1       |
| Lead     | 0.30   |           | 0.020  | 0.0030  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:28 | 1       |
| Selenium | ND     |           | 0.025  | 0.0087  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:28 | 1       |
| Silver   | ND     |           | 0.0060 | 0.0017  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:28 | 1       |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1503-111815-1300**

**Lab Sample ID: 480-91340-4**

**Date Collected: 11/18/15 13:00**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.00020 | 0.00012 | mg/L |   | 11/20/15 11:30 | 11/20/15 15:55 | 1       |

## General Chemistry

| Analyte     | Result | Qualifier | NONE | NONE | Unit    | D | Prepared | Analyzed       | Dil Fac |
|-------------|--------|-----------|------|------|---------|---|----------|----------------|---------|
| Free Liquid | passed |           |      |      | mL/100g |   |          | 11/23/15 10:40 | 1       |

| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/21/15 17:47 | 1       |
| Cyanide, Reactive | ND     |           | 9.7   | 9.7   | mg/Kg     |   | 11/19/15 05:15 | 11/19/15 14:54 | 1       |
| Sulfide, Reactive | ND     |           | 9.7   | 9.7   | mg/Kg     |   | 11/19/15 05:15 | 11/19/15 14:36 | 1       |
| pH                | 8.26   | HF        | 0.100 | 0.100 | SU        |   |                | 11/23/15 20:00 | 1       |

**Client Sample ID: SE1503-111815-1300**

**Lab Sample ID: 480-91340-4**

**Date Collected: 11/18/15 13:00**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

**Percent Solids: 67.1**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte  | Result | Qualifier | RL   | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|------|-------|-------|---|----------------|----------------|---------|
| PCB-1016 | ND     |           | 0.31 | 0.061 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:03 | 1       |
| PCB-1221 | ND     |           | 0.31 | 0.061 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:03 | 1       |
| PCB-1232 | ND     |           | 0.31 | 0.061 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:03 | 1       |
| PCB-1242 | ND     |           | 0.31 | 0.061 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:03 | 1       |
| PCB-1248 | ND     |           | 0.31 | 0.061 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:03 | 1       |
| PCB-1254 | ND     |           | 0.31 | 0.15  | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:03 | 1       |
| PCB-1260 | ND     |           | 0.31 | 0.15  | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:03 | 1       |

| Surrogate              | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| Tetrachloro-m-xylene   | 69        |           | 60 - 154 | 11/20/15 08:12 | 11/21/15 03:03 | 1       |
| DCB Decachlorobiphenyl | 81        |           | 65 - 174 | 11/20/15 08:12 | 11/21/15 03:03 | 1       |

**Client Sample ID: SE1505-111815-1330**

**Lab Sample ID: 480-91340-5**

**Date Collected: 11/18/15 13:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND     |           | 0.010 | 0.0021 | mg/L |   |          | 12/02/15 15:43 | 10      |
| 2-Butanone (MEK)     | ND     |           | 0.050 | 0.013  | mg/L |   |          | 12/02/15 15:43 | 10      |
| Benzene              | ND     |           | 0.010 | 0.0041 | mg/L |   |          | 12/02/15 15:43 | 10      |
| Carbon tetrachloride | ND     |           | 0.010 | 0.0027 | mg/L |   |          | 12/02/15 15:43 | 10      |
| Chlorobenzene        | ND     |           | 0.010 | 0.0075 | mg/L |   |          | 12/02/15 15:43 | 10      |
| Chloroform           | ND     |           | 0.010 | 0.0034 | mg/L |   |          | 12/02/15 15:43 | 10      |
| Tetrachloroethene    | ND     |           | 0.010 | 0.0036 | mg/L |   |          | 12/02/15 15:43 | 10      |
| Trichloroethene      | ND     |           | 0.010 | 0.0046 | mg/L |   |          | 12/02/15 15:43 | 10      |
| Vinyl chloride       | ND     |           | 0.010 | 0.0090 | mg/L |   |          | 12/02/15 15:43 | 10      |
| 1,1-Dichloroethene   | ND     |           | 0.010 | 0.0029 | mg/L |   |          | 12/02/15 15:43 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 117       |           | 66 - 137 |          | 12/02/15 15:43 | 10      |
| 4-Bromofluorobenzene (Surr)  | 82        |           | 73 - 120 |          | 12/02/15 15:43 | 10      |
| Toluene-d8 (Surr)            | 92        |           | 71 - 126 |          | 12/02/15 15:43 | 10      |

TestAmerica Buffalo



# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1505-111815-1330**

**Lab Sample ID: 480-91340-5**

**Date Collected: 11/18/15 13:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP (Continued)

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 118       |           | 60 - 140 |          | 12/02/15 15:43 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND     |           | 0.010  | 0.00046 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| 2,4-Dinitrotoluene    | ND     |           | 0.0050 | 0.00045 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| 2,4,5-Trichlorophenol | ND     |           | 0.0050 | 0.00048 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| 2,4,6-Trichlorophenol | ND     |           | 0.0050 | 0.00061 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| 2-Methylphenol        | ND     |           | 0.0050 | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| 3-Methylphenol        | ND     |           | 0.010  | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| 4-Methylphenol        | ND     |           | 0.010  | 0.00036 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| Hexachlorobenzene     | ND     |           | 0.0050 | 0.00051 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| Hexachlorobutadiene   | ND     |           | 0.0050 | 0.00068 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| Hexachloroethane      | ND     |           | 0.0050 | 0.00059 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| Nitrobenzene          | ND     |           | 0.0050 | 0.00029 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| Pentachlorophenol     | ND     |           | 0.010  | 0.0022  | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| Pyridine              | ND     |           | 0.025  | 0.00041 | mg/L |   | 11/20/15 12:54 | 11/23/15 15:48 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 96        |           | 52 - 132 | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| 2-Fluorobiphenyl            | 96        |           | 48 - 120 | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| 2-Fluorophenol (Surr)       | 53        |           | 20 - 120 | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| Nitrobenzene-d5 (Surr)      | 85        |           | 46 - 120 | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| p-Terphenyl-d14 (Surr)      | 98        |           | 67 - 150 | 11/20/15 12:54 | 11/23/15 15:48 | 1       |
| Phenol-d5 (Surr)            | 36        |           | 16 - 120 | 11/20/15 12:54 | 11/23/15 15:48 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte  | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | 0.0069 | J         | 0.015  | 0.0056  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:31 | 1       |
| Barium   | 0.54   | J         | 1.0    | 0.10    | mg/L |   | 11/20/15 11:10 | 11/21/15 02:31 | 1       |
| Cadmium  | 0.0085 |           | 0.0020 | 0.00050 | mg/L |   | 11/20/15 11:10 | 11/21/15 02:31 | 1       |
| Chromium | ND     |           | 0.020  | 0.010   | mg/L |   | 11/20/15 11:10 | 11/21/15 02:31 | 1       |
| Lead     | 0.017  | J         | 0.020  | 0.0030  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:31 | 1       |
| Selenium | ND     |           | 0.025  | 0.0087  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:31 | 1       |
| Silver   | ND     |           | 0.0060 | 0.0017  | mg/L |   | 11/20/15 11:10 | 11/21/15 02:31 | 1       |

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.00020 | 0.00012 | mg/L |   | 11/20/15 11:30 | 11/20/15 15:57 | 1       |

## General Chemistry

| Analyte           | Result | Qualifier | NONE  | NONE  | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Free Liquid       | passed |           |       |       | mL/100g   |   |                | 11/23/15 10:40 | 1       |
| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/21/15 17:47 | 1       |
| Cyanide, Reactive | ND     |           | 9.5   | 9.5   | mg/Kg     |   | 11/19/15 05:15 | 11/19/15 14:56 | 1       |
| Sulfide, Reactive | ND     |           | 9.5   | 9.5   | mg/Kg     |   | 11/19/15 05:15 | 11/19/15 14:36 | 1       |
| pH                | 7.74   | HF        | 0.100 | 0.100 | SU        |   |                | 11/23/15 20:00 | 1       |

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# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1505-111815-1330**

**Lab Sample ID: 480-91340-5**

**Date Collected: 11/18/15 13:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

**Percent Solids: 71.7**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte  | Result | Qualifier | RL   | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|------|-------|-------|---|----------------|----------------|---------|
| PCB-1016 | ND     |           | 0.33 | 0.065 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:18 | 1       |
| PCB-1221 | ND     |           | 0.33 | 0.065 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:18 | 1       |
| PCB-1232 | ND     |           | 0.33 | 0.065 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:18 | 1       |
| PCB-1242 | ND     |           | 0.33 | 0.065 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:18 | 1       |
| PCB-1248 | ND     |           | 0.33 | 0.065 | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:18 | 1       |
| PCB-1254 | ND     |           | 0.33 | 0.16  | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:18 | 1       |
| PCB-1260 | ND     |           | 0.33 | 0.16  | mg/Kg | ☼ | 11/20/15 08:12 | 11/21/15 03:18 | 1       |

| Surrogate              | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| Tetrachloro-m-xylene   | 90        |           | 60 - 154 | 11/20/15 08:12 | 11/21/15 03:18 | 1       |
| DCB Decachlorobiphenyl | 71        |           | 65 - 174 | 11/20/15 08:12 | 11/21/15 03:18 | 1       |



# Surrogate Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: Total/NA

| Lab Sample ID    | Client Sample ID   | Percent Surrogate Recovery (Acceptance Limits) |                 |                 |                  |
|------------------|--------------------|------------------------------------------------|-----------------|-----------------|------------------|
|                  |                    | 12DCE<br>(66-137)                              | BFB<br>(73-120) | TOL<br>(71-126) | DBFM<br>(60-140) |
| LCS 480-276789/4 | Lab Control Sample | 93                                             | 107             | 95              | 104              |
| LCS 480-277733/4 | Lab Control Sample | 104                                            | 92              | 97              | 106              |
| MB 480-276789/6  | Method Blank       | 97                                             | 98              | 90              | 111              |
| MB 480-277733/6  | Method Blank       | 113                                            | 85              | 94              | 117              |

### Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

## Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: TCLP

| Lab Sample ID     | Client Sample ID   | Percent Surrogate Recovery (Acceptance Limits) |                 |                 |                  |
|-------------------|--------------------|------------------------------------------------|-----------------|-----------------|------------------|
|                   |                    | 12DCE<br>(66-137)                              | BFB<br>(73-120) | TOL<br>(71-126) | DBFM<br>(60-140) |
| 480-91340-1       | SE1501-111815-1100 | 117                                            | 82              | 92              | 117              |
| 480-91340-2       | SE1502-111815-1130 | 113                                            | 82              | 92              | 117              |
| 480-91340-3       | SE1504-111815-1215 | 113                                            | 83              | 90              | 114              |
| 480-91340-4       | SE1503-111815-1300 | 114                                            | 84              | 92              | 117              |
| 480-91340-5       | SE1505-111815-1330 | 117                                            | 82              | 92              | 118              |
| LB 480-275834/1-A | Method Blank       | 100                                            | 96              | 93              | 110              |

### Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

| Lab Sample ID       | Client Sample ID       | Percent Surrogate Recovery (Acceptance Limits) |                 |                 |                 |                 |                 |
|---------------------|------------------------|------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                     |                        | TBP<br>(52-132)                                | FBP<br>(48-120) | 2FP<br>(20-120) | NBZ<br>(46-120) | TPH<br>(67-150) | PHL<br>(16-120) |
| LCS 480-276163/2-A  | Lab Control Sample     | 104                                            | 97              | 54              | 88              | 106             | 38              |
| LCSD 480-276163/3-A | Lab Control Sample Dup | 103                                            | 94              | 53              | 83              | 104             | 38              |
| MB 480-276163/1-A   | Method Blank           | 81                                             | 82              | 42              | 69              | 101             | 30              |

### Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)

FBP = 2-Fluorobiphenyl

2FP = 2-Fluorophenol (Surr)

NBZ = Nitrobenzene-d5 (Surr)

TPH = p-Terphenyl-d14 (Surr)

PHL = Phenol-d5 (Surr)

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# Surrogate Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: TCLP

| Lab Sample ID     | Client Sample ID   | Percent Surrogate Recovery (Acceptance Limits) |                 |                 |                 |                 |                 |
|-------------------|--------------------|------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                   |                    | TBP<br>(52-132)                                | FBP<br>(48-120) | 2FP<br>(20-120) | NBZ<br>(46-120) | TPH<br>(67-150) | PHL<br>(16-120) |
| 480-91340-1       | SE1501-111815-1100 | 91                                             | 91              | 49              | 80              | 99              | 36              |
| 480-91340-2       | SE1502-111815-1130 | 105                                            | 102             | 58              | 92              | 107             | 40              |
| 480-91340-3       | SE1504-111815-1215 | 99                                             | 93              | 54              | 85              | 107             | 37              |
| 480-91340-4       | SE1503-111815-1300 | 104                                            | 101             | 54              | 87              | 103             | 38              |
| 480-91340-5       | SE1505-111815-1330 | 96                                             | 96              | 53              | 85              | 98              | 36              |
| LB 480-275832/1-D | Method Blank       | 111                                            | 107             | 58              | 93              | 115             | 41              |

### Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)  
FBP = 2-Fluorobiphenyl  
2FP = 2-Fluorophenol (Surr)  
NBZ = Nitrobenzene-d5 (Surr)  
TPH = p-Terphenyl-d14 (Surr)  
PHL = Phenol-d5 (Surr)

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid

Prep Type: Total/NA

| Lab Sample ID      | Client Sample ID   | Percent Surrogate Recovery (Acceptance Limits) |                  |
|--------------------|--------------------|------------------------------------------------|------------------|
|                    |                    | TCX2<br>(60-154)                               | DCB2<br>(65-174) |
| 480-91340-1        | SE1501-111815-1100 | 89                                             | 67               |
| 480-91340-2        | SE1502-111815-1130 | 79                                             | 65               |
| 480-91340-3        | SE1504-111815-1215 | 70                                             | 53 X             |
| 480-91340-4        | SE1503-111815-1300 | 69                                             | 81               |
| 480-91340-5        | SE1505-111815-1330 | 90                                             | 71               |
| LCS 480-276052/2-A | Lab Control Sample | 108                                            | 117              |
| MB 480-276052/1-A  | Method Blank       | 99                                             | 103              |

### Surrogate Legend

TCX = Tetrachloro-m-xylene  
DCB = DCB Decachlorobiphenyl

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-276789/6

Matrix: Solid

Analysis Batch: 276789

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte              | MB Result | MB Qualifier | RL     | MDL     | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|-----------|--------------|--------|---------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND        |              | 0.0010 | 0.00021 | mg/L |   |          | 11/25/15 00:22 | 1       |
| 2-Butanone (MEK)     | ND        |              | 0.0050 | 0.0013  | mg/L |   |          | 11/25/15 00:22 | 1       |
| Benzene              | ND        |              | 0.0010 | 0.00041 | mg/L |   |          | 11/25/15 00:22 | 1       |
| Carbon tetrachloride | ND        |              | 0.0010 | 0.00027 | mg/L |   |          | 11/25/15 00:22 | 1       |
| Chlorobenzene        | ND        |              | 0.0010 | 0.00075 | mg/L |   |          | 11/25/15 00:22 | 1       |
| Chloroform           | ND        |              | 0.0010 | 0.00034 | mg/L |   |          | 11/25/15 00:22 | 1       |
| Tetrachloroethene    | ND        |              | 0.0010 | 0.00036 | mg/L |   |          | 11/25/15 00:22 | 1       |
| Trichloroethene      | ND        |              | 0.0010 | 0.00046 | mg/L |   |          | 11/25/15 00:22 | 1       |
| Vinyl chloride       | ND        |              | 0.0010 | 0.00090 | mg/L |   |          | 11/25/15 00:22 | 1       |
| 1,1-Dichloroethene   | ND        |              | 0.0010 | 0.00029 | mg/L |   |          | 11/25/15 00:22 | 1       |

| Surrogate                    | MB %Recovery | MB Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|--------------|--------------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 97           |              | 66 - 137 |          | 11/25/15 00:22 | 1       |
| 4-Bromofluorobenzene (Surr)  | 98           |              | 73 - 120 |          | 11/25/15 00:22 | 1       |
| Toluene-d8 (Surr)            | 90           |              | 71 - 126 |          | 11/25/15 00:22 | 1       |
| Dibromofluoromethane (Surr)  | 111          |              | 60 - 140 |          | 11/25/15 00:22 | 1       |

Lab Sample ID: LCS 480-276789/4

Matrix: Solid

Analysis Batch: 276789

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte              | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------------------|-------------|------------|---------------|------|---|------|--------------|
| 1,2-Dichloroethane   | 0.0250      | 0.0233     |               | mg/L |   | 93   | 75 - 127     |
| 2-Butanone (MEK)     | 0.125       | 0.131      |               | mg/L |   | 105  | 57 - 140     |
| Benzene              | 0.0250      | 0.0244     |               | mg/L |   | 97   | 71 - 124     |
| Carbon tetrachloride | 0.0250      | 0.0263     |               | mg/L |   | 105  | 72 - 134     |
| Chlorobenzene        | 0.0250      | 0.0248     |               | mg/L |   | 99   | 72 - 120     |
| Chloroform           | 0.0250      | 0.0248     |               | mg/L |   | 99   | 73 - 127     |
| Tetrachloroethene    | 0.0250      | 0.0280     |               | mg/L |   | 112  | 74 - 122     |
| Trichloroethene      | 0.0250      | 0.0258     |               | mg/L |   | 103  | 74 - 123     |
| Vinyl chloride       | 0.0250      | 0.0217     |               | mg/L |   | 87   | 65 - 133     |
| 1,1-Dichloroethene   | 0.0250      | 0.0252     |               | mg/L |   | 101  | 58 - 121     |

| Surrogate                    | LCS %Recovery | LCS Qualifier | Limits   |
|------------------------------|---------------|---------------|----------|
| 1,2-Dichloroethane-d4 (Surr) | 93            |               | 66 - 137 |
| 4-Bromofluorobenzene (Surr)  | 107           |               | 73 - 120 |
| Toluene-d8 (Surr)            | 95            |               | 71 - 126 |
| Dibromofluoromethane (Surr)  | 104           |               | 60 - 140 |

Lab Sample ID: MB 480-277733/6

Matrix: Solid

Analysis Batch: 277733

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte            | MB Result | MB Qualifier | RL     | MDL     | Unit | D | Prepared | Analyzed       | Dil Fac |
|--------------------|-----------|--------------|--------|---------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane | ND        |              | 0.0010 | 0.00021 | mg/L |   |          | 12/02/15 11:27 | 1       |
| 2-Butanone (MEK)   | ND        |              | 0.0050 | 0.0013  | mg/L |   |          | 12/02/15 11:27 | 1       |
| Benzene            | ND        |              | 0.0010 | 0.00041 | mg/L |   |          | 12/02/15 11:27 | 1       |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-277733/6

Matrix: Solid

Analysis Batch: 277733

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte                      | MB Result    | MB Qualifier | RL       | MDL     | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------------------|--------------|--------------|----------|---------|------|---|----------|----------------|---------|
| Carbon tetrachloride         | ND           |              | 0.0010   | 0.00027 | mg/L |   |          | 12/02/15 11:27 | 1       |
| Chlorobenzene                | ND           |              | 0.0010   | 0.00075 | mg/L |   |          | 12/02/15 11:27 | 1       |
| Chloroform                   | ND           |              | 0.0010   | 0.00034 | mg/L |   |          | 12/02/15 11:27 | 1       |
| Tetrachloroethene            | ND           |              | 0.0010   | 0.00036 | mg/L |   |          | 12/02/15 11:27 | 1       |
| Trichloroethene              | ND           |              | 0.0010   | 0.00046 | mg/L |   |          | 12/02/15 11:27 | 1       |
| Vinyl chloride               | ND           |              | 0.0010   | 0.00090 | mg/L |   |          | 12/02/15 11:27 | 1       |
| 1,1-Dichloroethene           | ND           |              | 0.0010   | 0.00029 | mg/L |   |          | 12/02/15 11:27 | 1       |
| Surrogate                    | MB %Recovery | MB Qualifier | Limits   |         |      |   | Prepared | Analyzed       | Dil Fac |
| 1,2-Dichloroethane-d4 (Surr) | 113          |              | 66 - 137 |         |      |   |          | 12/02/15 11:27 | 1       |
| 4-Bromofluorobenzene (Surr)  | 85           |              | 73 - 120 |         |      |   |          | 12/02/15 11:27 | 1       |
| Toluene-d8 (Surr)            | 94           |              | 71 - 126 |         |      |   |          | 12/02/15 11:27 | 1       |
| Dibromofluoromethane (Surr)  | 117          |              | 60 - 140 |         |      |   |          | 12/02/15 11:27 | 1       |

Lab Sample ID: LCS 480-277733/4

Matrix: Solid

Analysis Batch: 277733

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte                      | Spike Added   | LCS Result    | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|------------------------------|---------------|---------------|---------------|------|---|------|--------------|
| 1,2-Dichloroethane           | 0.0250        | 0.0259        |               | mg/L |   | 104  | 75 - 127     |
| 2-Butanone (MEK)             | 0.125         | 0.130         |               | mg/L |   | 104  | 57 - 140     |
| Benzene                      | 0.0250        | 0.0262        |               | mg/L |   | 105  | 71 - 124     |
| Carbon tetrachloride         | 0.0250        | 0.0309        |               | mg/L |   | 124  | 72 - 134     |
| Chlorobenzene                | 0.0250        | 0.0251        |               | mg/L |   | 100  | 72 - 120     |
| Chloroform                   | 0.0250        | 0.0257        |               | mg/L |   | 103  | 73 - 127     |
| Tetrachloroethene            | 0.0250        | 0.0259        |               | mg/L |   | 104  | 74 - 122     |
| Trichloroethene              | 0.0250        | 0.0262        |               | mg/L |   | 105  | 74 - 123     |
| Vinyl chloride               | 0.0250        | 0.0271        |               | mg/L |   | 108  | 65 - 133     |
| 1,1-Dichloroethene           | 0.0250        | 0.0286        |               | mg/L |   | 115  | 58 - 121     |
| Surrogate                    | LCS %Recovery | LCS Qualifier | Limits        |      |   |      |              |
| 1,2-Dichloroethane-d4 (Surr) | 104           |               | 66 - 137      |      |   |      |              |
| 4-Bromofluorobenzene (Surr)  | 92            |               | 73 - 120      |      |   |      |              |
| Toluene-d8 (Surr)            | 97            |               | 71 - 126      |      |   |      |              |
| Dibromofluoromethane (Surr)  | 106           |               | 60 - 140      |      |   |      |              |

Lab Sample ID: LB 480-275834/1-A

Matrix: Solid

Analysis Batch: 276789

Client Sample ID: Method Blank

Prep Type: TCLP

| Analyte              | LB Result | LB Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|-----------|--------------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND        |              | 0.010 | 0.0021 | mg/L |   |          | 11/25/15 00:49 | 10      |
| 2-Butanone (MEK)     | ND        |              | 0.050 | 0.013  | mg/L |   |          | 11/25/15 00:49 | 10      |
| Benzene              | ND        |              | 0.010 | 0.0041 | mg/L |   |          | 11/25/15 00:49 | 10      |
| Carbon tetrachloride | ND        |              | 0.010 | 0.0027 | mg/L |   |          | 11/25/15 00:49 | 10      |
| Chlorobenzene        | ND        |              | 0.010 | 0.0075 | mg/L |   |          | 11/25/15 00:49 | 10      |
| Chloroform           | ND        |              | 0.010 | 0.0034 | mg/L |   |          | 11/25/15 00:49 | 10      |
| Tetrachloroethene    | ND        |              | 0.010 | 0.0036 | mg/L |   |          | 11/25/15 00:49 | 10      |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LB 480-275834/1-A

Matrix: Solid

Analysis Batch: 276789

Client Sample ID: Method Blank

Prep Type: TCLP

| Analyte            | LB Result | LB Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|--------------------|-----------|--------------|-------|--------|------|---|----------|----------------|---------|
| Trichloroethene    | ND        |              | 0.010 | 0.0046 | mg/L |   |          | 11/25/15 00:49 | 10      |
| Vinyl chloride     | ND        |              | 0.010 | 0.0090 | mg/L |   |          | 11/25/15 00:49 | 10      |
| 1,1-Dichloroethene | ND        |              | 0.010 | 0.0029 | mg/L |   |          | 11/25/15 00:49 | 10      |

| Surrogate                    | LB %Recovery | LB Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|--------------|--------------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 100          |              | 66 - 137 |          | 11/25/15 00:49 | 10      |
| 4-Bromofluorobenzene (Surr)  | 96           |              | 73 - 120 |          | 11/25/15 00:49 | 10      |
| Toluene-d8 (Surr)            | 93           |              | 71 - 126 |          | 11/25/15 00:49 | 10      |
| Dibromofluoromethane (Surr)  | 110          |              | 60 - 140 |          | 11/25/15 00:49 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-276163/1-A

Matrix: Solid

Analysis Batch: 276397

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 276163

| Analyte               | MB Result | MB Qualifier | RL     | MDL      | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|-----------|--------------|--------|----------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND        |              | 0.0025 | 0.00012  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| 2,4-Dinitrotoluene    | ND        |              | 0.0013 | 0.00011  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| 2,4,5-Trichlorophenol | ND        |              | 0.0013 | 0.00012  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| 2,4,6-Trichlorophenol | ND        |              | 0.0013 | 0.00015  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| 2-Methylphenol        | ND        |              | 0.0013 | 0.00010  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| 3-Methylphenol        | ND        |              | 0.0025 | 0.00010  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| 4-Methylphenol        | ND        |              | 0.0025 | 0.000090 | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| Hexachlorobenzene     | ND        |              | 0.0013 | 0.00013  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| Hexachlorobutadiene   | ND        |              | 0.0013 | 0.00017  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| Hexachloroethane      | ND        |              | 0.0013 | 0.00015  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| Nitrobenzene          | ND        |              | 0.0013 | 0.000073 | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| Pentachlorophenol     | ND        |              | 0.0025 | 0.00055  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| Pyridine              | ND        |              | 0.0063 | 0.00010  | mg/L |   | 11/20/15 12:54 | 11/23/15 10:32 | 1       |

| Surrogate                   | MB %Recovery | MB Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|--------------|--------------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 81           |              | 52 - 132 | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| 2-Fluorobiphenyl            | 82           |              | 48 - 120 | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| 2-Fluorophenol (Surr)       | 42           |              | 20 - 120 | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| Nitrobenzene-d5 (Surr)      | 69           |              | 46 - 120 | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| p-Terphenyl-d14 (Surr)      | 101          |              | 67 - 150 | 11/20/15 12:54 | 11/23/15 10:32 | 1       |
| Phenol-d5 (Surr)            | 30           |              | 16 - 120 | 11/20/15 12:54 | 11/23/15 10:32 | 1       |

Lab Sample ID: LCS 480-276163/2-A

Matrix: Solid

Analysis Batch: 276397

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 276163

| Analyte               | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|-----------------------|-------------|------------|---------------|------|---|------|--------------|
| 1,4-Dichlorobenzene   | 0.0500      | 0.0286     |               | mg/L |   | 57   | 32 - 120     |
| 2,4-Dinitrotoluene    | 0.0500      | 0.0519     |               | mg/L |   | 104  | 65 - 154     |
| 2,4,5-Trichlorophenol | 0.0500      | 0.0496     |               | mg/L |   | 99   | 65 - 126     |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-276163/2-A

Matrix: Solid

Analysis Batch: 276397

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 276163

| Analyte               | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|-----------------------|-------------|------------|---------------|------|---|------|--------------|
| 2,4,6-Trichlorophenol | 0.0500      | 0.0500     |               | mg/L |   | 100  | 64 - 120     |
| 2-Methylphenol        | 0.0500      | 0.0383     |               | mg/L |   | 77   | 39 - 120     |
| 3-Methylphenol        | 0.0500      | 0.0360     |               | mg/L |   | 72   | 39 - 120     |
| 4-Methylphenol        | 0.0500      | 0.0360     |               | mg/L |   | 72   | 39 - 120     |
| Hexachlorobenzene     | 0.0500      | 0.0493     |               | mg/L |   | 99   | 14 - 130     |
| Hexachlorobutadiene   | 0.0500      | 0.0298     |               | mg/L |   | 60   | 14 - 130     |
| Hexachloroethane      | 0.0500      | 0.0235     |               | mg/L |   | 47   | 14 - 130     |
| Nitrobenzene          | 0.0500      | 0.0429     |               | mg/L |   | 86   | 45 - 123     |
| Pentachlorophenol     | 0.100       | 0.0866     |               | mg/L |   | 87   | 39 - 136     |
| Pyridine              | 0.0500      | 0.0204     |               | mg/L |   | 41   | 10 - 120     |

| Surrogate                   | LCS %Recovery | LCS Qualifier | Limits   |
|-----------------------------|---------------|---------------|----------|
| 2,4,6-Tribromophenol (Surr) | 104           |               | 52 - 132 |
| 2-Fluorobiphenyl            | 97            |               | 48 - 120 |
| 2-Fluorophenol (Surr)       | 54            |               | 20 - 120 |
| Nitrobenzene-d5 (Surr)      | 88            |               | 46 - 120 |
| p-Terphenyl-d14 (Surr)      | 106           |               | 67 - 150 |
| Phenol-d5 (Surr)            | 38            |               | 16 - 120 |

Lab Sample ID: LCSD 480-276163/3-A

Matrix: Solid

Analysis Batch: 276397

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 276163

| Analyte               | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|-----------------------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| 1,4-Dichlorobenzene   | 0.0500      | 0.0275      |                | mg/L |   | 55   | 32 - 120     | 4   | 36        |
| 2,4-Dinitrotoluene    | 0.0500      | 0.0516      |                | mg/L |   | 103  | 65 - 154     | 1   | 20        |
| 2,4,5-Trichlorophenol | 0.0500      | 0.0492      |                | mg/L |   | 98   | 65 - 126     | 1   | 18        |
| 2,4,6-Trichlorophenol | 0.0500      | 0.0485      |                | mg/L |   | 97   | 64 - 120     | 3   | 19        |
| 2-Methylphenol        | 0.0500      | 0.0389      |                | mg/L |   | 78   | 39 - 120     | 2   | 27        |
| 3-Methylphenol        | 0.0500      | 0.0366      |                | mg/L |   | 73   | 39 - 120     | 2   | 30        |
| 4-Methylphenol        | 0.0500      | 0.0366      |                | mg/L |   | 73   | 39 - 120     | 2   | 24        |
| Hexachlorobenzene     | 0.0500      | 0.0483      |                | mg/L |   | 97   | 14 - 130     | 2   | 15        |
| Hexachlorobutadiene   | 0.0500      | 0.0278      |                | mg/L |   | 56   | 14 - 130     | 7   | 44        |
| Hexachloroethane      | 0.0500      | 0.0220      |                | mg/L |   | 44   | 14 - 130     | 7   | 46        |
| Nitrobenzene          | 0.0500      | 0.0409      |                | mg/L |   | 82   | 45 - 123     | 5   | 24        |
| Pentachlorophenol     | 0.100       | 0.0826      |                | mg/L |   | 83   | 39 - 136     | 5   | 37        |
| Pyridine              | 0.0500      | 0.0230      |                | mg/L |   | 46   | 10 - 120     | 12  | 49        |

| Surrogate                   | LCSD %Recovery | LCSD Qualifier | Limits   |
|-----------------------------|----------------|----------------|----------|
| 2,4,6-Tribromophenol (Surr) | 103            |                | 52 - 132 |
| 2-Fluorobiphenyl            | 94             |                | 48 - 120 |
| 2-Fluorophenol (Surr)       | 53             |                | 20 - 120 |
| Nitrobenzene-d5 (Surr)      | 83             |                | 46 - 120 |
| p-Terphenyl-d14 (Surr)      | 104            |                | 67 - 150 |
| Phenol-d5 (Surr)            | 38             |                | 16 - 120 |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LB 480-275832/1-D

Matrix: Solid

Analysis Batch: 276397

Client Sample ID: Method Blank

Prep Type: TCLP

Prep Batch: 276163

| Analyte               | LB Result | LB Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|-----------|--------------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND        |              | 0.010  | 0.00046 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| 2,4-Dinitrotoluene    | ND        |              | 0.0050 | 0.00045 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| 2,4,5-Trichlorophenol | ND        |              | 0.0050 | 0.00048 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| 2,4,6-Trichlorophenol | ND        |              | 0.0050 | 0.00061 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| 2-Methylphenol        | ND        |              | 0.0050 | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| 3-Methylphenol        | ND        |              | 0.010  | 0.00040 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| 4-Methylphenol        | ND        |              | 0.010  | 0.00036 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| Hexachlorobenzene     | ND        |              | 0.0050 | 0.00051 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| Hexachlorobutadiene   | ND        |              | 0.0050 | 0.00068 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| Hexachloroethane      | ND        |              | 0.0050 | 0.00059 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| Nitrobenzene          | ND        |              | 0.0050 | 0.00029 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| Pentachlorophenol     | ND        |              | 0.010  | 0.0022  | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| Pyridine              | ND        |              | 0.025  | 0.00041 | mg/L |   | 11/20/15 12:54 | 11/23/15 12:17 | 1       |

| Surrogate                   | LB %Recovery | LB Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|--------------|--------------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 111          |              | 52 - 132 | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| 2-Fluorobiphenyl            | 107          |              | 48 - 120 | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| 2-Fluorophenol (Surr)       | 58           |              | 20 - 120 | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| Nitrobenzene-d5 (Surr)      | 93           |              | 46 - 120 | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| p-Terphenyl-d14 (Surr)      | 115          |              | 67 - 150 | 11/20/15 12:54 | 11/23/15 12:17 | 1       |
| Phenol-d5 (Surr)            | 41           |              | 16 - 120 | 11/20/15 12:54 | 11/23/15 12:17 | 1       |

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 480-276052/1-A

Matrix: Solid

Analysis Batch: 276208

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 276052

| Analyte  | MB Result | MB Qualifier | RL   | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|-----------|--------------|------|-------|-------|---|----------------|----------------|---------|
| PCB-1016 | ND        |              | 0.19 | 0.038 | mg/Kg |   | 11/20/15 08:12 | 11/20/15 22:48 | 1       |
| PCB-1221 | ND        |              | 0.19 | 0.038 | mg/Kg |   | 11/20/15 08:12 | 11/20/15 22:48 | 1       |
| PCB-1232 | ND        |              | 0.19 | 0.038 | mg/Kg |   | 11/20/15 08:12 | 11/20/15 22:48 | 1       |
| PCB-1242 | ND        |              | 0.19 | 0.038 | mg/Kg |   | 11/20/15 08:12 | 11/20/15 22:48 | 1       |
| PCB-1248 | ND        |              | 0.19 | 0.038 | mg/Kg |   | 11/20/15 08:12 | 11/20/15 22:48 | 1       |
| PCB-1254 | ND        |              | 0.19 | 0.091 | mg/Kg |   | 11/20/15 08:12 | 11/20/15 22:48 | 1       |
| PCB-1260 | ND        |              | 0.19 | 0.091 | mg/Kg |   | 11/20/15 08:12 | 11/20/15 22:48 | 1       |

| Surrogate              | MB %Recovery | MB Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|--------------|--------------|----------|----------------|----------------|---------|
| Tetrachloro-m-xylene   | 99           |              | 60 - 154 | 11/20/15 08:12 | 11/20/15 22:48 | 1       |
| DCB Decachlorobiphenyl | 103          |              | 65 - 174 | 11/20/15 08:12 | 11/20/15 22:48 | 1       |

Lab Sample ID: LCS 480-276052/2-A

Matrix: Solid

Analysis Batch: 276208

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 276052

| Analyte  | Spike Added | LCS Result | LCS Qualifier | Unit  | D | %Rec | Limits   |
|----------|-------------|------------|---------------|-------|---|------|----------|
| PCB-1016 | 2.35        | 2.50       |               | mg/Kg |   | 106  | 51 - 185 |

TestAmerica Buffalo



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCS 480-276052/2-A

Matrix: Solid

Analysis Batch: 276208

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 276052

| Analyte                | Spike Added   | LCS Result    | LCS Qualifier | Unit  | D | %Rec | %Rec. Limits |
|------------------------|---------------|---------------|---------------|-------|---|------|--------------|
| PCB-1260               | 2.35          | 2.68          |               | mg/Kg |   | 114  | 61 - 184     |
| Surrogate              | LCS %Recovery | LCS Qualifier | Limits        |       |   |      |              |
| Tetrachloro-m-xylene   | 108           |               | 60 - 154      |       |   |      |              |
| DCB Decachlorobiphenyl | 117           |               | 65 - 174      |       |   |      |              |

## Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-276110/2-A

Matrix: Solid

Analysis Batch: 276291

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 276110

| Analyte  | MB Result | MB Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|-----------|--------------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | ND        |              | 0.015  | 0.0056  | mg/L |   | 11/20/15 11:10 | 11/21/15 01:47 | 1       |
| Barium   | ND        |              | 1.0    | 0.10    | mg/L |   | 11/20/15 11:10 | 11/21/15 01:47 | 1       |
| Cadmium  | ND        |              | 0.0020 | 0.00050 | mg/L |   | 11/20/15 11:10 | 11/21/15 01:47 | 1       |
| Chromium | ND        |              | 0.020  | 0.010   | mg/L |   | 11/20/15 11:10 | 11/21/15 01:47 | 1       |
| Lead     | ND        |              | 0.020  | 0.0030  | mg/L |   | 11/20/15 11:10 | 11/21/15 01:47 | 1       |
| Selenium | ND        |              | 0.025  | 0.0087  | mg/L |   | 11/20/15 11:10 | 11/21/15 01:47 | 1       |
| Silver   | ND        |              | 0.0060 | 0.0017  | mg/L |   | 11/20/15 11:10 | 11/21/15 01:47 | 1       |

Lab Sample ID: LCS 480-276110/3-A

Matrix: Solid

Analysis Batch: 276291

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 276110

| Analyte  | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------|-------------|------------|---------------|------|---|------|--------------|
| Arsenic  | 1.00        | 1.08       |               | mg/L |   | 108  | 80 - 120     |
| Barium   | 1.00        | 1.05       |               | mg/L |   | 105  | 80 - 120     |
| Cadmium  | 1.00        | 1.03       |               | mg/L |   | 103  | 80 - 120     |
| Chromium | 1.00        | 1.02       |               | mg/L |   | 102  | 80 - 120     |
| Lead     | 1.00        | 1.02       |               | mg/L |   | 102  | 80 - 120     |
| Selenium | 1.00        | 1.07       |               | mg/L |   | 107  | 80 - 120     |
| Silver   | 1.00        | 1.08       |               | mg/L |   | 108  | 80 - 120     |

Lab Sample ID: LCSD 480-276110/16-A

Matrix: Solid

Analysis Batch: 276291

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 276110

| Analyte  | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | Limit |
|----------|-------------|-------------|----------------|------|---|------|--------------|-----|-------|
| Arsenic  | 1.00        | 1.10        |                | mg/L |   | 110  | 80 - 120     | 2   | 20    |
| Barium   | 1.00        | 1.08        |                | mg/L |   | 108  | 80 - 120     | 3   | 20    |
| Cadmium  | 1.00        | 1.05        |                | mg/L |   | 105  | 80 - 120     | 1   | 20    |
| Chromium | 1.00        | 1.04        |                | mg/L |   | 104  | 80 - 120     | 1   | 20    |
| Lead     | 1.00        | 1.02        |                | mg/L |   | 102  | 80 - 120     | 1   | 20    |
| Selenium | 1.00        | 1.09        |                | mg/L |   | 109  | 80 - 120     | 2   | 20    |
| Silver   | 1.00        | 1.09        |                | mg/L |   | 109  | 80 - 120     | 1   | 20    |

TestAmerica Buffalo



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LB 480-275832/1-B

Matrix: Solid

Analysis Batch: 276291

Client Sample ID: Method Blank

Prep Type: TCLP

Prep Batch: 276110

| Analyte  | LB<br>Result | LB<br>Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------------|-----------------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | ND           |                 | 0.015  | 0.0056  | mg/L |   | 11/20/15 11:10 | 11/21/15 01:44 | 1       |
| Barium   | ND           |                 | 1.0    | 0.10    | mg/L |   | 11/20/15 11:10 | 11/21/15 01:44 | 1       |
| Cadmium  | ND           |                 | 0.0020 | 0.00050 | mg/L |   | 11/20/15 11:10 | 11/21/15 01:44 | 1       |
| Chromium | ND           |                 | 0.020  | 0.010   | mg/L |   | 11/20/15 11:10 | 11/21/15 01:44 | 1       |
| Lead     | ND           |                 | 0.020  | 0.0030  | mg/L |   | 11/20/15 11:10 | 11/21/15 01:44 | 1       |
| Selenium | ND           |                 | 0.025  | 0.0087  | mg/L |   | 11/20/15 11:10 | 11/21/15 01:44 | 1       |
| Silver   | ND           |                 | 0.0060 | 0.0017  | mg/L |   | 11/20/15 11:10 | 11/21/15 01:44 | 1       |

## Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 480-276128/2-A

Matrix: Solid

Analysis Batch: 276275

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 276128

| Analyte | MB<br>Result | MB<br>Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------------|-----------------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND           |                 | 0.00020 | 0.00012 | mg/L |   | 11/20/15 11:30 | 11/20/15 15:35 | 1       |

Lab Sample ID: LCS 480-276128/3-A

Matrix: Solid

Analysis Batch: 276275

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 276128

| Analyte | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec.<br>Limits |
|---------|----------------|---------------|------------------|------|---|------|-----------------|
| Mercury | 0.00668        | 0.00745       |                  | mg/L |   | 112  | 80 - 120        |

Lab Sample ID: LB 480-275832/1-C

Matrix: Solid

Analysis Batch: 276275

Client Sample ID: Method Blank

Prep Type: TCLP

Prep Batch: 276128

| Analyte | LB<br>Result | LB<br>Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------------|-----------------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND           |                 | 0.00020 | 0.00012 | mg/L |   | 11/20/15 11:30 | 11/20/15 15:33 | 1       |

## Method: 1010A - Ignitability, Pensky-Martens Closed Cup Method

Lab Sample ID: LCS 480-276347/1

Matrix: Solid

Analysis Batch: 276347

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte    | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit      | D | %Rec | %Rec.<br>Limits  |
|------------|----------------|---------------|------------------|-----------|---|------|------------------|
| Flashpoint | 81.0           | 82.00         |                  | Degrees F |   | 101  | 97.5 - 102.<br>5 |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 9012 - Cyanide, Reactive

Lab Sample ID: MB 480-275920/1-A  
Matrix: Solid  
Analysis Batch: 275965

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 275920

| Analyte           | MB Result | MB Qualifier | RL   | RL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|-----------|--------------|------|------|-------|---|----------------|----------------|---------|
| Cyanide, Reactive | ND        |              | 10.0 | 10.0 | mg/Kg |   | 11/19/15 05:15 | 11/19/15 14:34 | 1       |

Lab Sample ID: LCS 480-275920/2-A  
Matrix: Solid  
Analysis Batch: 275965

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 275920

| Analyte           | Spike Added | LCS Result | LCS Qualifier | Unit  | D | %Rec | %Rec. Limits |
|-------------------|-------------|------------|---------------|-------|---|------|--------------|
| Cyanide, Reactive | 1000        | 385.0      |               | mg/Kg |   | 39   | 10 - 100     |

## Method: 9034 - Sulfide, Reactive

Lab Sample ID: MB 480-275922/1-A  
Matrix: Solid  
Analysis Batch: 275957

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 275922

| Analyte           | MB Result | MB Qualifier | RL   | RL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|-----------|--------------|------|------|-------|---|----------------|----------------|---------|
| Sulfide, Reactive | ND        |              | 10.0 | 10.0 | mg/Kg |   | 11/19/15 05:15 | 11/19/15 14:36 | 1       |

Lab Sample ID: LCS 480-275922/2-A  
Matrix: Solid  
Analysis Batch: 275957

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 275922

| Analyte           | Spike Added | LCS Result | LCS Qualifier | Unit  | D | %Rec | %Rec. Limits |
|-------------------|-------------|------------|---------------|-------|---|------|--------------|
| Sulfide, Reactive | 1000        | 340.6      |               | mg/Kg |   | 34   | 10 - 100     |

## Method: 9045D - pH

Lab Sample ID: LCS 480-276578/1  
Matrix: Solid  
Analysis Batch: 276578

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|-------------|------------|---------------|------|---|------|--------------|
| pH      | 7.00        | 7.030      |               | SU   |   | 100  | 99 - 101     |

Lab Sample ID: 480-91340-4 DU  
Matrix: Solid  
Analysis Batch: 276578

Client Sample ID: SE1503-111815-1300  
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---------|---------------|------------------|-----------|--------------|------|---|-----|-----------|
| pH      | 8.26          | HF               | 8.260     |              | SU   |   | 0   | 5         |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Method: 9095B - Paint Filter

Lab Sample ID: 480-91340-3 DU

Matrix: Solid

Analysis Batch: 276547

Client Sample ID: SE1504-111815-1215

Prep Type: Total/NA

| Analyte     | Sample<br>Result | Sample<br>Qualifier | DU<br>Result | DU<br>Qualifier | Unit    | D | RPD | RPD<br>Limit |
|-------------|------------------|---------------------|--------------|-----------------|---------|---|-----|--------------|
| Free Liquid | passed           |                     | passed       |                 | mL/100g |   | NC  |              |

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## GC/MS VOA

### Leach Batch: 275834

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1       | SE1501-111815-1100 | TCLP      | Solid  | 1311   |            |
| 480-91340-2       | SE1502-111815-1130 | TCLP      | Solid  | 1311   |            |
| 480-91340-3       | SE1504-111815-1215 | TCLP      | Solid  | 1311   |            |
| 480-91340-4       | SE1503-111815-1300 | TCLP      | Solid  | 1311   |            |
| 480-91340-5       | SE1505-111815-1330 | TCLP      | Solid  | 1311   |            |
| LB 480-275834/1-A | Method Blank       | TCLP      | Solid  | 1311   |            |

### Analysis Batch: 276789

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------|-----------|--------|--------|------------|
| LB 480-275834/1-A | Method Blank       | TCLP      | Solid  | 8260C  | 275834     |
| LCS 480-276789/4  | Lab Control Sample | Total/NA  | Solid  | 8260C  |            |
| MB 480-276789/6   | Method Blank       | Total/NA  | Solid  | 8260C  |            |

### Analysis Batch: 277733

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1      | SE1501-111815-1100 | TCLP      | Solid  | 8260C  | 275834     |
| 480-91340-2      | SE1502-111815-1130 | TCLP      | Solid  | 8260C  | 275834     |
| 480-91340-3      | SE1504-111815-1215 | TCLP      | Solid  | 8260C  | 275834     |
| 480-91340-4      | SE1503-111815-1300 | TCLP      | Solid  | 8260C  | 275834     |
| 480-91340-5      | SE1505-111815-1330 | TCLP      | Solid  | 8260C  | 275834     |
| LCS 480-277733/4 | Lab Control Sample | Total/NA  | Solid  | 8260C  |            |
| MB 480-277733/6  | Method Blank       | Total/NA  | Solid  | 8260C  |            |

## GC/MS Semi VOA

### Leach Batch: 275832

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1       | SE1501-111815-1100 | TCLP      | Solid  | 1311   |            |
| 480-91340-2       | SE1502-111815-1130 | TCLP      | Solid  | 1311   |            |
| 480-91340-3       | SE1504-111815-1215 | TCLP      | Solid  | 1311   |            |
| 480-91340-4       | SE1503-111815-1300 | TCLP      | Solid  | 1311   |            |
| 480-91340-5       | SE1505-111815-1330 | TCLP      | Solid  | 1311   |            |
| LB 480-275832/1-D | Method Blank       | TCLP      | Solid  | 1311   |            |

### Prep Batch: 276163

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 480-91340-1         | SE1501-111815-1100     | TCLP      | Solid  | 3510C  | 275832     |
| 480-91340-2         | SE1502-111815-1130     | TCLP      | Solid  | 3510C  | 275832     |
| 480-91340-3         | SE1504-111815-1215     | TCLP      | Solid  | 3510C  | 275832     |
| 480-91340-4         | SE1503-111815-1300     | TCLP      | Solid  | 3510C  | 275832     |
| 480-91340-5         | SE1505-111815-1330     | TCLP      | Solid  | 3510C  | 275832     |
| LB 480-275832/1-D   | Method Blank           | TCLP      | Solid  | 3510C  | 275832     |
| LCS 480-276163/2-A  | Lab Control Sample     | Total/NA  | Solid  | 3510C  |            |
| LCSD 480-276163/3-A | Lab Control Sample Dup | Total/NA  | Solid  | 3510C  |            |
| MB 480-276163/1-A   | Method Blank           | Total/NA  | Solid  | 3510C  |            |

### Analysis Batch: 276397

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|---------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1   | SE1501-111815-1100 | TCLP      | Solid  | 8270D  | 276163     |
| 480-91340-2   | SE1502-111815-1130 | TCLP      | Solid  | 8270D  | 276163     |

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## GC/MS Semi VOA (Continued)

### Analysis Batch: 276397 (Continued)

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 480-91340-3         | SE1504-111815-1215     | TCLP      | Solid  | 8270D  | 276163     |
| 480-91340-4         | SE1503-111815-1300     | TCLP      | Solid  | 8270D  | 276163     |
| 480-91340-5         | SE1505-111815-1330     | TCLP      | Solid  | 8270D  | 276163     |
| LB 480-275832/1-D   | Method Blank           | TCLP      | Solid  | 8270D  | 276163     |
| LCS 480-276163/2-A  | Lab Control Sample     | Total/NA  | Solid  | 8270D  | 276163     |
| LCSD 480-276163/3-A | Lab Control Sample Dup | Total/NA  | Solid  | 8270D  | 276163     |
| MB 480-276163/1-A   | Method Blank           | Total/NA  | Solid  | 8270D  | 276163     |

## GC Semi VOA

### Prep Batch: 276052

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1        | SE1501-111815-1100 | Total/NA  | Solid  | 3550C  |            |
| 480-91340-2        | SE1502-111815-1130 | Total/NA  | Solid  | 3550C  |            |
| 480-91340-3        | SE1504-111815-1215 | Total/NA  | Solid  | 3550C  |            |
| 480-91340-4        | SE1503-111815-1300 | Total/NA  | Solid  | 3550C  |            |
| 480-91340-5        | SE1505-111815-1330 | Total/NA  | Solid  | 3550C  |            |
| LCS 480-276052/2-A | Lab Control Sample | Total/NA  | Solid  | 3550C  |            |
| MB 480-276052/1-A  | Method Blank       | Total/NA  | Solid  | 3550C  |            |

### Analysis Batch: 276208

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1        | SE1501-111815-1100 | Total/NA  | Solid  | 8082A  | 276052     |
| 480-91340-2        | SE1502-111815-1130 | Total/NA  | Solid  | 8082A  | 276052     |
| 480-91340-3        | SE1504-111815-1215 | Total/NA  | Solid  | 8082A  | 276052     |
| 480-91340-4        | SE1503-111815-1300 | Total/NA  | Solid  | 8082A  | 276052     |
| 480-91340-5        | SE1505-111815-1330 | Total/NA  | Solid  | 8082A  | 276052     |
| LCS 480-276052/2-A | Lab Control Sample | Total/NA  | Solid  | 8082A  | 276052     |
| MB 480-276052/1-A  | Method Blank       | Total/NA  | Solid  | 8082A  | 276052     |

## Metals

### Leach Batch: 275832

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1       | SE1501-111815-1100 | TCLP      | Solid  | 1311   |            |
| 480-91340-2       | SE1502-111815-1130 | TCLP      | Solid  | 1311   |            |
| 480-91340-3       | SE1504-111815-1215 | TCLP      | Solid  | 1311   |            |
| 480-91340-4       | SE1503-111815-1300 | TCLP      | Solid  | 1311   |            |
| 480-91340-5       | SE1505-111815-1330 | TCLP      | Solid  | 1311   |            |
| LB 480-275832/1-B | Method Blank       | TCLP      | Solid  | 1311   |            |
| LB 480-275832/1-C | Method Blank       | TCLP      | Solid  | 1311   |            |

### Prep Batch: 276110

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1       | SE1501-111815-1100 | TCLP      | Solid  | 3010A  | 275832     |
| 480-91340-2       | SE1502-111815-1130 | TCLP      | Solid  | 3010A  | 275832     |
| 480-91340-3       | SE1504-111815-1215 | TCLP      | Solid  | 3010A  | 275832     |
| 480-91340-4       | SE1503-111815-1300 | TCLP      | Solid  | 3010A  | 275832     |
| 480-91340-5       | SE1505-111815-1330 | TCLP      | Solid  | 3010A  | 275832     |
| LB 480-275832/1-B | Method Blank       | TCLP      | Solid  | 3010A  | 275832     |

TestAmerica Buffalo

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Metals (Continued)

### Prep Batch: 276110 (Continued)

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| LCS 480-276110/3-A   | Lab Control Sample     | Total/NA  | Solid  | 3010A  |            |
| LCSD 480-276110/16-A | Lab Control Sample Dup | Total/NA  | Solid  | 3010A  |            |
| MB 480-276110/2-A    | Method Blank           | Total/NA  | Solid  | 3010A  |            |

### Prep Batch: 276128

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1        | SE1501-111815-1100 | TCLP      | Solid  | 7470A  | 275832     |
| 480-91340-2        | SE1502-111815-1130 | TCLP      | Solid  | 7470A  | 275832     |
| 480-91340-3        | SE1504-111815-1215 | TCLP      | Solid  | 7470A  | 275832     |
| 480-91340-4        | SE1503-111815-1300 | TCLP      | Solid  | 7470A  | 275832     |
| 480-91340-5        | SE1505-111815-1330 | TCLP      | Solid  | 7470A  | 275832     |
| LB 480-275832/1-C  | Method Blank       | TCLP      | Solid  | 7470A  | 275832     |
| LCS 480-276128/3-A | Lab Control Sample | Total/NA  | Solid  | 7470A  |            |
| MB 480-276128/2-A  | Method Blank       | Total/NA  | Solid  | 7470A  |            |

### Analysis Batch: 276275

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1        | SE1501-111815-1100 | TCLP      | Solid  | 7470A  | 276128     |
| 480-91340-2        | SE1502-111815-1130 | TCLP      | Solid  | 7470A  | 276128     |
| 480-91340-3        | SE1504-111815-1215 | TCLP      | Solid  | 7470A  | 276128     |
| 480-91340-4        | SE1503-111815-1300 | TCLP      | Solid  | 7470A  | 276128     |
| 480-91340-5        | SE1505-111815-1330 | TCLP      | Solid  | 7470A  | 276128     |
| LB 480-275832/1-C  | Method Blank       | TCLP      | Solid  | 7470A  | 276128     |
| LCS 480-276128/3-A | Lab Control Sample | Total/NA  | Solid  | 7470A  | 276128     |
| MB 480-276128/2-A  | Method Blank       | Total/NA  | Solid  | 7470A  | 276128     |

### Analysis Batch: 276291

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 480-91340-1          | SE1501-111815-1100     | TCLP      | Solid  | 6010C  | 276110     |
| 480-91340-2          | SE1502-111815-1130     | TCLP      | Solid  | 6010C  | 276110     |
| 480-91340-3          | SE1504-111815-1215     | TCLP      | Solid  | 6010C  | 276110     |
| 480-91340-4          | SE1503-111815-1300     | TCLP      | Solid  | 6010C  | 276110     |
| 480-91340-5          | SE1505-111815-1330     | TCLP      | Solid  | 6010C  | 276110     |
| LB 480-275832/1-B    | Method Blank           | TCLP      | Solid  | 6010C  | 276110     |
| LCS 480-276110/3-A   | Lab Control Sample     | Total/NA  | Solid  | 6010C  | 276110     |
| LCSD 480-276110/16-A | Lab Control Sample Dup | Total/NA  | Solid  | 6010C  | 276110     |
| MB 480-276110/2-A    | Method Blank           | Total/NA  | Solid  | 6010C  | 276110     |

## General Chemistry

### Prep Batch: 275920

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1        | SE1501-111815-1100 | Total/NA  | Solid  | 7.3.3  |            |
| 480-91340-2        | SE1502-111815-1130 | Total/NA  | Solid  | 7.3.3  |            |
| 480-91340-3        | SE1504-111815-1215 | Total/NA  | Solid  | 7.3.3  |            |
| 480-91340-4        | SE1503-111815-1300 | Total/NA  | Solid  | 7.3.3  |            |
| 480-91340-5        | SE1505-111815-1330 | Total/NA  | Solid  | 7.3.3  |            |
| LCS 480-275920/2-A | Lab Control Sample | Total/NA  | Solid  | 7.3.3  |            |
| MB 480-275920/1-A  | Method Blank       | Total/NA  | Solid  | 7.3.3  |            |

TestAmerica Buffalo

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## General Chemistry (Continued)

### Prep Batch: 275922

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1        | SE1501-111815-1100 | Total/NA  | Solid  | 7.3.4  |            |
| 480-91340-2        | SE1502-111815-1130 | Total/NA  | Solid  | 7.3.4  |            |
| 480-91340-3        | SE1504-111815-1215 | Total/NA  | Solid  | 7.3.4  |            |
| 480-91340-4        | SE1503-111815-1300 | Total/NA  | Solid  | 7.3.4  |            |
| 480-91340-5        | SE1505-111815-1330 | Total/NA  | Solid  | 7.3.4  |            |
| LCS 480-275922/2-A | Lab Control Sample | Total/NA  | Solid  | 7.3.4  |            |
| MB 480-275922/1-A  | Method Blank       | Total/NA  | Solid  | 7.3.4  |            |

### Analysis Batch: 275957

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1        | SE1501-111815-1100 | Total/NA  | Solid  | 9034   | 275922     |
| 480-91340-2        | SE1502-111815-1130 | Total/NA  | Solid  | 9034   | 275922     |
| 480-91340-3        | SE1504-111815-1215 | Total/NA  | Solid  | 9034   | 275922     |
| 480-91340-4        | SE1503-111815-1300 | Total/NA  | Solid  | 9034   | 275922     |
| 480-91340-5        | SE1505-111815-1330 | Total/NA  | Solid  | 9034   | 275922     |
| LCS 480-275922/2-A | Lab Control Sample | Total/NA  | Solid  | 9034   | 275922     |
| MB 480-275922/1-A  | Method Blank       | Total/NA  | Solid  | 9034   | 275922     |

### Analysis Batch: 275965

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1        | SE1501-111815-1100 | Total/NA  | Solid  | 9012   | 275920     |
| 480-91340-2        | SE1502-111815-1130 | Total/NA  | Solid  | 9012   | 275920     |
| 480-91340-3        | SE1504-111815-1215 | Total/NA  | Solid  | 9012   | 275920     |
| 480-91340-4        | SE1503-111815-1300 | Total/NA  | Solid  | 9012   | 275920     |
| 480-91340-5        | SE1505-111815-1330 | Total/NA  | Solid  | 9012   | 275920     |
| LCS 480-275920/2-A | Lab Control Sample | Total/NA  | Solid  | 9012   | 275920     |
| MB 480-275920/1-A  | Method Blank       | Total/NA  | Solid  | 9012   | 275920     |

### Analysis Batch: 276017

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method   | Prep Batch |
|---------------|--------------------|-----------|--------|----------|------------|
| 480-91340-1   | SE1501-111815-1100 | Total/NA  | Solid  | Moisture |            |
| 480-91340-2   | SE1502-111815-1130 | Total/NA  | Solid  | Moisture |            |
| 480-91340-3   | SE1504-111815-1215 | Total/NA  | Solid  | Moisture |            |
| 480-91340-4   | SE1503-111815-1300 | Total/NA  | Solid  | Moisture |            |
| 480-91340-5   | SE1505-111815-1330 | Total/NA  | Solid  | Moisture |            |

### Analysis Batch: 276347

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1      | SE1501-111815-1100 | Total/NA  | Solid  | 1010A  |            |
| 480-91340-2      | SE1502-111815-1130 | Total/NA  | Solid  | 1010A  |            |
| 480-91340-3      | SE1504-111815-1215 | Total/NA  | Solid  | 1010A  |            |
| 480-91340-4      | SE1503-111815-1300 | Total/NA  | Solid  | 1010A  |            |
| 480-91340-5      | SE1505-111815-1330 | Total/NA  | Solid  | 1010A  |            |
| LCS 480-276347/1 | Lab Control Sample | Total/NA  | Solid  | 1010A  |            |

### Analysis Batch: 276547

| Lab Sample ID  | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|----------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1    | SE1501-111815-1100 | Total/NA  | Solid  | 9095B  |            |
| 480-91340-2    | SE1502-111815-1130 | Total/NA  | Solid  | 9095B  |            |
| 480-91340-3    | SE1504-111815-1215 | Total/NA  | Solid  | 9095B  |            |
| 480-91340-3 DU | SE1504-111815-1215 | Total/NA  | Solid  | 9095B  |            |

TestAmerica Buffalo

## QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

### General Chemistry (Continued)

#### Analysis Batch: 276547 (Continued)

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|---------------|--------------------|-----------|--------|--------|------------|
| 480-91340-4   | SE1503-111815-1300 | Total/NA  | Solid  | 9095B  |            |
| 480-91340-5   | SE1505-111815-1330 | Total/NA  | Solid  | 9095B  |            |

#### Analysis Batch: 276578

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 480-91340-1      | SE1501-111815-1100 | Total/NA  | Solid  | 9045D  |            |
| 480-91340-2      | SE1502-111815-1130 | Total/NA  | Solid  | 9045D  |            |
| 480-91340-3      | SE1504-111815-1215 | Total/NA  | Solid  | 9045D  |            |
| 480-91340-4      | SE1503-111815-1300 | Total/NA  | Solid  | 9045D  |            |
| 480-91340-4 DU   | SE1503-111815-1300 | Total/NA  | Solid  | 9045D  |            |
| 480-91340-5      | SE1505-111815-1330 | Total/NA  | Solid  | 9045D  |            |
| LCS 480-276578/1 | Lab Control Sample | Total/NA  | Solid  | 9045D  |            |



# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1501-111815-1100**

**Date Collected: 11/18/15 11:00**

**Date Received: 11/19/15 02:15**

**Lab Sample ID: 480-91340-1**

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 275834       | 11/19/15 08:51       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277733       | 12/02/15 13:53       | GVF     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276163       | 11/20/15 12:54       | CPH     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 276397       | 11/23/15 14:02       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276110       | 11/20/15 11:10       | KJ1     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276291       | 11/21/15 02:08       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276128       | 11/20/15 11:30       | JRK     | TAL BUF |
| TCLP      | Analysis   | 7470A        |     | 1               | 276275       | 11/20/15 15:49       | JRK     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 276347       | 11/21/15 17:47       | ZRJ     | TAL BUF |
| Total/NA  | Prep       | 7.3.3        |     |                 | 275920       | 11/19/15 05:15       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 275965       | 11/19/15 14:47       | KMF     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 275922       | 11/19/15 05:15       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 275957       | 11/19/15 14:36       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 276578       | 11/23/15 20:00       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276017       | 11/19/15 20:54       | CMK     | TAL BUF |

**Client Sample ID: SE1501-111815-1100**

**Date Collected: 11/18/15 11:00**

**Date Received: 11/19/15 02:15**

**Lab Sample ID: 480-91340-1**

**Matrix: Solid**

**Percent Solids: 54.4**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276052       | 11/20/15 08:12       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276208       | 11/21/15 02:15       | KS      | TAL BUF |

**Client Sample ID: SE1502-111815-1130**

**Date Collected: 11/18/15 11:30**

**Date Received: 11/19/15 02:15**

**Lab Sample ID: 480-91340-2**

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 275834       | 11/19/15 08:51       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277733       | 12/02/15 14:21       | GVF     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276163       | 11/20/15 12:54       | CPH     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 276397       | 11/23/15 14:29       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276110       | 11/20/15 11:10       | KJ1     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276291       | 11/21/15 02:11       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276128       | 11/20/15 11:30       | JRK     | TAL BUF |

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# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1502-111815-1130**

**Lab Sample ID: 480-91340-2**

**Date Collected: 11/18/15 11:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Analysis   | 7470A        |     | 1               | 276275       | 11/20/15 15:51       | JRK     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 276347       | 11/21/15 17:47       | ZRJ     | TAL BUF |
| Total/NA  | Prep       | 7.3.3        |     |                 | 275920       | 11/19/15 05:15       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 275965       | 11/19/15 14:51       | KMF     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 275922       | 11/19/15 05:15       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 275957       | 11/19/15 14:36       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 276578       | 11/23/15 20:00       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276017       | 11/19/15 20:54       | CMK     | TAL BUF |

**Client Sample ID: SE1502-111815-1130**

**Lab Sample ID: 480-91340-2**

**Date Collected: 11/18/15 11:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

**Percent Solids: 71.1**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276052       | 11/20/15 08:12       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276208       | 11/21/15 02:31       | KS      | TAL BUF |

**Client Sample ID: SE1504-111815-1215**

**Lab Sample ID: 480-91340-3**

**Date Collected: 11/18/15 12:15**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 275834       | 11/19/15 08:51       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277733       | 12/02/15 14:48       | GVF     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276163       | 11/20/15 12:54       | CPH     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 276397       | 11/23/15 14:55       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276110       | 11/20/15 11:10       | KJ1     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276291       | 11/21/15 02:24       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276128       | 11/20/15 11:30       | JRK     | TAL BUF |
| TCLP      | Analysis   | 7470A        |     | 1               | 276275       | 11/20/15 15:53       | JRK     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 276347       | 11/21/15 17:47       | ZRJ     | TAL BUF |
| Total/NA  | Prep       | 7.3.3        |     |                 | 275920       | 11/19/15 05:15       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 275965       | 11/19/15 14:53       | KMF     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 275922       | 11/19/15 05:15       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 275957       | 11/19/15 14:36       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 276578       | 11/23/15 20:00       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276017       | 11/19/15 20:54       | CMK     | TAL BUF |

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# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1504-111815-1215**

**Lab Sample ID: 480-91340-3**

**Date Collected: 11/18/15 12:15**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

**Percent Solids: 59.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276052       | 11/20/15 08:12       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276208       | 11/21/15 02:47       | KS      | TAL BUF |

**Client Sample ID: SE1503-111815-1300**

**Lab Sample ID: 480-91340-4**

**Date Collected: 11/18/15 13:00**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 275834       | 11/19/15 08:51       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277733       | 12/02/15 15:16       | GVF     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276163       | 11/20/15 12:54       | CPH     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 276397       | 11/23/15 15:21       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276110       | 11/20/15 11:10       | KJ1     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276291       | 11/21/15 02:28       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276128       | 11/20/15 11:30       | JRK     | TAL BUF |
| TCLP      | Analysis   | 7470A        |     | 1               | 276275       | 11/20/15 15:55       | JRK     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 276347       | 11/21/15 17:47       | ZRJ     | TAL BUF |
| Total/NA  | Prep       | 7.3.3        |     |                 | 275920       | 11/19/15 05:15       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 275965       | 11/19/15 14:54       | KMF     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 275922       | 11/19/15 05:15       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 275957       | 11/19/15 14:36       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 276578       | 11/23/15 20:00       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276017       | 11/19/15 20:54       | CMK     | TAL BUF |

**Client Sample ID: SE1503-111815-1300**

**Lab Sample ID: 480-91340-4**

**Date Collected: 11/18/15 13:00**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

**Percent Solids: 67.1**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276052       | 11/20/15 08:12       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276208       | 11/21/15 03:03       | KS      | TAL BUF |

**Client Sample ID: SE1505-111815-1330**

**Lab Sample ID: 480-91340-5**

**Date Collected: 11/18/15 13:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 275834       | 11/19/15 08:51       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277733       | 12/02/15 15:43       | GVF     | TAL BUF |

TestAmerica Buffalo

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

**Client Sample ID: SE1505-111815-1330**

**Lab Sample ID: 480-91340-5**

**Date Collected: 11/18/15 13:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276163       | 11/20/15 12:54       | CPH     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 276397       | 11/23/15 15:48       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276110       | 11/20/15 11:10       | KJ1     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276291       | 11/21/15 02:31       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 275832       | 11/19/15 08:48       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276128       | 11/20/15 11:30       | JRK     | TAL BUF |
| TCLP      | Analysis   | 7470A        |     | 1               | 276275       | 11/20/15 15:57       | JRK     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 276347       | 11/21/15 17:47       | ZRJ     | TAL BUF |
| Total/NA  | Prep       | 7.3.3        |     |                 | 275920       | 11/19/15 05:15       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 275965       | 11/19/15 14:56       | KMF     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 275922       | 11/19/15 05:15       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 275957       | 11/19/15 14:36       | KMF     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 276578       | 11/23/15 20:00       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276017       | 11/19/15 20:54       | CMK     | TAL BUF |

**Client Sample ID: SE1505-111815-1330**

**Lab Sample ID: 480-91340-5**

**Date Collected: 11/18/15 13:30**

**Matrix: Solid**

**Date Received: 11/19/15 02:15**

**Percent Solids: 71.7**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276052       | 11/20/15 08:12       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276208       | 11/21/15 03:18       | KS      | TAL BUF |

## Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

# Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

## Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|-----------|---------|------------|------------------|-----------------|
| New York  | NELAP   | 2          | 10026            | 03-31-16        |

The following analytes are included in this report, but certification is not offered by the governing authority:

| Analysis Method | Prep Method | Matrix | Analyte           |
|-----------------|-------------|--------|-------------------|
| 7470A           | 7470A       | Solid  | Mercury           |
| 9012            | 7.3.3       | Solid  | Cyanide, Reactive |
| 9034            | 7.3.4       | Solid  | Sulfide, Reactive |
| Moisture        |             | Solid  | Percent Moisture  |
| Moisture        |             | Solid  | Percent Solids    |

## Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

| Method   | Method Description                                     | Protocol | Laboratory |
|----------|--------------------------------------------------------|----------|------------|
| 8260C    | Volatile Organic Compounds by GC/MS                    | SW846    | TAL BUF    |
| 8270D    | Semivolatile Organic Compounds (GC/MS)                 | SW846    | TAL BUF    |
| 8082A    | Polychlorinated Biphenyls (PCBs) by Gas Chromatography | SW846    | TAL BUF    |
| 6010C    | Metals (ICP)                                           | SW846    | TAL BUF    |
| 7470A    | Mercury (CVAA)                                         | SW846    | TAL BUF    |
| 1010A    | Ignitability, Pensky-Martens Closed Cup Method         | SW846    | TAL BUF    |
| 9012     | Cyanide, Reactive                                      | SW846    | TAL BUF    |
| 9034     | Sulfide, Reactive                                      | SW846    | TAL BUF    |
| 9045D    | pH                                                     | SW846    | TAL BUF    |
| 9095B    | Paint Filter                                           | SW846    | TAL BUF    |
| Moisture | Percent Moisture                                       | EPA      | TAL BUF    |

### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

## Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91340-1

| Lab Sample ID | Client Sample ID   | Matrix | Collected      | Received       |
|---------------|--------------------|--------|----------------|----------------|
| 480-91340-1   | SE1501-111815-1100 | Solid  | 11/18/15 11:00 | 11/19/15 02:15 |
| 480-91340-2   | SE1502-111815-1130 | Solid  | 11/18/15 11:30 | 11/19/15 02:15 |
| 480-91340-3   | SE1504-111815-1215 | Solid  | 11/18/15 12:15 | 11/19/15 02:15 |
| 480-91340-4   | SE1503-111815-1300 | Solid  | 11/18/15 13:00 | 11/19/15 02:15 |
| 480-91340-5   | SE1505-111815-1330 | Solid  | 11/18/15 13:30 | 11/19/15 02:15 |

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Temperature on Receipt \_\_\_\_\_

Drinking Water? Yes ☐ No ☐

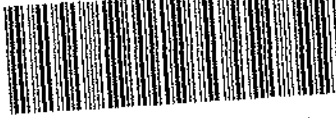
## Chain of Custody Record

TAL-4124 (1007)

|                                                                   |                                                                |                               |                                          |
|-------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------|------------------------------------------|
| Client<br><b>Haley &amp; Aldrich</b>                              | Project Manager<br><b>Doug Allen</b>                           | Date<br><b>11/18/15</b>       | Chain of Custody Number<br><b>292377</b> |
| Address<br><b>3 Bedford Farms Drive</b>                           | Telephone Number (Area Code)/Fax Number<br><b>603-341-3320</b> | Lab Number                    | Page <b>1</b> of <b>1</b>                |
| City<br><b>Bedford</b>                                            | State<br><b>NH</b>                                             | Zip Code<br><b>03110</b>      |                                          |
| Project Name and Location (State)<br><b>Seneca Falls MGP site</b> | Carrier/Waybill Number                                         | Lab Contact<br><b>M. Deyo</b> |                                          |
| Contract/Purchase Order/Quote No.                                 |                                                                |                               |                                          |

| Sample I.D. No. and Description<br>(Containers for each sample may be combined on one line) | Date     | Time | Matrix |         |     |      | Containers & Preservatives |       |      |     |      |      | Analysis (Attach list if more space is needed) |   |   |   |   |   | Special Instructions/<br>Conditions of Receipt |
|---------------------------------------------------------------------------------------------|----------|------|--------|---------|-----|------|----------------------------|-------|------|-----|------|------|------------------------------------------------|---|---|---|---|---|------------------------------------------------|
|                                                                                             |          |      | Air    | Aqueous | Sed | Soil | Unpres.                    | H2SO4 | HNO3 | HCl | NaOH | ZnAc |                                                |   |   |   |   |   |                                                |
| SE1501-111815-1100                                                                          | 11/18/15 | 1100 |        |         | X   |      |                            |       |      |     |      |      | X                                              | X | X | X | X | X | Normal                                         |
| SE1502-111815-1130                                                                          |          | 1130 |        |         |     |      |                            |       |      |     |      |      |                                                |   |   |   |   |   |                                                |
| SE1504-111815-1215                                                                          |          | 1215 |        |         |     |      |                            |       |      |     |      |      |                                                |   |   |   |   |   |                                                |
| SE1503-111815-1300                                                                          |          | 1300 |        |         |     |      |                            |       |      |     |      |      |                                                |   |   |   |   |   |                                                |
| SE1505-111815-1330                                                                          |          | 1330 |        |         |     |      |                            |       |      |     |      |      |                                                |   |   |   |   |   |                                                |

AP  
11/18/15



490-91340 Chain of Custody

|                                        |                                    |                                           |                                          |                                      |                                                                     |
|----------------------------------------|------------------------------------|-------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------------------|
| Possible Hazard Identification         |                                    | Sample Disposal                           |                                          | QC Requirements (Specify)            |                                                                     |
| <input type="checkbox"/> Non-Hazard    | <input type="checkbox"/> Flammable | <input type="checkbox"/> Return To Client | <input type="checkbox"/> Disposal By Lab | <input type="checkbox"/> Archive For | (A fee may be assessed if samples are retained longer than 1 month) |
| <input type="checkbox"/> Skin Irritant | <input type="checkbox"/> Poison B  | <input type="checkbox"/> Unknown          | <input type="checkbox"/> 21 Days         | <input type="checkbox"/> 14 Days     | <input type="checkbox"/> 7 Days                                     |
| Turn Around Time Required              |                                    | Other Standard                            |                                          |                                      |                                                                     |
| <input type="checkbox"/> 24 Hours      | <input type="checkbox"/> 48 Hours  | Date                                      | Time                                     | Date                                 | Time                                                                |
| 1. Relinquished By                     | <b>Reigley, Sgr</b>                | 11/18/15                                  | 1420                                     | 11/18/15                             | 1420                                                                |
| 2. Relinquished By                     |                                    |                                           |                                          |                                      |                                                                     |
| 3. Relinquished By                     |                                    |                                           |                                          |                                      |                                                                     |
| Comments                               |                                    | D.6,0.9 #1                                |                                          |                                      |                                                                     |

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 480-91340-1

**Login Number: 91340**

**List Source: TestAmerica Buffalo**

**List Number: 1**

**Creator: Williams, Christopher S**

| Question                                                                         | Answer | Comment |
|----------------------------------------------------------------------------------|--------|---------|
| Radioactivity either was not measured or, if measured, is at or below background | True   |         |
| The cooler's custody seal, if present, is intact.                                | True   |         |
| The cooler or samples do not appear to have been compromised or tampered with.   | True   |         |
| Samples were received on ice.                                                    | True   |         |
| Cooler Temperature is acceptable.                                                | True   |         |
| Cooler Temperature is recorded.                                                  | True   |         |
| COC is present.                                                                  | True   |         |
| COC is filled out in ink and legible.                                            | True   |         |
| COC is filled out with all pertinent information.                                | True   |         |
| Is the Field Sampler's name present on COC?                                      | True   |         |
| There are no discrepancies between the sample IDs on the containers and the COC. | True   |         |
| Samples are received within Holding Time.                                        | True   |         |
| Sample containers have legible labels.                                           | True   |         |
| Containers are not broken or leaking.                                            | True   |         |
| Sample collection date/times are provided.                                       | True   |         |
| Appropriate sample containers are used.                                          | True   |         |
| Sample bottles are completely filled.                                            | True   |         |
| Sample Preservation Verified                                                     | True   |         |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True   |         |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.     | N/A    |         |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True   |         |
| Multiphasic samples are not present.                                             | True   |         |
| Samples do not require splitting or compositing.                                 | True   |         |
| Sampling Company provided.                                                       | True   | H AND A |
| Samples received within 48 hours of sampling.                                    | True   |         |
| Samples requiring field filtration have been filtered in the field.              | N/A    |         |
| Chlorine Residual checked.                                                       | N/A    |         |

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-91551-1

Client Project/Site: RG&E Seneca Falls MGP Site

For:

Haley & Aldrich, Inc.

3 Bedford Farms Drive

Beford, New Hampshire 03110

Attn: Douglas C. Allen



Authorized for release by:

12/7/2015 10:35:39 AM

Rebecca Jones, Project Management Assistant I

[rebecca.jones@testamericainc.com](mailto:rebecca.jones@testamericainc.com)

Designee for

Melissa Deyo, Project Manager I

(716)504-9874

[melissa.deyo@testamericainc.com](mailto:melissa.deyo@testamericainc.com)

### LINKS

Review your project  
results through

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Have a Question?



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[www.testamericainc.com](http://www.testamericainc.com)

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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## Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

### Qualifiers

#### GC/MS VOA

| Qualifier | Qualifier Description                     |
|-----------|-------------------------------------------|
| *         | LCS or LCSD is outside acceptance limits. |

#### GC/MS Semi VOA

| Qualifier | Qualifier Description                                                                                          |
|-----------|----------------------------------------------------------------------------------------------------------------|
| B         | Compound was found in the blank and sample.                                                                    |
| J         | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

#### Metals

| Qualifier | Qualifier Description                                                                                          |
|-----------|----------------------------------------------------------------------------------------------------------------|
| J         | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| ^         | ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits. |

#### General Chemistry

| Qualifier | Qualifier Description                                                                                |
|-----------|------------------------------------------------------------------------------------------------------|
| HF        | Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. |

### Glossary

| Abbreviation   | These commonly used abbreviations may or may not be present in this report.                                 |
|----------------|-------------------------------------------------------------------------------------------------------------|
| □              | Listed under the "D" column to designate that the result is reported on a dry weight basis                  |
| %R             | Percent Recovery                                                                                            |
| CFL            | Contains Free Liquid                                                                                        |
| CNF            | Contains no Free Liquid                                                                                     |
| DER            | Duplicate error ratio (normalized absolute difference)                                                      |
| Dil Fac        | Dilution Factor                                                                                             |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC            | Decision level concentration                                                                                |
| MDA            | Minimum detectable activity                                                                                 |
| EDL            | Estimated Detection Limit                                                                                   |
| MDC            | Minimum detectable concentration                                                                            |
| MDL            | Method Detection Limit                                                                                      |
| ML             | Minimum Level (Dioxin)                                                                                      |
| NC             | Not Calculated                                                                                              |
| ND             | Not detected at the reporting limit (or MDL or EDL if shown)                                                |
| PQL            | Practical Quantitation Limit                                                                                |
| QC             | Quality Control                                                                                             |
| RER            | Relative error ratio                                                                                        |
| RL             | Reporting Limit or Requested Limit (Radiochemistry)                                                         |
| RPD            | Relative Percent Difference, a measure of the relative difference between two points                        |
| TEF            | Toxicity Equivalent Factor (Dioxin)                                                                         |
| TEQ            | Toxicity Equivalent Quotient (Dioxin)                                                                       |

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Job ID: 480-91551-1

### Laboratory: TestAmerica Buffalo

#### Narrative

#### Job Narrative 480-91551-1

#### Receipt

The samples were received on 11/21/2015 1:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.1° C and 0.2° C.

#### GC/MS VOA

Method(s) 8260C: Due to the co-elution of Ethyl Acetate with 2-Butanone in the full spike solution, these analytes exceeded control limits in the laboratory control sample (LCS) associated with batch 277923: TP1504-111915-1145 (480-91551-1), TP1502-111915-1320 (480-91551-2), TP1501-111915-1440 (480-91551-3), TP1503-111915-1530 (480-91551-4), TP1503-111915-1545 (480-91551-5) and TP1505-112015-0900 (480-91551-6).

Method(s) 8260C: The following samples were diluted due to the nature of the TCLP sample matrix: LB 480-276443/1-A, TP1504-111915-1145 (480-91551-1), TP1502-111915-1320 (480-91551-2), TP1501-111915-1440 (480-91551-3), TP1503-111915-1530 (480-91551-4), TP1503-111915-1545 (480-91551-5) and TP1505-112015-0900 (480-91551-6). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC/MS Semi VOA

Method(s) 8270D: The continuing calibration verification (CCV) analyzed in batch 480-277509 was outside the method criteria for the following analyte: pentachlorophenol. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Metals

Method(s) 6010C: The low level continuing calibration verification (CCVL 480-276979/41) for analytical batch 480-276979 contained TCLP Chromium above the upper quality control limit. All reported samples associated with this CCVL were either ND for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCVL; therefore, re-analysis of samples TP1503-111915-1545 (480-91551-5) and TP1505-112015-0900 (480-91551-6) was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

Method(s) 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: TP1504-111915-1145 (480-91551-1), TP1502-111915-1320 (480-91551-2), TP1501-111915-1440 (480-91551-3), TP1503-111915-1530 (480-91551-4), TP1503-111915-1545 (480-91551-5) and TP1505-112015-0900 (480-91551-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Organic Prep

Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with 276687.

Method(s) 3550C: The following sample: TP1501-111915-1440 (480-91551-3) was decanted prior to preparation.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Client Sample ID: TP1504-111915-1145

## Lab Sample ID: 480-91551-1

| Analyte     | Result  | Qualifier | NONE   | NONE    | Unit      | Dil Fac | D | Method | Prep Type |
|-------------|---------|-----------|--------|---------|-----------|---------|---|--------|-----------|
| Free Liquid | failed  |           |        |         | mL/100g   | 1       |   | 9095B  | Total/NA  |
| Analyte     | Result  | Qualifier | RL     | MDL     | Unit      | Dil Fac | D | Method | Prep Type |
| Pyridine    | 0.0012  | J B       | 0.025  | 0.00041 | mg/L      | 1       |   | 8270D  | TCLP      |
| Barium      | 0.29    | J         | 1.0    | 0.10    | mg/L      | 1       |   | 6010C  | TCLP      |
| Cadmium     | 0.00063 | J         | 0.0020 | 0.00050 | mg/L      | 1       |   | 6010C  | TCLP      |
| Lead        | 0.0034  | J         | 0.020  | 0.0030  | mg/L      | 1       |   | 6010C  | TCLP      |
| Analyte     | Result  | Qualifier | RL     | RL      | Unit      | Dil Fac | D | Method | Prep Type |
| Flashpoint  | >176.0  |           | 50.0   | 50.0    | Degrees F | 1       |   | 1010A  | Total/NA  |
| pH          | 7.63    | HF        | 0.100  | 0.100   | SU        | 1       |   | 9045D  | Total/NA  |

## Client Sample ID: TP1502-111915-1320

## Lab Sample ID: 480-91551-2

| Analyte     | Result  | Qualifier | NONE    | NONE    | Unit      | Dil Fac | D | Method | Prep Type |
|-------------|---------|-----------|---------|---------|-----------|---------|---|--------|-----------|
| Free Liquid | passed  |           |         |         | mL/100g   | 1       |   | 9095B  | Total/NA  |
| Analyte     | Result  | Qualifier | RL      | MDL     | Unit      | Dil Fac | D | Method | Prep Type |
| Pyridine    | 0.0013  | J B       | 0.025   | 0.00041 | mg/L      | 1       |   | 8270D  | TCLP      |
| Arsenic     | 0.012   | J         | 0.015   | 0.0056  | mg/L      | 1       |   | 6010C  | TCLP      |
| Barium      | 0.80    | J         | 1.0     | 0.10    | mg/L      | 1       |   | 6010C  | TCLP      |
| Cadmium     | 0.0038  |           | 0.0020  | 0.00050 | mg/L      | 1       |   | 6010C  | TCLP      |
| Lead        | 0.059   |           | 0.020   | 0.0030  | mg/L      | 1       |   | 6010C  | TCLP      |
| Mercury     | 0.00044 |           | 0.00020 | 0.00012 | mg/L      | 1       |   | 7470A  | TCLP      |
| Analyte     | Result  | Qualifier | RL      | RL      | Unit      | Dil Fac | D | Method | Prep Type |
| Flashpoint  | >176.0  |           | 50.0    | 50.0    | Degrees F | 1       |   | 1010A  | Total/NA  |
| pH          | 8.23    | HF        | 0.100   | 0.100   | SU        | 1       |   | 9045D  | Total/NA  |

## Client Sample ID: TP1501-111915-1440

## Lab Sample ID: 480-91551-3

| Analyte     | Result  | Qualifier | NONE   | NONE    | Unit      | Dil Fac | D | Method | Prep Type |
|-------------|---------|-----------|--------|---------|-----------|---------|---|--------|-----------|
| Free Liquid | passed  |           |        |         | mL/100g   | 1       |   | 9095B  | Total/NA  |
| Analyte     | Result  | Qualifier | RL     | MDL     | Unit      | Dil Fac | D | Method | Prep Type |
| Barium      | 0.41    | J         | 1.0    | 0.10    | mg/L      | 1       |   | 6010C  | TCLP      |
| Cadmium     | 0.00071 | J         | 0.0020 | 0.00050 | mg/L      | 1       |   | 6010C  | TCLP      |
| Lead        | 0.0051  | J         | 0.020  | 0.0030  | mg/L      | 1       |   | 6010C  | TCLP      |
| Analyte     | Result  | Qualifier | RL     | RL      | Unit      | Dil Fac | D | Method | Prep Type |
| Flashpoint  | >176.0  |           | 50.0   | 50.0    | Degrees F | 1       |   | 1010A  | Total/NA  |
| pH          | 8.28    | HF        | 0.100  | 0.100   | SU        | 1       |   | 9045D  | Total/NA  |

## Client Sample ID: TP1503-111915-1530

## Lab Sample ID: 480-91551-4

| Analyte     | Result  | Qualifier | NONE   | NONE    | Unit      | Dil Fac | D | Method | Prep Type |
|-------------|---------|-----------|--------|---------|-----------|---------|---|--------|-----------|
| Free Liquid | passed  |           |        |         | mL/100g   | 1       |   | 9095B  | Total/NA  |
| Analyte     | Result  | Qualifier | RL     | MDL     | Unit      | Dil Fac | D | Method | Prep Type |
| Pyridine    | 0.0011  | J B       | 0.025  | 0.00041 | mg/L      | 1       |   | 8270D  | TCLP      |
| Barium      | 0.43    | J         | 1.0    | 0.10    | mg/L      | 1       |   | 6010C  | TCLP      |
| Cadmium     | 0.00093 | J         | 0.0020 | 0.00050 | mg/L      | 1       |   | 6010C  | TCLP      |
| Lead        | 0.0082  | J         | 0.020  | 0.0030  | mg/L      | 1       |   | 6010C  | TCLP      |
| Analyte     | Result  | Qualifier | RL     | RL      | Unit      | Dil Fac | D | Method | Prep Type |
| Flashpoint  | >176.0  |           | 50.0   | 50.0    | Degrees F | 1       |   | 1010A  | Total/NA  |

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Client Sample ID: TP1503-111915-1530 (Continued)

## Lab Sample ID: 480-91551-4

| Analyte | Result | Qualifier | RL    | RL    | Unit | Dil | Fac | D | Method | Prep Type |
|---------|--------|-----------|-------|-------|------|-----|-----|---|--------|-----------|
| pH      | 7.70   | HF        | 0.100 | 0.100 | SU   | 1   |     |   | 9045D  | Total/NA  |

## Client Sample ID: TP1503-111915-1545

## Lab Sample ID: 480-91551-5

| Analyte     | Result | Qualifier | NONE   | NONE    | Unit      | Dil | Fac | D | Method | Prep Type |
|-------------|--------|-----------|--------|---------|-----------|-----|-----|---|--------|-----------|
| Free Liquid | passed |           |        |         | mL/100g   | 1   |     |   | 9095B  | Total/NA  |
| Analyte     | Result | Qualifier | RL     | MDL     | Unit      | Dil | Fac | D | Method | Prep Type |
| Pyridine    | 0.0017 | J B       | 0.025  | 0.00041 | mg/L      | 1   |     |   | 8270D  | TCLP      |
| Barium      | 0.39   | J         | 1.0    | 0.10    | mg/L      | 1   |     |   | 6010C  | TCLP      |
| Cadmium     | 0.0023 |           | 0.0020 | 0.00050 | mg/L      | 1   |     |   | 6010C  | TCLP      |
| Analyte     | Result | Qualifier | RL     | RL      | Unit      | Dil | Fac | D | Method | Prep Type |
| Flashpoint  | >176.0 |           | 50.0   | 50.0    | Degrees F | 1   |     |   | 1010A  | Total/NA  |
| pH          | 8.44   | HF        | 0.100  | 0.100   | SU        | 1   |     |   | 9045D  | Total/NA  |

## Client Sample ID: TP1505-112015-0900

## Lab Sample ID: 480-91551-6

| Analyte     | Result | Qualifier | NONE   | NONE    | Unit      | Dil | Fac | D | Method | Prep Type |
|-------------|--------|-----------|--------|---------|-----------|-----|-----|---|--------|-----------|
| Free Liquid | passed |           |        |         | mL/100g   | 1   |     |   | 9095B  | Total/NA  |
| Analyte     | Result | Qualifier | RL     | MDL     | Unit      | Dil | Fac | D | Method | Prep Type |
| Pyridine    | 0.0014 | J B       | 0.025  | 0.00041 | mg/L      | 1   |     |   | 8270D  | TCLP      |
| Arsenic     | 0.0095 | J         | 0.015  | 0.0056  | mg/L      | 1   |     |   | 6010C  | TCLP      |
| Barium      | 0.91   | J         | 1.0    | 0.10    | mg/L      | 1   |     |   | 6010C  | TCLP      |
| Cadmium     | 0.0042 |           | 0.0020 | 0.00050 | mg/L      | 1   |     |   | 6010C  | TCLP      |
| Lead        | 0.16   |           | 0.020  | 0.0030  | mg/L      | 1   |     |   | 6010C  | TCLP      |
| Analyte     | Result | Qualifier | RL     | RL      | Unit      | Dil | Fac | D | Method | Prep Type |
| Flashpoint  | >176.0 |           | 50.0   | 50.0    | Degrees F | 1   |     |   | 1010A  | Total/NA  |
| pH          | 8.61   | HF        | 0.100  | 0.100   | SU        | 1   |     |   | 9045D  | Total/NA  |

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo



# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1504-111915-1145**

**Lab Sample ID: 480-91551-1**

**Date Collected: 11/19/15 11:45**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND     |           | 0.010 | 0.0021 | mg/L |   |          | 12/03/15 12:27 | 10      |
| 2-Butanone (MEK)     | ND     | *         | 0.050 | 0.013  | mg/L |   |          | 12/03/15 12:27 | 10      |
| Benzene              | ND     |           | 0.010 | 0.0041 | mg/L |   |          | 12/03/15 12:27 | 10      |
| Carbon tetrachloride | ND     |           | 0.010 | 0.0027 | mg/L |   |          | 12/03/15 12:27 | 10      |
| Chlorobenzene        | ND     |           | 0.010 | 0.0075 | mg/L |   |          | 12/03/15 12:27 | 10      |
| Chloroform           | ND     |           | 0.010 | 0.0034 | mg/L |   |          | 12/03/15 12:27 | 10      |
| Tetrachloroethene    | ND     |           | 0.010 | 0.0036 | mg/L |   |          | 12/03/15 12:27 | 10      |
| Trichloroethene      | ND     |           | 0.010 | 0.0046 | mg/L |   |          | 12/03/15 12:27 | 10      |
| Vinyl chloride       | ND     |           | 0.010 | 0.0090 | mg/L |   |          | 12/03/15 12:27 | 10      |
| 1,1-Dichloroethene   | ND     |           | 0.010 | 0.0029 | mg/L |   |          | 12/03/15 12:27 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 102       |           | 66 - 137 |          | 12/03/15 12:27 | 10      |
| 4-Bromofluorobenzene (Surr)  | 95        |           | 73 - 120 |          | 12/03/15 12:27 | 10      |
| Toluene-d8 (Surr)            | 97        |           | 71 - 126 |          | 12/03/15 12:27 | 10      |
| Dibromofluoromethane (Surr)  | 94        |           | 60 - 140 |          | 12/03/15 12:27 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result        | Qualifier  | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|---------------|------------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND            |            | 0.010  | 0.00046 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| 2,4-Dinitrotoluene    | ND            |            | 0.0050 | 0.00045 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| 2,4,5-Trichlorophenol | ND            |            | 0.0050 | 0.00048 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| 2,4,6-Trichlorophenol | ND            |            | 0.0050 | 0.00061 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| 2-Methylphenol        | ND            |            | 0.0050 | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| 3-Methylphenol        | ND            |            | 0.010  | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| 4-Methylphenol        | ND            |            | 0.010  | 0.00036 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| Hexachlorobenzene     | ND            |            | 0.0050 | 0.00051 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| Hexachlorobutadiene   | ND            |            | 0.0050 | 0.00068 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| Hexachloroethane      | ND            |            | 0.0050 | 0.00059 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| Nitrobenzene          | ND            |            | 0.0050 | 0.00029 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| Pentachlorophenol     | ND            |            | 0.010  | 0.0022  | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| <b>Pyridine</b>       | <b>0.0012</b> | <b>J B</b> | 0.025  | 0.00041 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:02 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 101       |           | 52 - 132 | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| 2-Fluorobiphenyl            | 101       |           | 48 - 120 | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| 2-Fluorophenol (Surr)       | 55        |           | 20 - 120 | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| Nitrobenzene-d5 (Surr)      | 89        |           | 46 - 120 | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| p-Terphenyl-d14 (Surr)      | 105       |           | 67 - 150 | 11/24/15 11:06 | 12/01/15 19:02 | 1       |
| Phenol-d5 (Surr)            | 37        |           | 16 - 120 | 11/24/15 11:06 | 12/01/15 19:02 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte        | Result         | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------------|----------------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic        | ND             |           | 0.015  | 0.0056  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:55 | 1       |
| <b>Barium</b>  | <b>0.29</b>    | <b>J</b>  | 1.0    | 0.10    | mg/L |   | 11/24/15 10:50 | 11/25/15 12:55 | 1       |
| <b>Cadmium</b> | <b>0.00063</b> | <b>J</b>  | 0.0020 | 0.00050 | mg/L |   | 11/24/15 10:50 | 11/25/15 12:55 | 1       |
| Chromium       | ND             |           | 0.020  | 0.010   | mg/L |   | 11/24/15 10:50 | 11/25/15 12:55 | 1       |
| <b>Lead</b>    | <b>0.0034</b>  | <b>J</b>  | 0.020  | 0.0030  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:55 | 1       |
| Selenium       | ND             |           | 0.025  | 0.0087  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:55 | 1       |
| Silver         | ND             |           | 0.0060 | 0.0017  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:55 | 1       |

TestAmerica Buffalo



# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1504-111915-1145**

**Lab Sample ID: 480-91551-1**

**Date Collected: 11/19/15 11:45**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.00020 | 0.00012 | mg/L |   | 11/24/15 12:15 | 11/24/15 16:32 | 1       |

## General Chemistry

| Analyte     | Result | Qualifier | NONE | NONE | Unit    | D | Prepared | Analyzed       | Dil Fac |
|-------------|--------|-----------|------|------|---------|---|----------|----------------|---------|
| Free Liquid | failed |           |      |      | mL/100g |   |          | 11/23/15 10:40 | 1       |

| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/25/15 16:49 | 1       |
| Cyanide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/24/15 16:18 | 1       |
| Sulfide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/25/15 07:55 | 1       |
| pH                | 7.63   | HF        | 0.100 | 0.100 | SU        |   |                | 11/25/15 19:15 | 1       |

**Client Sample ID: TP1504-111915-1145**

**Lab Sample ID: 480-91551-1**

**Date Collected: 11/19/15 11:45**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 90.8**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte  | Result | Qualifier | RL   | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|------|-------|-------|---|----------------|----------------|---------|
| PCB-1016 | ND     |           | 0.21 | 0.041 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:03 | 1       |
| PCB-1221 | ND     |           | 0.21 | 0.041 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:03 | 1       |
| PCB-1232 | ND     |           | 0.21 | 0.041 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:03 | 1       |
| PCB-1242 | ND     |           | 0.21 | 0.041 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:03 | 1       |
| PCB-1248 | ND     |           | 0.21 | 0.041 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:03 | 1       |
| PCB-1254 | ND     |           | 0.21 | 0.097 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:03 | 1       |
| PCB-1260 | ND     |           | 0.21 | 0.097 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:03 | 1       |

| Surrogate              | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| Tetrachloro-m-xylene   | 100       |           | 60 - 154 | 11/23/15 12:01 | 11/23/15 18:03 | 1       |
| DCB Decachlorobiphenyl | 99        |           | 65 - 174 | 11/23/15 12:01 | 11/23/15 18:03 | 1       |

**Client Sample ID: TP1502-111915-1320**

**Lab Sample ID: 480-91551-2**

**Date Collected: 11/19/15 13:20**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND     |           | 0.010 | 0.0021 | mg/L |   |          | 12/03/15 12:51 | 10      |
| 2-Butanone (MEK)     | ND     | *         | 0.050 | 0.013  | mg/L |   |          | 12/03/15 12:51 | 10      |
| Benzene              | ND     |           | 0.010 | 0.0041 | mg/L |   |          | 12/03/15 12:51 | 10      |
| Carbon tetrachloride | ND     |           | 0.010 | 0.0027 | mg/L |   |          | 12/03/15 12:51 | 10      |
| Chlorobenzene        | ND     |           | 0.010 | 0.0075 | mg/L |   |          | 12/03/15 12:51 | 10      |
| Chloroform           | ND     |           | 0.010 | 0.0034 | mg/L |   |          | 12/03/15 12:51 | 10      |
| Tetrachloroethene    | ND     |           | 0.010 | 0.0036 | mg/L |   |          | 12/03/15 12:51 | 10      |
| Trichloroethene      | ND     |           | 0.010 | 0.0046 | mg/L |   |          | 12/03/15 12:51 | 10      |
| Vinyl chloride       | ND     |           | 0.010 | 0.0090 | mg/L |   |          | 12/03/15 12:51 | 10      |
| 1,1-Dichloroethene   | ND     |           | 0.010 | 0.0029 | mg/L |   |          | 12/03/15 12:51 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 100       |           | 66 - 137 |          | 12/03/15 12:51 | 10      |
| 4-Bromofluorobenzene (Surr)  | 96        |           | 73 - 120 |          | 12/03/15 12:51 | 10      |
| Toluene-d8 (Surr)            | 97        |           | 71 - 126 |          | 12/03/15 12:51 | 10      |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1502-111915-1320**

**Lab Sample ID: 480-91551-2**

**Date Collected: 11/19/15 13:20**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP (Continued)

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 90        |           | 60 - 140 |          | 12/03/15 12:51 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND     |           | 0.010  | 0.00046 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| 2,4-Dinitrotoluene    | ND     |           | 0.0050 | 0.00045 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| 2,4,5-Trichlorophenol | ND     |           | 0.0050 | 0.00048 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| 2,4,6-Trichlorophenol | ND     |           | 0.0050 | 0.00061 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| 2-Methylphenol        | ND     |           | 0.0050 | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| 3-Methylphenol        | ND     |           | 0.010  | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| 4-Methylphenol        | ND     |           | 0.010  | 0.00036 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| Hexachlorobenzene     | ND     |           | 0.0050 | 0.00051 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| Hexachlorobutadiene   | ND     |           | 0.0050 | 0.00068 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| Hexachloroethane      | ND     |           | 0.0050 | 0.00059 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| Nitrobenzene          | ND     |           | 0.0050 | 0.00029 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| Pentachlorophenol     | ND     |           | 0.010  | 0.0022  | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| Pyridine              | 0.0013 | J B       | 0.025  | 0.00041 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:28 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 91        |           | 52 - 132 | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| 2-Fluorobiphenyl            | 95        |           | 48 - 120 | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| 2-Fluorophenol (Surr)       | 55        |           | 20 - 120 | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| Nitrobenzene-d5 (Surr)      | 84        |           | 46 - 120 | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| p-Terphenyl-d14 (Surr)      | 93        |           | 67 - 150 | 11/24/15 11:06 | 12/01/15 19:28 | 1       |
| Phenol-d5 (Surr)            | 36        |           | 16 - 120 | 11/24/15 11:06 | 12/01/15 19:28 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte  | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | 0.012  | J         | 0.015  | 0.0056  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:58 | 1       |
| Barium   | 0.80   | J         | 1.0    | 0.10    | mg/L |   | 11/24/15 10:50 | 11/25/15 12:58 | 1       |
| Cadmium  | 0.0038 |           | 0.0020 | 0.00050 | mg/L |   | 11/24/15 10:50 | 11/25/15 12:58 | 1       |
| Chromium | ND     |           | 0.020  | 0.010   | mg/L |   | 11/24/15 10:50 | 11/25/15 12:58 | 1       |
| Lead     | 0.059  |           | 0.020  | 0.0030  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:58 | 1       |
| Selenium | ND     |           | 0.025  | 0.0087  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:58 | 1       |
| Silver   | ND     |           | 0.0060 | 0.0017  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:58 | 1       |

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result  | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|---------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | 0.00044 |           | 0.00020 | 0.00012 | mg/L |   | 11/24/15 12:15 | 11/24/15 16:33 | 1       |

## General Chemistry

| Analyte           | Result | Qualifier | NONE  | NONE  | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Free Liquid       | passed |           |       |       | mL/100g   |   |                | 11/23/15 10:40 | 1       |
| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/25/15 16:49 | 1       |
| Cyanide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/24/15 16:18 | 1       |
| Sulfide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/25/15 07:55 | 1       |
| pH                | 8.23   | HF        | 0.100 | 0.100 | SU        |   |                | 11/25/15 19:15 | 1       |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1502-111915-1320**

**Lab Sample ID: 480-91551-2**

**Date Collected: 11/19/15 13:20**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 90.7**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte  | Result | Qualifier | RL   | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|------|-------|-------|---|----------------|----------------|---------|
| PCB-1016 | ND     |           | 0.26 | 0.050 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:17 | 1       |
| PCB-1221 | ND     |           | 0.26 | 0.050 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:17 | 1       |
| PCB-1232 | ND     |           | 0.26 | 0.050 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:17 | 1       |
| PCB-1242 | ND     |           | 0.26 | 0.050 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:17 | 1       |
| PCB-1248 | ND     |           | 0.26 | 0.050 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:17 | 1       |
| PCB-1254 | ND     |           | 0.26 | 0.12  | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:17 | 1       |
| PCB-1260 | ND     |           | 0.26 | 0.12  | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:17 | 1       |

| Surrogate              | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| Tetrachloro-m-xylene   | 97        |           | 60 - 154 | 11/23/15 12:01 | 11/23/15 18:17 | 1       |
| DCB Decachlorobiphenyl | 108       |           | 65 - 174 | 11/23/15 12:01 | 11/23/15 18:17 | 1       |

**Client Sample ID: TP1501-111915-1440**

**Lab Sample ID: 480-91551-3**

**Date Collected: 11/19/15 14:40**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND     |           | 0.010 | 0.0021 | mg/L |   |          | 12/03/15 13:15 | 10      |
| 2-Butanone (MEK)     | ND     | *         | 0.050 | 0.013  | mg/L |   |          | 12/03/15 13:15 | 10      |
| Benzene              | ND     |           | 0.010 | 0.0041 | mg/L |   |          | 12/03/15 13:15 | 10      |
| Carbon tetrachloride | ND     |           | 0.010 | 0.0027 | mg/L |   |          | 12/03/15 13:15 | 10      |
| Chlorobenzene        | ND     |           | 0.010 | 0.0075 | mg/L |   |          | 12/03/15 13:15 | 10      |
| Chloroform           | ND     |           | 0.010 | 0.0034 | mg/L |   |          | 12/03/15 13:15 | 10      |
| Tetrachloroethene    | ND     |           | 0.010 | 0.0036 | mg/L |   |          | 12/03/15 13:15 | 10      |
| Trichloroethene      | ND     |           | 0.010 | 0.0046 | mg/L |   |          | 12/03/15 13:15 | 10      |
| Vinyl chloride       | ND     |           | 0.010 | 0.0090 | mg/L |   |          | 12/03/15 13:15 | 10      |
| 1,1-Dichloroethene   | ND     |           | 0.010 | 0.0029 | mg/L |   |          | 12/03/15 13:15 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 102       |           | 66 - 137 |          | 12/03/15 13:15 | 10      |
| 4-Bromofluorobenzene (Surr)  | 99        |           | 73 - 120 |          | 12/03/15 13:15 | 10      |
| Toluene-d8 (Surr)            | 96        |           | 71 - 126 |          | 12/03/15 13:15 | 10      |
| Dibromofluoromethane (Surr)  | 92        |           | 60 - 140 |          | 12/03/15 13:15 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND     |           | 0.010  | 0.00046 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| 2,4-Dinitrotoluene    | ND     |           | 0.0050 | 0.00045 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| 2,4,5-Trichlorophenol | ND     |           | 0.0050 | 0.00048 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| 2,4,6-Trichlorophenol | ND     |           | 0.0050 | 0.00061 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| 2-Methylphenol        | ND     |           | 0.0050 | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| 3-Methylphenol        | ND     |           | 0.010  | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| 4-Methylphenol        | ND     |           | 0.010  | 0.00036 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| Hexachlorobenzene     | ND     |           | 0.0050 | 0.00051 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| Hexachlorobutadiene   | ND     |           | 0.0050 | 0.00068 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| Hexachloroethane      | ND     |           | 0.0050 | 0.00059 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| Nitrobenzene          | ND     |           | 0.0050 | 0.00029 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| Pentachlorophenol     | ND     |           | 0.010  | 0.0022  | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| Pyridine              | ND     |           | 0.025  | 0.00041 | mg/L |   | 11/24/15 11:06 | 12/01/15 19:54 | 1       |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1501-111915-1440**

**Lab Sample ID: 480-91551-3**

**Date Collected: 11/19/15 14:40**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 86        |           | 52 - 132 | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| 2-Fluorobiphenyl            | 89        |           | 48 - 120 | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| 2-Fluorophenol (Surr)       | 50        |           | 20 - 120 | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| Nitrobenzene-d5 (Surr)      | 79        |           | 46 - 120 | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| p-Terphenyl-d14 (Surr)      | 86        |           | 67 - 150 | 11/24/15 11:06 | 12/01/15 19:54 | 1       |
| Phenol-d5 (Surr)            | 33        |           | 16 - 120 | 11/24/15 11:06 | 12/01/15 19:54 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte  | Result  | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|---------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | ND      |           | 0.015  | 0.0056  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:02 | 1       |
| Barium   | 0.41    | J         | 1.0    | 0.10    | mg/L |   | 11/24/15 10:50 | 11/25/15 13:02 | 1       |
| Cadmium  | 0.00071 | J         | 0.0020 | 0.00050 | mg/L |   | 11/24/15 10:50 | 11/25/15 13:02 | 1       |
| Chromium | ND      |           | 0.020  | 0.010   | mg/L |   | 11/24/15 10:50 | 11/25/15 13:02 | 1       |
| Lead     | 0.0051  | J         | 0.020  | 0.0030  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:02 | 1       |
| Selenium | ND      |           | 0.025  | 0.0087  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:02 | 1       |
| Silver   | ND      |           | 0.0060 | 0.0017  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:02 | 1       |

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.00020 | 0.00012 | mg/L |   | 11/24/15 12:15 | 11/24/15 16:35 | 1       |

## General Chemistry

| Analyte           | Result | Qualifier | NONE  | NONE  | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Free Liquid       | passed |           |       |       | mL/100g   |   |                | 11/23/15 10:40 | 1       |
| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/25/15 16:49 | 1       |
| Cyanide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/24/15 16:18 | 1       |
| Sulfide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/25/15 07:55 | 1       |
| pH                | 8.28   | HF        | 0.100 | 0.100 | SU        |   |                | 11/25/15 19:15 | 1       |

**Client Sample ID: TP1501-111915-1440**

**Lab Sample ID: 480-91551-3**

**Date Collected: 11/19/15 14:40**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 79.2**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte                | Result    | Qualifier | RL       | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|-------|-------|---|----------------|----------------|---------|
| PCB-1016               | ND        |           | 0.22     | 0.043 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:32 | 1       |
| PCB-1221               | ND        |           | 0.22     | 0.043 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:32 | 1       |
| PCB-1232               | ND        |           | 0.22     | 0.043 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:32 | 1       |
| PCB-1242               | ND        |           | 0.22     | 0.043 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:32 | 1       |
| PCB-1248               | ND        |           | 0.22     | 0.043 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:32 | 1       |
| PCB-1254               | ND        |           | 0.22     | 0.10  | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:32 | 1       |
| PCB-1260               | ND        |           | 0.22     | 0.10  | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:32 | 1       |
| Surrogate              | %Recovery | Qualifier | Limits   |       |       |   | Prepared       | Analyzed       | Dil Fac |
| Tetrachloro-m-xylene   | 100       |           | 60 - 154 |       |       |   | 11/23/15 12:01 | 11/23/15 18:32 | 1       |
| DCB Decachlorobiphenyl | 98        |           | 65 - 174 |       |       |   | 11/23/15 12:01 | 11/23/15 18:32 | 1       |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1503-111915-1530**

**Lab Sample ID: 480-91551-4**

**Date Collected: 11/19/15 15:30**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND     |           | 0.010 | 0.0021 | mg/L |   |          | 12/03/15 13:38 | 10      |
| 2-Butanone (MEK)     | ND     | *         | 0.050 | 0.013  | mg/L |   |          | 12/03/15 13:38 | 10      |
| Benzene              | ND     |           | 0.010 | 0.0041 | mg/L |   |          | 12/03/15 13:38 | 10      |
| Carbon tetrachloride | ND     |           | 0.010 | 0.0027 | mg/L |   |          | 12/03/15 13:38 | 10      |
| Chlorobenzene        | ND     |           | 0.010 | 0.0075 | mg/L |   |          | 12/03/15 13:38 | 10      |
| Chloroform           | ND     |           | 0.010 | 0.0034 | mg/L |   |          | 12/03/15 13:38 | 10      |
| Tetrachloroethene    | ND     |           | 0.010 | 0.0036 | mg/L |   |          | 12/03/15 13:38 | 10      |
| Trichloroethene      | ND     |           | 0.010 | 0.0046 | mg/L |   |          | 12/03/15 13:38 | 10      |
| Vinyl chloride       | ND     |           | 0.010 | 0.0090 | mg/L |   |          | 12/03/15 13:38 | 10      |
| 1,1-Dichloroethene   | ND     |           | 0.010 | 0.0029 | mg/L |   |          | 12/03/15 13:38 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 101       |           | 66 - 137 |          | 12/03/15 13:38 | 10      |
| 4-Bromofluorobenzene (Surr)  | 95        |           | 73 - 120 |          | 12/03/15 13:38 | 10      |
| Toluene-d8 (Surr)            | 96        |           | 71 - 126 |          | 12/03/15 13:38 | 10      |
| Dibromofluoromethane (Surr)  | 93        |           | 60 - 140 |          | 12/03/15 13:38 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND     |           | 0.010  | 0.00046 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| 2,4-Dinitrotoluene    | ND     |           | 0.0050 | 0.00045 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| 2,4,5-Trichlorophenol | ND     |           | 0.0050 | 0.00048 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| 2,4,6-Trichlorophenol | ND     |           | 0.0050 | 0.00061 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| 2-Methylphenol        | ND     |           | 0.0050 | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| 3-Methylphenol        | ND     |           | 0.010  | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| 4-Methylphenol        | ND     |           | 0.010  | 0.00036 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| Hexachlorobenzene     | ND     |           | 0.0050 | 0.00051 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| Hexachlorobutadiene   | ND     |           | 0.0050 | 0.00068 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| Hexachloroethane      | ND     |           | 0.0050 | 0.00059 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| Nitrobenzene          | ND     |           | 0.0050 | 0.00029 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| Pentachlorophenol     | ND     |           | 0.010  | 0.0022  | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| Pyridine              | 0.0011 | J B       | 0.025  | 0.00041 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:20 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 93        |           | 52 - 132 | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| 2-Fluorobiphenyl            | 97        |           | 48 - 120 | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| 2-Fluorophenol (Surr)       | 52        |           | 20 - 120 | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| Nitrobenzene-d5 (Surr)      | 93        |           | 46 - 120 | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| p-Terphenyl-d14 (Surr)      | 94        |           | 67 - 150 | 11/24/15 11:06 | 12/01/15 20:20 | 1       |
| Phenol-d5 (Surr)            | 35        |           | 16 - 120 | 11/24/15 11:06 | 12/01/15 20:20 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte  | Result  | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|---------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | ND      |           | 0.015  | 0.0056  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:05 | 1       |
| Barium   | 0.43    | J         | 1.0    | 0.10    | mg/L |   | 11/24/15 10:50 | 11/25/15 13:05 | 1       |
| Cadmium  | 0.00093 | J         | 0.0020 | 0.00050 | mg/L |   | 11/24/15 10:50 | 11/25/15 13:05 | 1       |
| Chromium | ND      |           | 0.020  | 0.010   | mg/L |   | 11/24/15 10:50 | 11/25/15 13:05 | 1       |
| Lead     | 0.0082  | J         | 0.020  | 0.0030  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:05 | 1       |
| Selenium | ND      |           | 0.025  | 0.0087  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:05 | 1       |
| Silver   | ND      |           | 0.0060 | 0.0017  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:05 | 1       |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1503-111915-1530**

**Lab Sample ID: 480-91551-4**

**Date Collected: 11/19/15 15:30**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.00020 | 0.00012 | mg/L |   | 11/24/15 12:15 | 11/24/15 16:36 | 1       |

## General Chemistry

| Analyte     | Result | Qualifier | NONE | NONE | Unit    | D | Prepared | Analyzed       | Dil Fac |
|-------------|--------|-----------|------|------|---------|---|----------|----------------|---------|
| Free Liquid | passed |           |      |      | mL/100g |   |          | 11/23/15 10:40 | 1       |

| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/25/15 16:49 | 1       |
| Cyanide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/24/15 16:18 | 1       |
| Sulfide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/25/15 07:55 | 1       |
| pH                | 7.70   | HF        | 0.100 | 0.100 | SU        |   |                | 11/25/15 19:15 | 1       |

**Client Sample ID: TP1503-111915-1530**

**Lab Sample ID: 480-91551-4**

**Date Collected: 11/19/15 15:30**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 88.0**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte  | Result | Qualifier | RL   | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|------|-------|-------|---|----------------|----------------|---------|
| PCB-1016 | ND     |           | 0.24 | 0.048 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:47 | 1       |
| PCB-1221 | ND     |           | 0.24 | 0.048 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:47 | 1       |
| PCB-1232 | ND     |           | 0.24 | 0.048 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:47 | 1       |
| PCB-1242 | ND     |           | 0.24 | 0.048 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:47 | 1       |
| PCB-1248 | ND     |           | 0.24 | 0.048 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:47 | 1       |
| PCB-1254 | ND     |           | 0.24 | 0.11  | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:47 | 1       |
| PCB-1260 | ND     |           | 0.24 | 0.11  | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 18:47 | 1       |

| Surrogate              | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| Tetrachloro-m-xylene   | 93        |           | 60 - 154 | 11/23/15 12:01 | 11/23/15 18:47 | 1       |
| DCB Decachlorobiphenyl | 95        |           | 65 - 174 | 11/23/15 12:01 | 11/23/15 18:47 | 1       |

**Client Sample ID: TP1503-111915-1545**

**Lab Sample ID: 480-91551-5**

**Date Collected: 11/19/15 15:45**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND     |           | 0.010 | 0.0021 | mg/L |   |          | 12/03/15 14:02 | 10      |
| 2-Butanone (MEK)     | ND     | *         | 0.050 | 0.013  | mg/L |   |          | 12/03/15 14:02 | 10      |
| Benzene              | ND     |           | 0.010 | 0.0041 | mg/L |   |          | 12/03/15 14:02 | 10      |
| Carbon tetrachloride | ND     |           | 0.010 | 0.0027 | mg/L |   |          | 12/03/15 14:02 | 10      |
| Chlorobenzene        | ND     |           | 0.010 | 0.0075 | mg/L |   |          | 12/03/15 14:02 | 10      |
| Chloroform           | ND     |           | 0.010 | 0.0034 | mg/L |   |          | 12/03/15 14:02 | 10      |
| Tetrachloroethene    | ND     |           | 0.010 | 0.0036 | mg/L |   |          | 12/03/15 14:02 | 10      |
| Trichloroethene      | ND     |           | 0.010 | 0.0046 | mg/L |   |          | 12/03/15 14:02 | 10      |
| Vinyl chloride       | ND     |           | 0.010 | 0.0090 | mg/L |   |          | 12/03/15 14:02 | 10      |
| 1,1-Dichloroethene   | ND     |           | 0.010 | 0.0029 | mg/L |   |          | 12/03/15 14:02 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 102       |           | 66 - 137 |          | 12/03/15 14:02 | 10      |
| 4-Bromofluorobenzene (Surr)  | 98        |           | 73 - 120 |          | 12/03/15 14:02 | 10      |
| Toluene-d8 (Surr)            | 96        |           | 71 - 126 |          | 12/03/15 14:02 | 10      |

TestAmerica Buffalo



# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1503-111915-1545**

**Lab Sample ID: 480-91551-5**

**Date Collected: 11/19/15 15:45**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP (Continued)

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| Dibromofluoromethane (Surr) | 93        |           | 60 - 140 |          | 12/03/15 14:02 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND     |           | 0.010  | 0.00046 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| 2,4-Dinitrotoluene    | ND     |           | 0.0050 | 0.00045 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| 2,4,5-Trichlorophenol | ND     |           | 0.0050 | 0.00048 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| 2,4,6-Trichlorophenol | ND     |           | 0.0050 | 0.00061 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| 2-Methylphenol        | ND     |           | 0.0050 | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| 3-Methylphenol        | ND     |           | 0.010  | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| 4-Methylphenol        | ND     |           | 0.010  | 0.00036 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| Hexachlorobenzene     | ND     |           | 0.0050 | 0.00051 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| Hexachlorobutadiene   | ND     |           | 0.0050 | 0.00068 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| Hexachloroethane      | ND     |           | 0.0050 | 0.00059 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| Nitrobenzene          | ND     |           | 0.0050 | 0.00029 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| Pentachlorophenol     | ND     |           | 0.010  | 0.0022  | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| Pyridine              | 0.0017 | J B       | 0.025  | 0.00041 | mg/L |   | 11/24/15 11:06 | 12/01/15 20:46 | 1       |

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 97        |           | 52 - 132 | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| 2-Fluorobiphenyl            | 95        |           | 48 - 120 | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| 2-Fluorophenol (Surr)       | 51        |           | 20 - 120 | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| Nitrobenzene-d5 (Surr)      | 86        |           | 46 - 120 | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| p-Terphenyl-d14 (Surr)      | 97        |           | 67 - 150 | 11/24/15 11:06 | 12/01/15 20:46 | 1       |
| Phenol-d5 (Surr)            | 35        |           | 16 - 120 | 11/24/15 11:06 | 12/01/15 20:46 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte  | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | ND     |           | 0.015  | 0.0056  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:18 | 1       |
| Barium   | 0.39   | J         | 1.0    | 0.10    | mg/L |   | 11/24/15 10:50 | 11/25/15 13:18 | 1       |
| Cadmium  | 0.0023 |           | 0.0020 | 0.00050 | mg/L |   | 11/24/15 10:50 | 11/25/15 13:18 | 1       |
| Chromium | ND     | ^         | 0.020  | 0.010   | mg/L |   | 11/24/15 10:50 | 11/25/15 13:18 | 1       |
| Lead     | ND     |           | 0.020  | 0.0030  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:18 | 1       |
| Selenium | ND     |           | 0.025  | 0.0087  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:18 | 1       |
| Silver   | ND     |           | 0.0060 | 0.0017  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:18 | 1       |

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.00020 | 0.00012 | mg/L |   | 11/24/15 12:15 | 11/24/15 16:38 | 1       |

## General Chemistry

| Analyte           | Result | Qualifier | NONE  | NONE  | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Free Liquid       | passed |           |       |       | mL/100g   |   |                | 11/23/15 10:40 | 1       |
| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/25/15 16:49 | 1       |
| Cyanide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/24/15 16:18 | 1       |
| Sulfide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/25/15 07:55 | 1       |
| pH                | 8.44   | HF        | 0.100 | 0.100 | SU        |   |                | 11/25/15 19:15 | 1       |

TestAmerica Buffalo

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1503-111915-1545**

**Lab Sample ID: 480-91551-5**

**Date Collected: 11/19/15 15:45**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 75.2**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte  | Result | Qualifier | RL   | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|------|-------|-------|---|----------------|----------------|---------|
| PCB-1016 | ND     |           | 0.27 | 0.054 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:02 | 1       |
| PCB-1221 | ND     |           | 0.27 | 0.054 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:02 | 1       |
| PCB-1232 | ND     |           | 0.27 | 0.054 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:02 | 1       |
| PCB-1242 | ND     |           | 0.27 | 0.054 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:02 | 1       |
| PCB-1248 | ND     |           | 0.27 | 0.054 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:02 | 1       |
| PCB-1254 | ND     |           | 0.27 | 0.13  | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:02 | 1       |
| PCB-1260 | ND     |           | 0.27 | 0.13  | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:02 | 1       |

| Surrogate              | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|----------------|----------------|---------|
| Tetrachloro-m-xylene   | 101       |           | 60 - 154 | 11/23/15 12:01 | 11/23/15 19:02 | 1       |
| DCB Decachlorobiphenyl | 100       |           | 65 - 174 | 11/23/15 12:01 | 11/23/15 19:02 | 1       |

**Client Sample ID: TP1505-112015-0900**

**Lab Sample ID: 480-91551-6**

**Date Collected: 11/20/15 09:00**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

## Method: 8260C - Volatile Organic Compounds by GC/MS - TCLP

| Analyte              | Result | Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|--------|-----------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND     |           | 0.010 | 0.0021 | mg/L |   |          | 12/03/15 14:26 | 10      |
| 2-Butanone (MEK)     | ND     | *         | 0.050 | 0.013  | mg/L |   |          | 12/03/15 14:26 | 10      |
| Benzene              | ND     |           | 0.010 | 0.0041 | mg/L |   |          | 12/03/15 14:26 | 10      |
| Carbon tetrachloride | ND     |           | 0.010 | 0.0027 | mg/L |   |          | 12/03/15 14:26 | 10      |
| Chlorobenzene        | ND     |           | 0.010 | 0.0075 | mg/L |   |          | 12/03/15 14:26 | 10      |
| Chloroform           | ND     |           | 0.010 | 0.0034 | mg/L |   |          | 12/03/15 14:26 | 10      |
| Tetrachloroethene    | ND     |           | 0.010 | 0.0036 | mg/L |   |          | 12/03/15 14:26 | 10      |
| Trichloroethene      | ND     |           | 0.010 | 0.0046 | mg/L |   |          | 12/03/15 14:26 | 10      |
| Vinyl chloride       | ND     |           | 0.010 | 0.0090 | mg/L |   |          | 12/03/15 14:26 | 10      |
| 1,1-Dichloroethene   | ND     |           | 0.010 | 0.0029 | mg/L |   |          | 12/03/15 14:26 | 10      |

| Surrogate                    | %Recovery | Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 101       |           | 66 - 137 |          | 12/03/15 14:26 | 10      |
| 4-Bromofluorobenzene (Surr)  | 96        |           | 73 - 120 |          | 12/03/15 14:26 | 10      |
| Toluene-d8 (Surr)            | 95        |           | 71 - 126 |          | 12/03/15 14:26 | 10      |
| Dibromofluoromethane (Surr)  | 93        |           | 60 - 140 |          | 12/03/15 14:26 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

| Analyte               | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND     |           | 0.010  | 0.00046 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| 2,4-Dinitrotoluene    | ND     |           | 0.0050 | 0.00045 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| 2,4,5-Trichlorophenol | ND     |           | 0.0050 | 0.00048 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| 2,4,6-Trichlorophenol | ND     |           | 0.0050 | 0.00061 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| 2-Methylphenol        | ND     |           | 0.0050 | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| 3-Methylphenol        | ND     |           | 0.010  | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| 4-Methylphenol        | ND     |           | 0.010  | 0.00036 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| Hexachlorobenzene     | ND     |           | 0.0050 | 0.00051 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| Hexachlorobutadiene   | ND     |           | 0.0050 | 0.00068 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| Hexachloroethane      | ND     |           | 0.0050 | 0.00059 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| Nitrobenzene          | ND     |           | 0.0050 | 0.00029 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| Pentachlorophenol     | ND     |           | 0.010  | 0.0022  | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| Pyridine              | 0.0014 | J B       | 0.025  | 0.00041 | mg/L |   | 11/24/15 11:06 | 12/02/15 13:49 | 1       |

TestAmerica Buffalo



# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1505-112015-0900**

**Lab Sample ID: 480-91551-6**

**Date Collected: 11/20/15 09:00**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

| Surrogate                   | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 89        |           | 52 - 132 | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| 2-Fluorobiphenyl            | 86        |           | 48 - 120 | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| 2-Fluorophenol (Surr)       | 48        |           | 20 - 120 | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| Nitrobenzene-d5 (Surr)      | 77        |           | 46 - 120 | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| p-Terphenyl-d14 (Surr)      | 98        |           | 67 - 150 | 11/24/15 11:06 | 12/02/15 13:49 | 1       |
| Phenol-d5 (Surr)            | 34        |           | 16 - 120 | 11/24/15 11:06 | 12/02/15 13:49 | 1       |

## Method: 6010C - Metals (ICP) - TCLP

| Analyte  | Result | Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------|-----------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | 0.0095 | J         | 0.015  | 0.0056  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:21 | 1       |
| Barium   | 0.91   | J         | 1.0    | 0.10    | mg/L |   | 11/24/15 10:50 | 11/25/15 13:21 | 1       |
| Cadmium  | 0.0042 |           | 0.0020 | 0.00050 | mg/L |   | 11/24/15 10:50 | 11/25/15 13:21 | 1       |
| Chromium | ND     | ^         | 0.020  | 0.010   | mg/L |   | 11/24/15 10:50 | 11/25/15 13:21 | 1       |
| Lead     | 0.16   |           | 0.020  | 0.0030  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:21 | 1       |
| Selenium | ND     |           | 0.025  | 0.0087  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:21 | 1       |
| Silver   | ND     |           | 0.0060 | 0.0017  | mg/L |   | 11/24/15 10:50 | 11/25/15 13:21 | 1       |

## Method: 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND     |           | 0.00020 | 0.00012 | mg/L |   | 11/24/15 12:15 | 11/24/15 16:40 | 1       |

## General Chemistry

| Analyte           | Result | Qualifier | NONE  | NONE  | Unit      | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------|-----------|-------|-------|-----------|---|----------------|----------------|---------|
| Free Liquid       | passed |           |       |       | mL/100g   |   |                | 11/23/15 10:40 | 1       |
| Analyte           | Result | Qualifier | RL    | RL    | Unit      | D | Prepared       | Analyzed       | Dil Fac |
| Flashpoint        | >176.0 |           | 50.0  | 50.0  | Degrees F |   |                | 11/25/15 16:49 | 1       |
| Cyanide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/24/15 16:18 | 1       |
| Sulfide, Reactive | ND     |           | 10    | 10    | mg/Kg     |   | 11/24/15 04:15 | 11/25/15 07:55 | 1       |
| pH                | 8.61   | HF        | 0.100 | 0.100 | SU        |   |                | 11/25/15 19:15 | 1       |

**Client Sample ID: TP1505-112015-0900**

**Lab Sample ID: 480-91551-6**

**Date Collected: 11/20/15 09:00**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 78.9**

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte                | Result    | Qualifier | RL       | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------|-----------|----------|-------|-------|---|----------------|----------------|---------|
| PCB-1016               | ND        |           | 0.27     | 0.053 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:17 | 1       |
| PCB-1221               | ND        |           | 0.27     | 0.053 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:17 | 1       |
| PCB-1232               | ND        |           | 0.27     | 0.053 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:17 | 1       |
| PCB-1242               | ND        |           | 0.27     | 0.053 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:17 | 1       |
| PCB-1248               | ND        |           | 0.27     | 0.053 | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:17 | 1       |
| PCB-1254               | ND        |           | 0.27     | 0.13  | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:17 | 1       |
| PCB-1260               | ND        |           | 0.27     | 0.13  | mg/Kg | ☼ | 11/23/15 12:01 | 11/23/15 19:17 | 1       |
| Surrogate              | %Recovery | Qualifier | Limits   |       |       |   | Prepared       | Analyzed       | Dil Fac |
| Tetrachloro-m-xylene   | 99        |           | 60 - 154 |       |       |   | 11/23/15 12:01 | 11/23/15 19:17 | 1       |
| DCB Decachlorobiphenyl | 122       |           | 65 - 174 |       |       |   | 11/23/15 12:01 | 11/23/15 19:17 | 1       |

TestAmerica Buffalo

# Surrogate Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: Total/NA

| Lab Sample ID    | Client Sample ID   | Percent Surrogate Recovery (Acceptance Limits) |                 |                 |                  |
|------------------|--------------------|------------------------------------------------|-----------------|-----------------|------------------|
|                  |                    | 12DCE<br>(66-137)                              | BFB<br>(73-120) | TOL<br>(71-126) | DBFM<br>(60-140) |
| LCS 480-277923/5 | Lab Control Sample | 98                                             | 96              | 95              | 91               |
| MB 480-277923/7  | Method Blank       | 101                                            | 97              | 96              | 93               |

### Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)  
BFB = 4-Bromofluorobenzene (Surr)  
TOL = Toluene-d8 (Surr)  
DBFM = Dibromofluoromethane (Surr)

## Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: TCLP

| Lab Sample ID     | Client Sample ID   | Percent Surrogate Recovery (Acceptance Limits) |                 |                 |                  |
|-------------------|--------------------|------------------------------------------------|-----------------|-----------------|------------------|
|                   |                    | 12DCE<br>(66-137)                              | BFB<br>(73-120) | TOL<br>(71-126) | DBFM<br>(60-140) |
| 480-91551-1       | TP1504-111915-1145 | 102                                            | 95              | 97              | 94               |
| 480-91551-2       | TP1502-111915-1320 | 100                                            | 96              | 97              | 90               |
| 480-91551-3       | TP1501-111915-1440 | 102                                            | 99              | 96              | 92               |
| 480-91551-4       | TP1503-111915-1530 | 101                                            | 95              | 96              | 93               |
| 480-91551-5       | TP1503-111915-1545 | 102                                            | 98              | 96              | 93               |
| 480-91551-6       | TP1505-112015-0900 | 101                                            | 96              | 95              | 93               |
| LB 480-276443/1-A | Method Blank       | 100                                            | 99              | 97              | 94               |

### Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)  
BFB = 4-Bromofluorobenzene (Surr)  
TOL = Toluene-d8 (Surr)  
DBFM = Dibromofluoromethane (Surr)

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

| Lab Sample ID       | Client Sample ID       | Percent Surrogate Recovery (Acceptance Limits) |                 |                 |                 |                 |                 |
|---------------------|------------------------|------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                     |                        | TBP<br>(52-132)                                | FBP<br>(48-120) | 2FP<br>(20-120) | NBZ<br>(46-120) | TPH<br>(67-150) | PHL<br>(16-120) |
| LCS 480-276687/2-A  | Lab Control Sample     | 105                                            | 98              | 54              | 87              | 101             | 39              |
| LCSD 480-276687/3-A | Lab Control Sample Dup | 101                                            | 101             | 59              | 97              | 94              | 39              |
| MB 480-276687/1-A   | Method Blank           | 83                                             | 88              | 46              | 78              | 94              | 34              |

### Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)  
FBP = 2-Fluorobiphenyl  
2FP = 2-Fluorophenol (Surr)  
NBZ = Nitrobenzene-d5 (Surr)  
TPH = p-Terphenyl-d14 (Surr)  
PHL = Phenol-d5 (Surr)

TestAmerica Buffalo

# Surrogate Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: TCLP

| Lab Sample ID     | Client Sample ID   | Percent Surrogate Recovery (Acceptance Limits) |                 |                 |                 |                 |                 |
|-------------------|--------------------|------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                   |                    | TBP<br>(52-132)                                | FBP<br>(48-120) | 2FP<br>(20-120) | NBZ<br>(46-120) | TPH<br>(67-150) | PHL<br>(16-120) |
| 480-91551-1       | TP1504-111915-1145 | 101                                            | 101             | 55              | 89              | 105             | 37              |
| 480-91551-2       | TP1502-111915-1320 | 91                                             | 95              | 55              | 84              | 93              | 36              |
| 480-91551-3       | TP1501-111915-1440 | 86                                             | 89              | 50              | 79              | 86              | 33              |
| 480-91551-4       | TP1503-111915-1530 | 93                                             | 97              | 52              | 93              | 94              | 35              |
| 480-91551-5       | TP1503-111915-1545 | 97                                             | 95              | 51              | 86              | 97              | 35              |
| 480-91551-6       | TP1505-112015-0900 | 89                                             | 86              | 48              | 77              | 98              | 34              |
| LB 480-276440/1-D | Method Blank       | 93                                             | 91              | 53              | 90              | 98              | 35              |

### Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)

FBP = 2-Fluorobiphenyl

2FP = 2-Fluorophenol (Surr)

NBZ = Nitrobenzene-d5 (Surr)

TPH = p-Terphenyl-d14 (Surr)

PHL = Phenol-d5 (Surr)

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid

Prep Type: Total/NA

| Lab Sample ID      | Client Sample ID   | Percent Surrogate Recovery (Acceptance Limits) |                  |
|--------------------|--------------------|------------------------------------------------|------------------|
|                    |                    | TCX2<br>(60-154)                               | DCB2<br>(65-174) |
| 480-91551-1        | TP1504-111915-1145 | 100                                            | 99               |
| 480-91551-1 MS     | TP1504-111915-1145 | 114                                            | 119              |
| 480-91551-1 MSD    | TP1504-111915-1145 | 109                                            | 113              |
| 480-91551-2        | TP1502-111915-1320 | 97                                             | 108              |
| 480-91551-3        | TP1501-111915-1440 | 100                                            | 98               |
| 480-91551-4        | TP1503-111915-1530 | 93                                             | 95               |
| 480-91551-5        | TP1503-111915-1545 | 101                                            | 100              |
| 480-91551-6        | TP1505-112015-0900 | 99                                             | 122              |
| LCS 480-276503/2-A | Lab Control Sample | 115                                            | 117              |
| MB 480-276503/1-A  | Method Blank       | 99                                             | 103              |

### Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-277923/7

Matrix: Solid

Analysis Batch: 277923

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte              | MB Result | MB Qualifier | RL     | MDL     | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------------------|-----------|--------------|--------|---------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane   | ND        |              | 0.0010 | 0.00021 | mg/L |   |          | 12/03/15 10:59 | 1       |
| 2-Butanone (MEK)     | ND        |              | 0.0050 | 0.0013  | mg/L |   |          | 12/03/15 10:59 | 1       |
| Benzene              | ND        |              | 0.0010 | 0.00041 | mg/L |   |          | 12/03/15 10:59 | 1       |
| Carbon tetrachloride | ND        |              | 0.0010 | 0.00027 | mg/L |   |          | 12/03/15 10:59 | 1       |
| Chlorobenzene        | ND        |              | 0.0010 | 0.00075 | mg/L |   |          | 12/03/15 10:59 | 1       |
| Chloroform           | ND        |              | 0.0010 | 0.00034 | mg/L |   |          | 12/03/15 10:59 | 1       |
| Tetrachloroethene    | ND        |              | 0.0010 | 0.00036 | mg/L |   |          | 12/03/15 10:59 | 1       |
| Trichloroethene      | ND        |              | 0.0010 | 0.00046 | mg/L |   |          | 12/03/15 10:59 | 1       |
| Vinyl chloride       | ND        |              | 0.0010 | 0.00090 | mg/L |   |          | 12/03/15 10:59 | 1       |
| 1,1-Dichloroethene   | ND        |              | 0.0010 | 0.00029 | mg/L |   |          | 12/03/15 10:59 | 1       |

| Surrogate                    | MB %Recovery | MB Qualifier | Limits   | Prepared | Analyzed       | Dil Fac |
|------------------------------|--------------|--------------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 101          |              | 66 - 137 |          | 12/03/15 10:59 | 1       |
| 4-Bromofluorobenzene (Surr)  | 97           |              | 73 - 120 |          | 12/03/15 10:59 | 1       |
| Toluene-d8 (Surr)            | 96           |              | 71 - 126 |          | 12/03/15 10:59 | 1       |
| Dibromofluoromethane (Surr)  | 93           |              | 60 - 140 |          | 12/03/15 10:59 | 1       |

Lab Sample ID: LCS 480-277923/5

Matrix: Solid

Analysis Batch: 277923

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte              | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------------------|-------------|------------|---------------|------|---|------|--------------|
| 1,2-Dichloroethane   | 0.0250      | 0.0242     |               | mg/L |   | 97   | 75 - 127     |
| 2-Butanone (MEK)     | 0.125       | 0.235      | *             | mg/L |   | 188  | 57 - 140     |
| Benzene              | 0.0250      | 0.0235     |               | mg/L |   | 94   | 71 - 124     |
| Carbon tetrachloride | 0.0250      | 0.0220     |               | mg/L |   | 88   | 72 - 134     |
| Chlorobenzene        | 0.0250      | 0.0238     |               | mg/L |   | 95   | 72 - 120     |
| Chloroform           | 0.0250      | 0.0238     |               | mg/L |   | 95   | 73 - 127     |
| Tetrachloroethene    | 0.0250      | 0.0239     |               | mg/L |   | 96   | 74 - 122     |
| Trichloroethene      | 0.0250      | 0.0226     |               | mg/L |   | 90   | 74 - 123     |
| Vinyl chloride       | 0.0250      | 0.0210     |               | mg/L |   | 84   | 65 - 133     |
| 1,1-Dichloroethene   | 0.0250      | 0.0223     |               | mg/L |   | 89   | 58 - 121     |

| Surrogate                    | LCS %Recovery | LCS Qualifier | Limits   |
|------------------------------|---------------|---------------|----------|
| 1,2-Dichloroethane-d4 (Surr) | 98            |               | 66 - 137 |
| 4-Bromofluorobenzene (Surr)  | 96            |               | 73 - 120 |
| Toluene-d8 (Surr)            | 95            |               | 71 - 126 |
| Dibromofluoromethane (Surr)  | 91            |               | 60 - 140 |

Lab Sample ID: LB 480-276443/1-A

Matrix: Solid

Analysis Batch: 277923

Client Sample ID: Method Blank

Prep Type: TCLP

| Analyte            | LB Result | LB Qualifier | RL    | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|--------------------|-----------|--------------|-------|--------|------|---|----------|----------------|---------|
| 1,2-Dichloroethane | ND        |              | 0.010 | 0.0021 | mg/L |   |          | 12/03/15 11:40 | 10      |
| 2-Butanone (MEK)   | ND        |              | 0.050 | 0.013  | mg/L |   |          | 12/03/15 11:40 | 10      |
| Benzene            | ND        |              | 0.010 | 0.0041 | mg/L |   |          | 12/03/15 11:40 | 10      |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LB 480-276443/1-A

Matrix: Solid

Analysis Batch: 277923

Client Sample ID: Method Blank

Prep Type: TCLP

| Analyte                      | LB Result    | LB Qualifier | RL       | MDL    | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------------------|--------------|--------------|----------|--------|------|---|----------|----------------|---------|
| Carbon tetrachloride         | ND           |              | 0.010    | 0.0027 | mg/L |   |          | 12/03/15 11:40 | 10      |
| Chlorobenzene                | ND           |              | 0.010    | 0.0075 | mg/L |   |          | 12/03/15 11:40 | 10      |
| Chloroform                   | ND           |              | 0.010    | 0.0034 | mg/L |   |          | 12/03/15 11:40 | 10      |
| Tetrachloroethene            | ND           |              | 0.010    | 0.0036 | mg/L |   |          | 12/03/15 11:40 | 10      |
| Trichloroethene              | ND           |              | 0.010    | 0.0046 | mg/L |   |          | 12/03/15 11:40 | 10      |
| Vinyl chloride               | ND           |              | 0.010    | 0.0090 | mg/L |   |          | 12/03/15 11:40 | 10      |
| 1,1-Dichloroethene           | ND           |              | 0.010    | 0.0029 | mg/L |   |          | 12/03/15 11:40 | 10      |
| Surrogate                    | LB %Recovery | LB Qualifier | Limits   |        |      |   | Prepared | Analyzed       | Dil Fac |
| 1,2-Dichloroethane-d4 (Surr) | 100          |              | 66 - 137 |        |      |   |          | 12/03/15 11:40 | 10      |
| 4-Bromofluorobenzene (Surr)  | 99           |              | 73 - 120 |        |      |   |          | 12/03/15 11:40 | 10      |
| Toluene-d8 (Surr)            | 97           |              | 71 - 126 |        |      |   |          | 12/03/15 11:40 | 10      |
| Dibromofluoromethane (Surr)  | 94           |              | 60 - 140 |        |      |   |          | 12/03/15 11:40 | 10      |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-276687/1-A

Matrix: Solid

Analysis Batch: 277509

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 276687

| Analyte                     | MB Result    | MB Qualifier | RL       | MDL      | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|--------------|--------------|----------|----------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene         | ND           |              | 0.0025   | 0.00012  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| 2,4-Dinitrotoluene          | ND           |              | 0.0013   | 0.00011  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| 2,4,5-Trichlorophenol       | ND           |              | 0.0013   | 0.00012  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| 2,4,6-Trichlorophenol       | ND           |              | 0.0013   | 0.00015  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| 2-Methylphenol              | ND           |              | 0.0013   | 0.00010  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| 3-Methylphenol              | ND           |              | 0.0025   | 0.00010  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| 4-Methylphenol              | ND           |              | 0.0025   | 0.000090 | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| Hexachlorobenzene           | ND           |              | 0.0013   | 0.00013  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| Hexachlorobutadiene         | ND           |              | 0.0013   | 0.00017  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| Hexachloroethane            | ND           |              | 0.0013   | 0.00015  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| Nitrobenzene                | ND           |              | 0.0013   | 0.000073 | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| Pentachlorophenol           | ND           |              | 0.0025   | 0.00055  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| Pyridine                    | 0.000312     | J            | 0.0063   | 0.00010  | mg/L |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| Surrogate                   | MB %Recovery | MB Qualifier | Limits   |          |      |   | Prepared       | Analyzed       | Dil Fac |
| 2,4,6-Tribromophenol (Surr) | 83           |              | 52 - 132 |          |      |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| 2-Fluorobiphenyl            | 88           |              | 48 - 120 |          |      |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| 2-Fluorophenol (Surr)       | 46           |              | 20 - 120 |          |      |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| Nitrobenzene-d5 (Surr)      | 78           |              | 46 - 120 |          |      |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| p-Terphenyl-d14 (Surr)      | 94           |              | 67 - 150 |          |      |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |
| Phenol-d5 (Surr)            | 34           |              | 16 - 120 |          |      |   | 11/24/15 11:06 | 12/01/15 16:25 | 1       |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-276687/2-A

Matrix: Solid

Analysis Batch: 277509

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 276687

| Analyte               | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits   |
|-----------------------|-------------|------------|---------------|------|---|------|----------|
| 1,4-Dichlorobenzene   | 0.0500      | 0.0346     |               | mg/L |   | 69   | 32 - 120 |
| 2,4-Dinitrotoluene    | 0.0500      | 0.0532     |               | mg/L |   | 106  | 65 - 154 |
| 2,4,5-Trichlorophenol | 0.0500      | 0.0520     |               | mg/L |   | 104  | 65 - 126 |
| 2,4,6-Trichlorophenol | 0.0500      | 0.0497     |               | mg/L |   | 99   | 64 - 120 |
| 2-Methylphenol        | 0.0500      | 0.0386     |               | mg/L |   | 77   | 39 - 120 |
| 3-Methylphenol        | 0.0500      | 0.0352     |               | mg/L |   | 70   | 39 - 120 |
| 4-Methylphenol        | 0.0500      | 0.0352     |               | mg/L |   | 70   | 39 - 120 |
| Hexachlorobenzene     | 0.0500      | 0.0524     |               | mg/L |   | 105  | 14 - 130 |
| Hexachlorobutadiene   | 0.0500      | 0.0380     |               | mg/L |   | 76   | 14 - 130 |
| Hexachloroethane      | 0.0500      | 0.0333     |               | mg/L |   | 67   | 14 - 130 |
| Nitrobenzene          | 0.0500      | 0.0424     |               | mg/L |   | 85   | 45 - 123 |
| Pentachlorophenol     | 0.100       | 0.0990     |               | mg/L |   | 99   | 39 - 136 |
| Pyridine              | 0.0500      | 0.0202     |               | mg/L |   | 40   | 10 - 120 |

| Surrogate                   | LCS %Recovery | LCS Qualifier | Limits   |
|-----------------------------|---------------|---------------|----------|
| 2,4,6-Tribromophenol (Surr) | 105           |               | 52 - 132 |
| 2-Fluorobiphenyl            | 98            |               | 48 - 120 |
| 2-Fluorophenol (Surr)       | 54            |               | 20 - 120 |
| Nitrobenzene-d5 (Surr)      | 87            |               | 46 - 120 |
| p-Terphenyl-d14 (Surr)      | 101           |               | 67 - 150 |
| Phenol-d5 (Surr)            | 39            |               | 16 - 120 |

Lab Sample ID: LCSD 480-276687/3-A

Matrix: Solid

Analysis Batch: 277509

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 276687

| Analyte               | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | Limits   | RPD | Limit |
|-----------------------|-------------|-------------|----------------|------|---|------|----------|-----|-------|
| 1,4-Dichlorobenzene   | 0.0500      | 0.0383      |                | mg/L |   | 77   | 32 - 120 | 10  | 36    |
| 2,4-Dinitrotoluene    | 0.0500      | 0.0504      |                | mg/L |   | 101  | 65 - 154 | 5   | 20    |
| 2,4,5-Trichlorophenol | 0.0500      | 0.0520      |                | mg/L |   | 104  | 65 - 126 | 0   | 18    |
| 2,4,6-Trichlorophenol | 0.0500      | 0.0512      |                | mg/L |   | 102  | 64 - 120 | 3   | 19    |
| 2-Methylphenol        | 0.0500      | 0.0390      |                | mg/L |   | 78   | 39 - 120 | 1   | 27    |
| 3-Methylphenol        | 0.0500      | 0.0370      |                | mg/L |   | 74   | 39 - 120 | 5   | 30    |
| 4-Methylphenol        | 0.0500      | 0.0370      |                | mg/L |   | 74   | 39 - 120 | 5   | 24    |
| Hexachlorobenzene     | 0.0500      | 0.0508      |                | mg/L |   | 102  | 14 - 130 | 3   | 15    |
| Hexachlorobutadiene   | 0.0500      | 0.0427      |                | mg/L |   | 85   | 14 - 130 | 11  | 44    |
| Hexachloroethane      | 0.0500      | 0.0387      |                | mg/L |   | 77   | 14 - 130 | 15  | 46    |
| Nitrobenzene          | 0.0500      | 0.0486      |                | mg/L |   | 97   | 45 - 123 | 13  | 24    |
| Pentachlorophenol     | 0.100       | 0.0957      |                | mg/L |   | 96   | 39 - 136 | 3   | 37    |
| Pyridine              | 0.0500      | 0.0139      |                | mg/L |   | 28   | 10 - 120 | 37  | 49    |

| Surrogate                   | LCSD %Recovery | LCSD Qualifier | Limits   |
|-----------------------------|----------------|----------------|----------|
| 2,4,6-Tribromophenol (Surr) | 101            |                | 52 - 132 |
| 2-Fluorobiphenyl            | 101            |                | 48 - 120 |
| 2-Fluorophenol (Surr)       | 59             |                | 20 - 120 |
| Nitrobenzene-d5 (Surr)      | 97             |                | 46 - 120 |
| p-Terphenyl-d14 (Surr)      | 94             |                | 67 - 150 |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 480-276687/3-A

Matrix: Solid

Analysis Batch: 277509

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 276687

| Surrogate        | LCSD<br>%Recovery | LCSD<br>Qualifier | Limits   |
|------------------|-------------------|-------------------|----------|
| Phenol-d5 (Surr) | 39                |                   | 16 - 120 |

Lab Sample ID: LB 480-276440/1-D

Matrix: Solid

Analysis Batch: 277509

Client Sample ID: Method Blank

Prep Type: TCLP

Prep Batch: 276687

| Analyte               | LB<br>Result | LB<br>Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|-----------------------|--------------|-----------------|--------|---------|------|---|----------------|----------------|---------|
| 1,4-Dichlorobenzene   | ND           |                 | 0.010  | 0.00046 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| 2,4-Dinitrotoluene    | ND           |                 | 0.0050 | 0.00045 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| 2,4,5-Trichlorophenol | ND           |                 | 0.0050 | 0.00048 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| 2,4,6-Trichlorophenol | ND           |                 | 0.0050 | 0.00061 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| 2-Methylphenol        | ND           |                 | 0.0050 | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| 3-Methylphenol        | ND           |                 | 0.010  | 0.00040 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| 4-Methylphenol        | ND           |                 | 0.010  | 0.00036 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| Hexachlorobenzene     | ND           |                 | 0.0050 | 0.00051 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| Hexachlorobutadiene   | ND           |                 | 0.0050 | 0.00068 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| Hexachloroethane      | ND           |                 | 0.0050 | 0.00059 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| Nitrobenzene          | ND           |                 | 0.0050 | 0.00029 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| Pentachlorophenol     | ND           |                 | 0.010  | 0.0022  | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| Pyridine              | 0.00148      | J               | 0.025  | 0.00041 | mg/L |   | 11/24/15 11:06 | 12/01/15 17:43 | 1       |

| Surrogate                   | LB<br>%Recovery | LB<br>Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|-----------------------------|-----------------|-----------------|----------|----------------|----------------|---------|
| 2,4,6-Tribromophenol (Surr) | 93              |                 | 52 - 132 | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| 2-Fluorobiphenyl            | 91              |                 | 48 - 120 | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| 2-Fluorophenol (Surr)       | 53              |                 | 20 - 120 | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| Nitrobenzene-d5 (Surr)      | 90              |                 | 46 - 120 | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| p-Terphenyl-d14 (Surr)      | 98              |                 | 67 - 150 | 11/24/15 11:06 | 12/01/15 17:43 | 1       |
| Phenol-d5 (Surr)            | 35              |                 | 16 - 120 | 11/24/15 11:06 | 12/01/15 17:43 | 1       |

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 480-276503/1-A

Matrix: Solid

Analysis Batch: 276545

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 276503

| Analyte  | MB<br>Result | MB<br>Qualifier | RL   | MDL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|----------|--------------|-----------------|------|-------|-------|---|----------------|----------------|---------|
| PCB-1016 | ND           |                 | 0.20 | 0.039 | mg/Kg |   | 11/23/15 12:01 | 11/23/15 17:03 | 1       |
| PCB-1221 | ND           |                 | 0.20 | 0.039 | mg/Kg |   | 11/23/15 12:01 | 11/23/15 17:03 | 1       |
| PCB-1232 | ND           |                 | 0.20 | 0.039 | mg/Kg |   | 11/23/15 12:01 | 11/23/15 17:03 | 1       |
| PCB-1242 | ND           |                 | 0.20 | 0.039 | mg/Kg |   | 11/23/15 12:01 | 11/23/15 17:03 | 1       |
| PCB-1248 | ND           |                 | 0.20 | 0.039 | mg/Kg |   | 11/23/15 12:01 | 11/23/15 17:03 | 1       |
| PCB-1254 | ND           |                 | 0.20 | 0.094 | mg/Kg |   | 11/23/15 12:01 | 11/23/15 17:03 | 1       |
| PCB-1260 | ND           |                 | 0.20 | 0.094 | mg/Kg |   | 11/23/15 12:01 | 11/23/15 17:03 | 1       |

| Surrogate              | MB<br>%Recovery | MB<br>Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------------------|-----------------|-----------------|----------|----------------|----------------|---------|
| Tetrachloro-m-xylene   | 99              |                 | 60 - 154 | 11/23/15 12:01 | 11/23/15 17:03 | 1       |
| DCB Decachlorobiphenyl | 103             |                 | 65 - 174 | 11/23/15 12:01 | 11/23/15 17:03 | 1       |

TestAmerica Buffalo



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCS 480-276503/2-A

Matrix: Solid

Analysis Batch: 276545

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 276503

| Analyte  | Spike Added | LCS Result | LCS Qualifier | Unit  | D | %Rec | Limits   |
|----------|-------------|------------|---------------|-------|---|------|----------|
| PCB-1016 | 2.00        | 2.44       |               | mg/Kg |   | 122  | 51 - 185 |
| PCB-1260 | 2.00        | 2.47       |               | mg/Kg |   | 123  | 61 - 184 |

| Surrogate              | LCS %Recovery | LCS Qualifier | Limits   |
|------------------------|---------------|---------------|----------|
| Tetrachloro-m-xylene   | 115           |               | 60 - 154 |
| DCB Decachlorobiphenyl | 117           |               | 65 - 174 |

Lab Sample ID: 480-91551-1 MS

Matrix: Solid

Analysis Batch: 276545

Client Sample ID: TP1504-111915-1145

Prep Type: Total/NA

Prep Batch: 276503

| Analyte  | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit  | D | %Rec | Limits   |
|----------|---------------|------------------|-------------|-----------|--------------|-------|---|------|----------|
| PCB-1016 | ND            |                  | 2.57        | 3.14      |              | mg/Kg | ☼ | 122  | 50 - 177 |
| PCB-1260 | ND            |                  | 2.57        | 3.22      |              | mg/Kg | ☼ | 125  | 33 - 200 |

| Surrogate              | MS %Recovery | MS Qualifier | Limits   |
|------------------------|--------------|--------------|----------|
| Tetrachloro-m-xylene   | 114          |              | 60 - 154 |
| DCB Decachlorobiphenyl | 119          |              | 65 - 174 |

Lab Sample ID: 480-91551-1 MSD

Matrix: Solid

Analysis Batch: 276545

Client Sample ID: TP1504-111915-1145

Prep Type: Total/NA

Prep Batch: 276503

| Analyte  | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit  | D | %Rec | Limits   | RPD | RPD Limit |
|----------|---------------|------------------|-------------|------------|---------------|-------|---|------|----------|-----|-----------|
| PCB-1016 | ND            |                  | 2.65        | 2.98       |               | mg/Kg | ☼ | 113  | 50 - 177 | 5   | 50        |
| PCB-1260 | ND            |                  | 2.65        | 3.06       |               | mg/Kg | ☼ | 116  | 33 - 200 | 5   | 50        |

| Surrogate              | MSD %Recovery | MSD Qualifier | Limits   |
|------------------------|---------------|---------------|----------|
| Tetrachloro-m-xylene   | 109           |               | 60 - 154 |
| DCB Decachlorobiphenyl | 113           |               | 65 - 174 |

## Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-276668/2-A

Matrix: Solid

Analysis Batch: 276979

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 276668

| Analyte  | MB Result | MB Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|-----------|--------------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | ND        |              | 0.015  | 0.0056  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:39 | 1       |
| Barium   | ND        |              | 1.0    | 0.10    | mg/L |   | 11/24/15 10:50 | 11/25/15 12:39 | 1       |
| Cadmium  | ND        |              | 0.0020 | 0.00050 | mg/L |   | 11/24/15 10:50 | 11/25/15 12:39 | 1       |
| Chromium | ND        |              | 0.020  | 0.010   | mg/L |   | 11/24/15 10:50 | 11/25/15 12:39 | 1       |
| Lead     | ND        |              | 0.020  | 0.0030  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:39 | 1       |
| Selenium | ND        |              | 0.025  | 0.0087  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:39 | 1       |
| Silver   | ND        |              | 0.0060 | 0.0017  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:39 | 1       |

TestAmerica Buffalo



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 480-276668/3-A

Matrix: Solid

Analysis Batch: 276979

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 276668

| Analyte  | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------|-------------|------------|---------------|------|---|------|--------------|
| Arsenic  | 1.00        | 1.06       |               | mg/L |   | 106  | 80 - 120     |
| Barium   | 1.00        | 1.01       |               | mg/L |   | 101  | 80 - 120     |
| Cadmium  | 1.00        | 1.06       |               | mg/L |   | 106  | 80 - 120     |
| Chromium | 1.00        | 1.12       |               | mg/L |   | 112  | 80 - 120     |
| Lead     | 1.00        | 1.02       |               | mg/L |   | 102  | 80 - 120     |
| Selenium | 1.00        | 1.18       |               | mg/L |   | 118  | 80 - 120     |
| Silver   | 1.00        | 1.19       |               | mg/L |   | 119  | 80 - 120     |

Lab Sample ID: LCSD 480-276668/4-A

Matrix: Solid

Analysis Batch: 276979

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 276668

| Analyte  | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|----------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| Arsenic  | 1.00        | 1.03        |                | mg/L |   | 103  | 80 - 120     | 4   | 20        |
| Barium   | 1.00        | 0.974       | J              | mg/L |   | 97   | 80 - 120     | 3   | 20        |
| Cadmium  | 1.00        | 1.03        |                | mg/L |   | 103  | 80 - 120     | 3   | 20        |
| Chromium | 1.00        | 1.08        |                | mg/L |   | 108  | 80 - 120     | 3   | 20        |
| Lead     | 1.00        | 0.992       |                | mg/L |   | 99   | 80 - 120     | 3   | 20        |
| Selenium | 1.00        | 1.13        |                | mg/L |   | 113  | 80 - 120     | 4   | 20        |
| Silver   | 1.00        | 1.14        |                | mg/L |   | 114  | 80 - 120     | 4   | 20        |

Lab Sample ID: LB 480-276440/1-B

Matrix: Solid

Analysis Batch: 276979

Client Sample ID: Method Blank

Prep Type: TCLP

Prep Batch: 276668

| Analyte  | LB Result | LB Qualifier | RL     | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|----------|-----------|--------------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic  | ND        |              | 0.015  | 0.0056  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:26 | 1       |
| Barium   | ND        |              | 1.0    | 0.10    | mg/L |   | 11/24/15 10:50 | 11/25/15 12:26 | 1       |
| Cadmium  | ND        |              | 0.0020 | 0.00050 | mg/L |   | 11/24/15 10:50 | 11/25/15 12:26 | 1       |
| Chromium | ND        |              | 0.020  | 0.010   | mg/L |   | 11/24/15 10:50 | 11/25/15 12:26 | 1       |
| Lead     | ND        |              | 0.020  | 0.0030  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:26 | 1       |
| Selenium | ND        |              | 0.025  | 0.0087  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:26 | 1       |
| Silver   | ND        |              | 0.0060 | 0.0017  | mg/L |   | 11/24/15 10:50 | 11/25/15 12:26 | 1       |

## Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 480-276686/2-A

Matrix: Solid

Analysis Batch: 276827

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 276686

| Analyte | MB Result | MB Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|-----------|--------------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND        |              | 0.00020 | 0.00012 | mg/L |   | 11/24/15 12:15 | 11/24/15 16:20 | 1       |

Lab Sample ID: LCS 480-276686/3-A

Matrix: Solid

Analysis Batch: 276827

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 276686

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|-------------|------------|---------------|------|---|------|--------------|
| Mercury | 0.00668     | 0.00653    |               | mg/L |   | 98   | 80 - 120     |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCSD 480-276686/15-A  
Matrix: Solid  
Analysis Batch: 276827

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 276686

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | Limit |
|---------|-------------|-------------|----------------|------|---|------|--------------|-----|-------|
| Mercury | 0.00668     | 0.00620     |                | mg/L |   | 93   | 80 - 120     | 5   | 20    |

Lab Sample ID: LB 480-276440/1-C  
Matrix: Solid  
Analysis Batch: 276827

Client Sample ID: Method Blank  
Prep Type: TCLP  
Prep Batch: 276686

| Analyte | LB Result | LB Qualifier | RL      | MDL     | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|-----------|--------------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND        |              | 0.00020 | 0.00012 | mg/L |   | 11/24/15 12:15 | 11/24/15 16:19 | 1       |

## Method: 1010A - Ignitability, Pensky-Martens Closed Cup Method

Lab Sample ID: LCS 480-277009/1  
Matrix: Solid  
Analysis Batch: 277009

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

| Analyte    | Spike Added | LCS Result | LCS Qualifier | Unit      | D | %Rec | %Rec. Limits |
|------------|-------------|------------|---------------|-----------|---|------|--------------|
| Flashpoint | 81.0        | 83.00      |               | Degrees F |   | 102  | 97.5 - 102.5 |

Lab Sample ID: 480-91551-6 DU  
Matrix: Solid  
Analysis Batch: 277009

Client Sample ID: TP1505-112015-0900  
Prep Type: Total/NA

| Analyte    | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit      | D | RPD | Limit |
|------------|---------------|------------------|-----------|--------------|-----------|---|-----|-------|
| Flashpoint | >176.0        |                  | >176.0    |              | Degrees F |   | NC  | 10    |

## Method: 9012 - Cyanide, Reactive

Lab Sample ID: MB 480-276723/1-A  
Matrix: Solid  
Analysis Batch: 276842

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 276723

| Analyte           | MB Result | MB Qualifier | RL   | RL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|-----------|--------------|------|------|-------|---|----------------|----------------|---------|
| Cyanide, Reactive | ND        |              | 10.0 | 10.0 | mg/Kg |   | 11/24/15 04:15 | 11/24/15 16:18 | 1       |

Lab Sample ID: LCS 480-276723/2-A  
Matrix: Solid  
Analysis Batch: 276842

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 276723

| Analyte           | Spike Added | LCS Result | LCS Qualifier | Unit  | D | %Rec | %Rec. Limits |
|-------------------|-------------|------------|---------------|-------|---|------|--------------|
| Cyanide, Reactive | 1000        | ND         |               | mg/Kg |   | 23   | 10 - 100     |

TestAmerica Buffalo

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Method: 9034 - Sulfide, Reactive

Lab Sample ID: MB 480-276729/1-A  
Matrix: Solid  
Analysis Batch: 276884

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 276729

| Analyte           | MB<br>Result | MB<br>Qualifier | RL   | RL   | Unit  | D | Prepared       | Analyzed       | Dil Fac |
|-------------------|--------------|-----------------|------|------|-------|---|----------------|----------------|---------|
| Sulfide, Reactive | ND           |                 | 10.0 | 10.0 | mg/Kg | - | 11/24/15 04:15 | 11/25/15 07:55 | 1       |

Lab Sample ID: LCS 480-276729/2-A  
Matrix: Solid  
Analysis Batch: 276884

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 276729

| Analyte           | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit  | D | %Rec | %Rec.<br>Limits |
|-------------------|----------------|---------------|------------------|-------|---|------|-----------------|
| Sulfide, Reactive | 1000           | 761.4         |                  | mg/Kg | - | 76   | 10 - 100        |

## Method: 9045D - pH

Lab Sample ID: LCS 480-277058/1  
Matrix: Solid  
Analysis Batch: 277058

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

| Analyte | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec.<br>Limits |
|---------|----------------|---------------|------------------|------|---|------|-----------------|
| pH      | 7.00           | 7.020         |                  | SU   | - | 100  | 99 - 101        |

Lab Sample ID: 480-91551-6 DU  
Matrix: Solid  
Analysis Batch: 277058

Client Sample ID: TP1505-112015-0900  
Prep Type: Total/NA

| Analyte | Sample<br>Result | Sample<br>Qualifier | DU<br>Result | DU<br>Qualifier | Unit | D | RPD | RPD<br>Limit |
|---------|------------------|---------------------|--------------|-----------------|------|---|-----|--------------|
| pH      | 8.61             | HF                  | 8.610        |                 | SU   | - | 0   | 5            |

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## GC/MS VOA

### Leach Batch: 276443

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1       | TP1504-111915-1145 | TCLP      | Solid  | 1311   |            |
| 480-91551-2       | TP1502-111915-1320 | TCLP      | Solid  | 1311   |            |
| 480-91551-3       | TP1501-111915-1440 | TCLP      | Solid  | 1311   |            |
| 480-91551-4       | TP1503-111915-1530 | TCLP      | Solid  | 1311   |            |
| 480-91551-5       | TP1503-111915-1545 | TCLP      | Solid  | 1311   |            |
| 480-91551-6       | TP1505-112015-0900 | TCLP      | Solid  | 1311   |            |
| LB 480-276443/1-A | Method Blank       | TCLP      | Solid  | 1311   |            |

### Analysis Batch: 277923

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1       | TP1504-111915-1145 | TCLP      | Solid  | 8260C  | 276443     |
| 480-91551-2       | TP1502-111915-1320 | TCLP      | Solid  | 8260C  | 276443     |
| 480-91551-3       | TP1501-111915-1440 | TCLP      | Solid  | 8260C  | 276443     |
| 480-91551-4       | TP1503-111915-1530 | TCLP      | Solid  | 8260C  | 276443     |
| 480-91551-5       | TP1503-111915-1545 | TCLP      | Solid  | 8260C  | 276443     |
| 480-91551-6       | TP1505-112015-0900 | TCLP      | Solid  | 8260C  | 276443     |
| LB 480-276443/1-A | Method Blank       | TCLP      | Solid  | 8260C  | 276443     |
| LCS 480-277923/5  | Lab Control Sample | Total/NA  | Solid  | 8260C  |            |
| MB 480-277923/7   | Method Blank       | Total/NA  | Solid  | 8260C  |            |

## GC/MS Semi VOA

### Leach Batch: 276440

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1       | TP1504-111915-1145 | TCLP      | Solid  | 1311   |            |
| 480-91551-2       | TP1502-111915-1320 | TCLP      | Solid  | 1311   |            |
| 480-91551-3       | TP1501-111915-1440 | TCLP      | Solid  | 1311   |            |
| 480-91551-4       | TP1503-111915-1530 | TCLP      | Solid  | 1311   |            |
| 480-91551-5       | TP1503-111915-1545 | TCLP      | Solid  | 1311   |            |
| 480-91551-6       | TP1505-112015-0900 | TCLP      | Solid  | 1311   |            |
| LB 480-276440/1-D | Method Blank       | TCLP      | Solid  | 1311   |            |

### Prep Batch: 276687

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 480-91551-1         | TP1504-111915-1145     | TCLP      | Solid  | 3510C  | 276440     |
| 480-91551-2         | TP1502-111915-1320     | TCLP      | Solid  | 3510C  | 276440     |
| 480-91551-3         | TP1501-111915-1440     | TCLP      | Solid  | 3510C  | 276440     |
| 480-91551-4         | TP1503-111915-1530     | TCLP      | Solid  | 3510C  | 276440     |
| 480-91551-5         | TP1503-111915-1545     | TCLP      | Solid  | 3510C  | 276440     |
| 480-91551-6         | TP1505-112015-0900     | TCLP      | Solid  | 3510C  | 276440     |
| LB 480-276440/1-D   | Method Blank           | TCLP      | Solid  | 3510C  | 276440     |
| LCS 480-276687/2-A  | Lab Control Sample     | Total/NA  | Solid  | 3510C  |            |
| LCSD 480-276687/3-A | Lab Control Sample Dup | Total/NA  | Solid  | 3510C  |            |
| MB 480-276687/1-A   | Method Blank           | Total/NA  | Solid  | 3510C  |            |

### Analysis Batch: 277509

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|---------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1   | TP1504-111915-1145 | TCLP      | Solid  | 8270D  | 276687     |
| 480-91551-2   | TP1502-111915-1320 | TCLP      | Solid  | 8270D  | 276687     |
| 480-91551-3   | TP1501-111915-1440 | TCLP      | Solid  | 8270D  | 276687     |

TestAmerica Buffalo

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## GC/MS Semi VOA (Continued)

### Analysis Batch: 277509 (Continued)

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 480-91551-4         | TP1503-111915-1530     | TCLP      | Solid  | 8270D  | 276687     |
| 480-91551-5         | TP1503-111915-1545     | TCLP      | Solid  | 8270D  | 276687     |
| LB 480-276440/1-D   | Method Blank           | TCLP      | Solid  | 8270D  | 276687     |
| LCS 480-276687/2-A  | Lab Control Sample     | Total/NA  | Solid  | 8270D  | 276687     |
| LCSD 480-276687/3-A | Lab Control Sample Dup | Total/NA  | Solid  | 8270D  | 276687     |
| MB 480-276687/1-A   | Method Blank           | Total/NA  | Solid  | 8270D  | 276687     |

### Analysis Batch: 277687

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|---------------|--------------------|-----------|--------|--------|------------|
| 480-91551-6   | TP1505-112015-0900 | TCLP      | Solid  | 8270D  | 276687     |

## GC Semi VOA

### Prep Batch: 276503

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1        | TP1504-111915-1145 | Total/NA  | Solid  | 3550C  |            |
| 480-91551-1 MS     | TP1504-111915-1145 | Total/NA  | Solid  | 3550C  |            |
| 480-91551-1 MSD    | TP1504-111915-1145 | Total/NA  | Solid  | 3550C  |            |
| 480-91551-2        | TP1502-111915-1320 | Total/NA  | Solid  | 3550C  |            |
| 480-91551-3        | TP1501-111915-1440 | Total/NA  | Solid  | 3550C  |            |
| 480-91551-4        | TP1503-111915-1530 | Total/NA  | Solid  | 3550C  |            |
| 480-91551-5        | TP1503-111915-1545 | Total/NA  | Solid  | 3550C  |            |
| 480-91551-6        | TP1505-112015-0900 | Total/NA  | Solid  | 3550C  |            |
| LCS 480-276503/2-A | Lab Control Sample | Total/NA  | Solid  | 3550C  |            |
| MB 480-276503/1-A  | Method Blank       | Total/NA  | Solid  | 3550C  |            |

### Analysis Batch: 276545

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1        | TP1504-111915-1145 | Total/NA  | Solid  | 8082A  | 276503     |
| 480-91551-1 MS     | TP1504-111915-1145 | Total/NA  | Solid  | 8082A  | 276503     |
| 480-91551-1 MSD    | TP1504-111915-1145 | Total/NA  | Solid  | 8082A  | 276503     |
| 480-91551-2        | TP1502-111915-1320 | Total/NA  | Solid  | 8082A  | 276503     |
| 480-91551-3        | TP1501-111915-1440 | Total/NA  | Solid  | 8082A  | 276503     |
| 480-91551-4        | TP1503-111915-1530 | Total/NA  | Solid  | 8082A  | 276503     |
| 480-91551-5        | TP1503-111915-1545 | Total/NA  | Solid  | 8082A  | 276503     |
| 480-91551-6        | TP1505-112015-0900 | Total/NA  | Solid  | 8082A  | 276503     |
| LCS 480-276503/2-A | Lab Control Sample | Total/NA  | Solid  | 8082A  | 276503     |
| MB 480-276503/1-A  | Method Blank       | Total/NA  | Solid  | 8082A  | 276503     |

## Metals

### Leach Batch: 276440

| Lab Sample ID     | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|-------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1       | TP1504-111915-1145 | TCLP      | Solid  | 1311   |            |
| 480-91551-2       | TP1502-111915-1320 | TCLP      | Solid  | 1311   |            |
| 480-91551-3       | TP1501-111915-1440 | TCLP      | Solid  | 1311   |            |
| 480-91551-4       | TP1503-111915-1530 | TCLP      | Solid  | 1311   |            |
| 480-91551-5       | TP1503-111915-1545 | TCLP      | Solid  | 1311   |            |
| 480-91551-6       | TP1505-112015-0900 | TCLP      | Solid  | 1311   |            |
| LB 480-276440/1-B | Method Blank       | TCLP      | Solid  | 1311   |            |

TestAmerica Buffalo

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Metals (Continued)

### Leach Batch: 276440 (Continued)

| Lab Sample ID     | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-------------------|------------------|-----------|--------|--------|------------|
| LB 480-276440/1-C | Method Blank     | TCLP      | Solid  | 1311   |            |

### Prep Batch: 276668

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 480-91551-1         | TP1504-111915-1145     | TCLP      | Solid  | 3010A  | 276440     |
| 480-91551-2         | TP1502-111915-1320     | TCLP      | Solid  | 3010A  | 276440     |
| 480-91551-3         | TP1501-111915-1440     | TCLP      | Solid  | 3010A  | 276440     |
| 480-91551-4         | TP1503-111915-1530     | TCLP      | Solid  | 3010A  | 276440     |
| 480-91551-5         | TP1503-111915-1545     | TCLP      | Solid  | 3010A  | 276440     |
| 480-91551-6         | TP1505-112015-0900     | TCLP      | Solid  | 3010A  | 276440     |
| LB 480-276440/1-B   | Method Blank           | TCLP      | Solid  | 3010A  | 276440     |
| LCS 480-276668/3-A  | Lab Control Sample     | Total/NA  | Solid  | 3010A  |            |
| LCSD 480-276668/4-A | Lab Control Sample Dup | Total/NA  | Solid  | 3010A  |            |
| MB 480-276668/2-A   | Method Blank           | Total/NA  | Solid  | 3010A  |            |

### Prep Batch: 276686

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 480-91551-1          | TP1504-111915-1145     | TCLP      | Solid  | 7470A  | 276440     |
| 480-91551-2          | TP1502-111915-1320     | TCLP      | Solid  | 7470A  | 276440     |
| 480-91551-3          | TP1501-111915-1440     | TCLP      | Solid  | 7470A  | 276440     |
| 480-91551-4          | TP1503-111915-1530     | TCLP      | Solid  | 7470A  | 276440     |
| 480-91551-5          | TP1503-111915-1545     | TCLP      | Solid  | 7470A  | 276440     |
| 480-91551-6          | TP1505-112015-0900     | TCLP      | Solid  | 7470A  | 276440     |
| LB 480-276440/1-C    | Method Blank           | TCLP      | Solid  | 7470A  | 276440     |
| LCS 480-276686/3-A   | Lab Control Sample     | Total/NA  | Solid  | 7470A  |            |
| LCSD 480-276686/15-A | Lab Control Sample Dup | Total/NA  | Solid  | 7470A  |            |
| MB 480-276686/2-A    | Method Blank           | Total/NA  | Solid  | 7470A  |            |

### Analysis Batch: 276827

| Lab Sample ID        | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-----------|--------|--------|------------|
| 480-91551-1          | TP1504-111915-1145     | TCLP      | Solid  | 7470A  | 276686     |
| 480-91551-2          | TP1502-111915-1320     | TCLP      | Solid  | 7470A  | 276686     |
| 480-91551-3          | TP1501-111915-1440     | TCLP      | Solid  | 7470A  | 276686     |
| 480-91551-4          | TP1503-111915-1530     | TCLP      | Solid  | 7470A  | 276686     |
| 480-91551-5          | TP1503-111915-1545     | TCLP      | Solid  | 7470A  | 276686     |
| 480-91551-6          | TP1505-112015-0900     | TCLP      | Solid  | 7470A  | 276686     |
| LB 480-276440/1-C    | Method Blank           | TCLP      | Solid  | 7470A  | 276686     |
| LCS 480-276686/3-A   | Lab Control Sample     | Total/NA  | Solid  | 7470A  | 276686     |
| LCSD 480-276686/15-A | Lab Control Sample Dup | Total/NA  | Solid  | 7470A  | 276686     |
| MB 480-276686/2-A    | Method Blank           | Total/NA  | Solid  | 7470A  | 276686     |

### Analysis Batch: 276979

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1        | TP1504-111915-1145 | TCLP      | Solid  | 6010C  | 276668     |
| 480-91551-2        | TP1502-111915-1320 | TCLP      | Solid  | 6010C  | 276668     |
| 480-91551-3        | TP1501-111915-1440 | TCLP      | Solid  | 6010C  | 276668     |
| 480-91551-4        | TP1503-111915-1530 | TCLP      | Solid  | 6010C  | 276668     |
| 480-91551-5        | TP1503-111915-1545 | TCLP      | Solid  | 6010C  | 276668     |
| 480-91551-6        | TP1505-112015-0900 | TCLP      | Solid  | 6010C  | 276668     |
| LB 480-276440/1-B  | Method Blank       | TCLP      | Solid  | 6010C  | 276668     |
| LCS 480-276668/3-A | Lab Control Sample | Total/NA  | Solid  | 6010C  | 276668     |

TestAmerica Buffalo

# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Metals (Continued)

### Analysis Batch: 276979 (Continued)

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| LCSD 480-276668/4-A | Lab Control Sample Dup | Total/NA  | Solid  | 6010C  | 276668     |
| MB 480-276668/2-A   | Method Blank           | Total/NA  | Solid  | 6010C  | 276668     |

## General Chemistry

### Analysis Batch: 276276

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method   | Prep Batch |
|---------------|--------------------|-----------|--------|----------|------------|
| 480-91551-1   | TP1504-111915-1145 | Total/NA  | Solid  | Moisture |            |
| 480-91551-2   | TP1502-111915-1320 | Total/NA  | Solid  | Moisture |            |
| 480-91551-3   | TP1501-111915-1440 | Total/NA  | Solid  | Moisture |            |
| 480-91551-4   | TP1503-111915-1530 | Total/NA  | Solid  | Moisture |            |
| 480-91551-5   | TP1503-111915-1545 | Total/NA  | Solid  | Moisture |            |
| 480-91551-6   | TP1505-112015-0900 | Total/NA  | Solid  | Moisture |            |

### Analysis Batch: 276547

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|---------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1   | TP1504-111915-1145 | Total/NA  | Solid  | 9095B  |            |
| 480-91551-2   | TP1502-111915-1320 | Total/NA  | Solid  | 9095B  |            |
| 480-91551-3   | TP1501-111915-1440 | Total/NA  | Solid  | 9095B  |            |
| 480-91551-4   | TP1503-111915-1530 | Total/NA  | Solid  | 9095B  |            |
| 480-91551-5   | TP1503-111915-1545 | Total/NA  | Solid  | 9095B  |            |
| 480-91551-6   | TP1505-112015-0900 | Total/NA  | Solid  | 9095B  |            |

### Prep Batch: 276723

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1        | TP1504-111915-1145 | Total/NA  | Solid  | 7.3.3  |            |
| 480-91551-2        | TP1502-111915-1320 | Total/NA  | Solid  | 7.3.3  |            |
| 480-91551-3        | TP1501-111915-1440 | Total/NA  | Solid  | 7.3.3  |            |
| 480-91551-4        | TP1503-111915-1530 | Total/NA  | Solid  | 7.3.3  |            |
| 480-91551-5        | TP1503-111915-1545 | Total/NA  | Solid  | 7.3.3  |            |
| 480-91551-6        | TP1505-112015-0900 | Total/NA  | Solid  | 7.3.3  |            |
| LCS 480-276723/2-A | Lab Control Sample | Total/NA  | Solid  | 7.3.3  |            |
| MB 480-276723/1-A  | Method Blank       | Total/NA  | Solid  | 7.3.3  |            |

### Prep Batch: 276729

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1        | TP1504-111915-1145 | Total/NA  | Solid  | 7.3.4  |            |
| 480-91551-2        | TP1502-111915-1320 | Total/NA  | Solid  | 7.3.4  |            |
| 480-91551-3        | TP1501-111915-1440 | Total/NA  | Solid  | 7.3.4  |            |
| 480-91551-4        | TP1503-111915-1530 | Total/NA  | Solid  | 7.3.4  |            |
| 480-91551-5        | TP1503-111915-1545 | Total/NA  | Solid  | 7.3.4  |            |
| 480-91551-6        | TP1505-112015-0900 | Total/NA  | Solid  | 7.3.4  |            |
| LCS 480-276729/2-A | Lab Control Sample | Total/NA  | Solid  | 7.3.4  |            |
| MB 480-276729/1-A  | Method Blank       | Total/NA  | Solid  | 7.3.4  |            |

### Analysis Batch: 276842

| Lab Sample ID | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|---------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1   | TP1504-111915-1145 | Total/NA  | Solid  | 9012   | 276723     |
| 480-91551-2   | TP1502-111915-1320 | Total/NA  | Solid  | 9012   | 276723     |
| 480-91551-3   | TP1501-111915-1440 | Total/NA  | Solid  | 9012   | 276723     |

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## General Chemistry (Continued)

### Analysis Batch: 276842 (Continued)

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-4        | TP1503-111915-1530 | Total/NA  | Solid  | 9012   | 276723     |
| 480-91551-5        | TP1503-111915-1545 | Total/NA  | Solid  | 9012   | 276723     |
| 480-91551-6        | TP1505-112015-0900 | Total/NA  | Solid  | 9012   | 276723     |
| LCS 480-276723/2-A | Lab Control Sample | Total/NA  | Solid  | 9012   | 276723     |
| MB 480-276723/1-A  | Method Blank       | Total/NA  | Solid  | 9012   | 276723     |

### Analysis Batch: 276884

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1        | TP1504-111915-1145 | Total/NA  | Solid  | 9034   | 276729     |
| 480-91551-2        | TP1502-111915-1320 | Total/NA  | Solid  | 9034   | 276729     |
| 480-91551-3        | TP1501-111915-1440 | Total/NA  | Solid  | 9034   | 276729     |
| 480-91551-4        | TP1503-111915-1530 | Total/NA  | Solid  | 9034   | 276729     |
| 480-91551-5        | TP1503-111915-1545 | Total/NA  | Solid  | 9034   | 276729     |
| 480-91551-6        | TP1505-112015-0900 | Total/NA  | Solid  | 9034   | 276729     |
| LCS 480-276729/2-A | Lab Control Sample | Total/NA  | Solid  | 9034   | 276729     |
| MB 480-276729/1-A  | Method Blank       | Total/NA  | Solid  | 9034   | 276729     |

### Analysis Batch: 277009

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1      | TP1504-111915-1145 | Total/NA  | Solid  | 1010A  |            |
| 480-91551-2      | TP1502-111915-1320 | Total/NA  | Solid  | 1010A  |            |
| 480-91551-3      | TP1501-111915-1440 | Total/NA  | Solid  | 1010A  |            |
| 480-91551-4      | TP1503-111915-1530 | Total/NA  | Solid  | 1010A  |            |
| 480-91551-5      | TP1503-111915-1545 | Total/NA  | Solid  | 1010A  |            |
| 480-91551-6      | TP1505-112015-0900 | Total/NA  | Solid  | 1010A  |            |
| 480-91551-6 DU   | TP1505-112015-0900 | Total/NA  | Solid  | 1010A  |            |
| LCS 480-277009/1 | Lab Control Sample | Total/NA  | Solid  | 1010A  |            |

### Analysis Batch: 277058

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 480-91551-1      | TP1504-111915-1145 | Total/NA  | Solid  | 9045D  |            |
| 480-91551-2      | TP1502-111915-1320 | Total/NA  | Solid  | 9045D  |            |
| 480-91551-3      | TP1501-111915-1440 | Total/NA  | Solid  | 9045D  |            |
| 480-91551-4      | TP1503-111915-1530 | Total/NA  | Solid  | 9045D  |            |
| 480-91551-5      | TP1503-111915-1545 | Total/NA  | Solid  | 9045D  |            |
| 480-91551-6      | TP1505-112015-0900 | Total/NA  | Solid  | 9045D  |            |
| 480-91551-6 DU   | TP1505-112015-0900 | Total/NA  | Solid  | 9045D  |            |
| LCS 480-277058/1 | Lab Control Sample | Total/NA  | Solid  | 9045D  |            |

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# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1504-111915-1145**

**Date Collected: 11/19/15 11:45**

**Date Received: 11/21/15 01:50**

**Lab Sample ID: 480-91551-1**

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 276443       | 11/23/15 08:40       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277923       | 12/03/15 12:27       | JWG     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276687       | 11/24/15 11:06       | RMZ     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 277509       | 12/01/15 19:02       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276668       | 11/24/15 10:50       | CMM     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276979       | 11/25/15 12:55       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276686       | 11/24/15 12:15       | TAS     | TAL BUF |
| TCLP      | Analysis   | 7470A        |     | 1               | 276827       | 11/24/15 16:32       | TAS     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 277009       | 11/25/15 16:49       | ZRJ     | TAL BUF |
| Total/NA  | Prep       | 7.3.3        |     |                 | 276723       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 276842       | 11/24/15 16:18       | LAW     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 276729       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 276884       | 11/25/15 07:55       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 277058       | 11/25/15 19:15       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276276       | 11/21/15 07:38       | CSW     | TAL BUF |

**Client Sample ID: TP1504-111915-1145**

**Date Collected: 11/19/15 11:45**

**Date Received: 11/21/15 01:50**

**Lab Sample ID: 480-91551-1**

**Matrix: Solid**

**Percent Solids: 90.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276503       | 11/23/15 12:01       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276545       | 11/23/15 18:03       | JMO     | TAL BUF |

**Client Sample ID: TP1502-111915-1320**

**Date Collected: 11/19/15 13:20**

**Date Received: 11/21/15 01:50**

**Lab Sample ID: 480-91551-2**

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 276443       | 11/23/15 08:40       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277923       | 12/03/15 12:51       | JWG     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276687       | 11/24/15 11:06       | RMZ     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 277509       | 12/01/15 19:28       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276668       | 11/24/15 10:50       | CMM     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276979       | 11/25/15 12:58       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276686       | 11/24/15 12:15       | TAS     | TAL BUF |

TestAmerica Buffalo

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1502-111915-1320**

**Lab Sample ID: 480-91551-2**

**Date Collected: 11/19/15 13:20**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Analysis   | 7470A        |     | 1               | 276827       | 11/24/15 16:33       | TAS     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 277009       | 11/25/15 16:49       | ZRJ     | TAL BUF |
| Total/NA  | Prep       | 7.3.3        |     |                 | 276723       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 276842       | 11/24/15 16:18       | LAW     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 276729       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 276884       | 11/25/15 07:55       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 277058       | 11/25/15 19:15       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276276       | 11/21/15 07:38       | CSW     | TAL BUF |

**Client Sample ID: TP1502-111915-1320**

**Lab Sample ID: 480-91551-2**

**Date Collected: 11/19/15 13:20**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 90.7**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276503       | 11/23/15 12:01       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276545       | 11/23/15 18:17       | JMO     | TAL BUF |

**Client Sample ID: TP1501-111915-1440**

**Lab Sample ID: 480-91551-3**

**Date Collected: 11/19/15 14:40**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 276443       | 11/23/15 08:40       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277923       | 12/03/15 13:15       | JWG     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276687       | 11/24/15 11:06       | RMZ     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 277509       | 12/01/15 19:54       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276668       | 11/24/15 10:50       | CMM     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276979       | 11/25/15 13:02       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276686       | 11/24/15 12:15       | TAS     | TAL BUF |
| TCLP      | Analysis   | 7470A        |     | 1               | 276827       | 11/24/15 16:35       | TAS     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 277009       | 11/25/15 16:49       | ZRJ     | TAL BUF |
| Total/NA  | Prep       | 7.3.3        |     |                 | 276723       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 276842       | 11/24/15 16:18       | LAW     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 276729       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 276884       | 11/25/15 07:55       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 277058       | 11/25/15 19:15       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276276       | 11/21/15 07:38       | CSW     | TAL BUF |

TestAmerica Buffalo

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1501-111915-1440**

**Lab Sample ID: 480-91551-3**

**Date Collected: 11/19/15 14:40**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 79.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276503       | 11/23/15 12:01       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276545       | 11/23/15 18:32       | JMO     | TAL BUF |

**Client Sample ID: TP1503-111915-1530**

**Lab Sample ID: 480-91551-4**

**Date Collected: 11/19/15 15:30**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 276443       | 11/23/15 08:40       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277923       | 12/03/15 13:38       | JWG     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276687       | 11/24/15 11:06       | RMZ     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 277509       | 12/01/15 20:20       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276668       | 11/24/15 10:50       | CMM     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276979       | 11/25/15 13:05       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276686       | 11/24/15 12:15       | TAS     | TAL BUF |
| TCLP      | Analysis   | 7470A        |     | 1               | 276827       | 11/24/15 16:36       | TAS     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 277009       | 11/25/15 16:49       | ZRJ     | TAL BUF |
| Total/NA  | Prep       | 7.3.3        |     |                 | 276723       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 276842       | 11/24/15 16:18       | LAW     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 276729       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 276884       | 11/25/15 07:55       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 277058       | 11/25/15 19:15       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276276       | 11/21/15 07:38       | CSW     | TAL BUF |

**Client Sample ID: TP1503-111915-1530**

**Lab Sample ID: 480-91551-4**

**Date Collected: 11/19/15 15:30**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 88.0**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276503       | 11/23/15 12:01       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276545       | 11/23/15 18:47       | JMO     | TAL BUF |

**Client Sample ID: TP1503-111915-1545**

**Lab Sample ID: 480-91551-5**

**Date Collected: 11/19/15 15:45**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 276443       | 11/23/15 08:40       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277923       | 12/03/15 14:02       | JWG     | TAL BUF |

TestAmerica Buffalo

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1503-111915-1545**

**Lab Sample ID: 480-91551-5**

**Date Collected: 11/19/15 15:45**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276687       | 11/24/15 11:06       | RMZ     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 277509       | 12/01/15 20:46       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276668       | 11/24/15 10:50       | CMM     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276979       | 11/25/15 13:18       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276686       | 11/24/15 12:15       | TAS     | TAL BUF |
| TCLP      | Analysis   | 7470A        |     | 1               | 276827       | 11/24/15 16:38       | TAS     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 277009       | 11/25/15 16:49       | ZRJ     | TAL BUF |
| Total/NA  | Prep       | 7.3.3        |     |                 | 276723       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 276842       | 11/24/15 16:18       | LAW     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 276729       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 276884       | 11/25/15 07:55       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 277058       | 11/25/15 19:15       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276276       | 11/21/15 07:38       | CSW     | TAL BUF |

**Client Sample ID: TP1503-111915-1545**

**Lab Sample ID: 480-91551-5**

**Date Collected: 11/19/15 15:45**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 75.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276503       | 11/23/15 12:01       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276545       | 11/23/15 19:02       | JMO     | TAL BUF |

**Client Sample ID: TP1505-112015-0900**

**Lab Sample ID: 480-91551-6**

**Date Collected: 11/20/15 09:00**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| TCLP      | Leach      | 1311         |     |                 | 276443       | 11/23/15 08:40       | JLS     | TAL BUF |
| TCLP      | Analysis   | 8260C        |     | 10              | 277923       | 12/03/15 14:26       | JWG     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3510C        |     |                 | 276687       | 11/24/15 11:06       | RMZ     | TAL BUF |
| TCLP      | Analysis   | 8270D        |     | 1               | 277687       | 12/02/15 13:49       | CAS     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 3010A        |     |                 | 276668       | 11/24/15 10:50       | CMM     | TAL BUF |
| TCLP      | Analysis   | 6010C        |     | 1               | 276979       | 11/25/15 13:21       | AMH     | TAL BUF |
| TCLP      | Leach      | 1311         |     |                 | 276440       | 11/23/15 08:37       | JLS     | TAL BUF |
| TCLP      | Prep       | 7470A        |     |                 | 276686       | 11/24/15 12:15       | TAS     | TAL BUF |
| TCLP      | Analysis   | 7470A        |     | 1               | 276827       | 11/24/15 16:40       | TAS     | TAL BUF |
| Total/NA  | Analysis   | 1010A        |     | 1               | 277009       | 11/25/15 16:49       | ZRJ     | TAL BUF |

TestAmerica Buffalo

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

**Client Sample ID: TP1505-112015-0900**

**Lab Sample ID: 480-91551-6**

**Date Collected: 11/20/15 09:00**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 7.3.3        |     |                 | 276723       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9012         |     | 1               | 276842       | 11/24/15 16:18       | LAW     | TAL BUF |
| Total/NA  | Prep       | 7.3.4        |     |                 | 276729       | 11/24/15 04:15       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9034         |     | 1               | 276884       | 11/25/15 07:55       | LAW     | TAL BUF |
| Total/NA  | Analysis   | 9045D        |     | 1               | 277058       | 11/25/15 19:15       | MGH     | TAL BUF |
| Total/NA  | Analysis   | 9095B        |     | 1               | 276547       | 11/23/15 10:40       | MDL     | TAL BUF |
| Total/NA  | Analysis   | Moisture     |     | 1               | 276276       | 11/21/15 07:38       | CSW     | TAL BUF |

**Client Sample ID: TP1505-112015-0900**

**Lab Sample ID: 480-91551-6**

**Date Collected: 11/20/15 09:00**

**Matrix: Solid**

**Date Received: 11/21/15 01:50**

**Percent Solids: 78.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 3550C        |     |                 | 276503       | 11/23/15 12:01       | CAM     | TAL BUF |
| Total/NA  | Analysis   | 8082A        |     | 1               | 276545       | 11/23/15 19:17       | JMO     | TAL BUF |

## Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

# Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

## Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|-----------|---------|------------|------------------|-----------------|
| New York  | NELAP   | 2          | 10026            | 03-31-16        |

The following analytes are included in this report, but certification is not offered by the governing authority:

| Analysis Method | Prep Method | Matrix | Analyte           |
|-----------------|-------------|--------|-------------------|
| 7470A           | 7470A       | Solid  | Mercury           |
| 9012            | 7.3.3       | Solid  | Cyanide, Reactive |
| 9034            | 7.3.4       | Solid  | Sulfide, Reactive |
| Moisture        |             | Solid  | Percent Moisture  |
| Moisture        |             | Solid  | Percent Solids    |

## Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

| Method   | Method Description                                     | Protocol | Laboratory |
|----------|--------------------------------------------------------|----------|------------|
| 8260C    | Volatile Organic Compounds by GC/MS                    | SW846    | TAL BUF    |
| 8270D    | Semivolatile Organic Compounds (GC/MS)                 | SW846    | TAL BUF    |
| 8082A    | Polychlorinated Biphenyls (PCBs) by Gas Chromatography | SW846    | TAL BUF    |
| 6010C    | Metals (ICP)                                           | SW846    | TAL BUF    |
| 7470A    | Mercury (CVAA)                                         | SW846    | TAL BUF    |
| 1010A    | Ignitability, Pensky-Martens Closed Cup Method         | SW846    | TAL BUF    |
| 9012     | Cyanide, Reactive                                      | SW846    | TAL BUF    |
| 9034     | Sulfide, Reactive                                      | SW846    | TAL BUF    |
| 9045D    | pH                                                     | SW846    | TAL BUF    |
| 9095B    | Paint Filter                                           | SW846    | TAL BUF    |
| Moisture | Percent Moisture                                       | EPA      | TAL BUF    |

### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

## Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: RG&E Seneca Falls MGP Site

TestAmerica Job ID: 480-91551-1

| Lab Sample ID | Client Sample ID   | Matrix | Collected      | Received       |
|---------------|--------------------|--------|----------------|----------------|
| 480-91551-1   | TP1504-111915-1145 | Solid  | 11/19/15 11:45 | 11/21/15 01:50 |
| 480-91551-2   | TP1502-111915-1320 | Solid  | 11/19/15 13:20 | 11/21/15 01:50 |
| 480-91551-3   | TP1501-111915-1440 | Solid  | 11/19/15 14:40 | 11/21/15 01:50 |
| 480-91551-4   | TP1503-111915-1530 | Solid  | 11/19/15 15:30 | 11/21/15 01:50 |
| 480-91551-5   | TP1503-111915-1545 | Solid  | 11/19/15 15:45 | 11/21/15 01:50 |
| 480-91551-6   | TP1505-112015-0900 | Solid  | 11/20/15 09:00 | 11/21/15 01:50 |



## THE LEADER IN ENVIRONMENTAL TESTING

## Chain of Custody Record

EAL-4124 (1007)

[illegible]

**DISTRIBUTION:** WHITE - Returned to Client with Report; CANARY - Slays with the Sample; PINK - Field Copy

## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 480-91551-1

Login Number: 91551

List Number: 1

Creator: Williams, Christopher S

List Source: TestAmerica Buffalo

| Question                                                                         | Answer | Comment |
|----------------------------------------------------------------------------------|--------|---------|
| Radioactivity either was not measured or, if measured, is at or below background | True   |         |
| The cooler's custody seal, if present, is intact.                                | True   |         |
| The cooler or samples do not appear to have been compromised or tampered with.   | True   |         |
| Samples were received on ice.                                                    | True   |         |
| Cooler Temperature is acceptable.                                                | True   |         |
| Cooler Temperature is recorded.                                                  | True   |         |
| COC is present.                                                                  | True   |         |
| COC is filled out in ink and legible.                                            | True   |         |
| COC is filled out with all pertinent information.                                | True   |         |
| Is the Field Sampler's name present on COC?                                      | True   |         |
| There are no discrepancies between the sample IDs on the containers and the COC. | True   |         |
| Samples are received within Holding Time.                                        | True   |         |
| Sample containers have legible labels.                                           | True   |         |
| Containers are not broken or leaking.                                            | True   |         |
| Sample collection date/times are provided.                                       | True   |         |
| Appropriate sample containers are used.                                          | True   |         |
| Sample bottles are completely filled.                                            | True   |         |
| Sample Preservation Verified                                                     | True   |         |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True   |         |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.     | N/A    |         |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True   |         |
| Multiphasic samples are not present.                                             | True   |         |
| Samples do not require splitting or compositing.                                 | True   |         |
| Sampling Company provided.                                                       | True   | H AND A |
| Samples received within 48 hours of sampling.                                    | True   |         |
| Samples requiring field filtration have been filtered in the field.              | N/A    |         |
| Chlorine Residual checked.                                                       | N/A    |         |

## **APPENDIX E**

### **Treatability Testing Results**



**T**imely  
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**S**oil  
**T**ests, L L C

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Tucker, GA 30084  
Office: 770-938-8233  
Fax: 770-923-8973  
Web: [www.test-llc.com](http://www.test-llc.com)

Document Title: Soil-Grout Mixing Molding Procedure  
Document No.: TEST-SOP – 12B  
Revision/Date : No. 01B, Effective: 01-15-2016  
Page No.: 1 of 5

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### *Standard Test Method for*

## **SOIL-GROUT MIXING MOLDING PROCEDURE**

### **1.0 SCOPE**

- 1.1 This test method covers the laboratory preparation of grout and grout-soil mixtures to be used for physical property test measurements. This method applies to laboratory mixed and cast specimens and has partial application for samples mixed and/or cast in the field

### **2.0 REFERENCED DOCUMENTS**

2.1 ASTM Standards:

- C 143 Standard Test Method for Slump of Hydraulic-Cement Concrete
- C 192 Practice for Making and Curing Concrete Test Specimens in the Laboratory
- D 6910 Standard Test Method for Marsh Funnel Viscosity of Clay Construction Slurries
- D1632 Standard Practice for Making and Curing Soil-Cement Test Specimens in the Laboratory
- C 511 Specification for Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes
- D 1633 Test Method for Compressive Strength of Molded Soil-Cement Cylinders
- D 4832 Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders

### **3.0 SUMMARY OF PROCEDURE**

- 3.1 Ingredients of a predetermined composition are mixed in the laboratory and cast in plastic molds. Following an initial cure period, test specimens are either trimmed or capped to appropriate ASTM end conditions relative to smoothness, perpendicularity and surface texture.



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## **4.0 SAFETY**

- 4.1 Wear latex gloves whenever handling samples.
- 4.2 Wear safety glasses in active laboratory areas.
- 4.3 Use caution when handling any contaminated materials. Wear protective clothing and use hoods.
- 4.4 Use caution when using the mixer. Keep mixing utensils and loose clothing away from mobile mixer attachments.
- 4.5 Use caution when handling knife. Be careful not to cut yourself.

## **5.0 APPARATUS AND MATERIALS**

- 5.1 Stainless Steel Bowl
- 5.2 Mixer: an electric hand-held mixer capable of mixing batches at a fixed speed.
- 5.3 Mixer Attachments
- 5.4 Spatulas
- 5.5 5/8" (Diameter) Tamping Rod (L=16-24"): used for compaction and removing voids in sample. Slump Mold (metal or plastic), see Fig. 1 of ASTM C143/143M, or modified mold with proportional dimensions, if there are not sufficient amount of material (soil-grout) to use standard size slump mold.
- 5.6 Balance: of 0.01 gram readability (class GP1).
- 5.7 Balance: of 0.1 gram readability (class GP2).
- 5.8 Graduated Cylinder, Marsh Funnel per ASTM D6910
- 5.9 2" x 4" Plastic Molds, or 3"x6".
- 5.10 3" x 3" Plastic Molds
- 5.11 Knife, straightedge



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5.12 Spoons and Scoops

5.13 Humidity Meter and Thermometer

5.14 Humidity Chamber

## **6.0 SAMPLE PREPARATION**

6.1 Remove oversize gravel. Thoroughly mix soil in order to achieve uniform distribution of soil particles and moisture content and keep composite in a plastic bag inside of a plastic drum with cover.

6.2 Take moisture content of soil composite and record.

6.3 Using mixture recipe, determine the necessary mass of each constituent. Weigh each item.

## **7.0 PROCEDURE**

7.1 Thoroughly mix dry ingredients except for soil in the stainless steel bowl (grout mixture)

7.2 Measure tap water or liquid requested by client in graduated cylinder (based on requested water/cement ratio) and add to ingredients in bowl. Mix thoroughly using hand-held mixer and spatula.

7.3 Add soil weighed in separate tare to mixed ingredients in stainless steel bowl and mix by electric mixer.

7.3A Place soil-cement mix into slump mold by scoop in 3 layers (approximately 1/3 volume of mold each layer). Rod each layer 25 times over the cross section with the rounded end of the rod. After completion of Top Layer strike off the surface of material with rod and by straightedge make surface horizontal. Remove material around mold. Raise Mold vertically by steady upward lift in 5+/-2 seconds without disturbance of sample. Place mold next to sample cone and measure slump by determining the difference between the top of mold and the displaced original center of the top surface of the specimen. Report slump to the nearest 1/4".



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- 7.3B If slump of material is less than requested by client (for example 4-5”) collect all material back to the mixing bowl and add some additional water (based on consistency of material, original slump and experience for various soil types). Record additional amount of water and mix again with electric mixer. After mixing repeat step 7.3A of this procedure.
- 7.3C If slump in previous step is at target, follow to next step. If target slump is not achieve, repeat step 7.3B. Record TOTAL amount of additional water needed to achieve target slump.
- 7.4 Place the mixture into the appropriate plastic molds. Label mold with sample mixture number and mix date.
- 7.5 Use a tamping rod, as well as vigorous tapping of the mold against a hard surface, to densify the sample and drive out air bubbles (in 3 layers). Other methods may be acceptable, based on properties of material.
- 7.6 Check the smoothness and level of the top of the sample with a straightedge.
- 7.7 Place molds into a humidity chamber. A couple of mold containers full of water were placed in the humidity chamber as well in order to maintain a humid environment for the duration of curing time. Keep molds in humidity chamber to cure until further testing.
- 7.8 Based on original amount of water (from w/c ratio) and additional amount of water from step 7.3C perform new mix of grout and observe time in seconds needed to empty 1Qt (946mL) Marsh funnel.

## **8.0 CALCULATIONS**

- 8.1 Not Applicable.

## **9.0 QUALITY CONTROL**

- 9.1 Ensure that all equipment is thoroughly clean.
- 9.2 Balance should be calibrated yearly.
- 9.3 Suggested mixing time is 8 minutes but may vary between projects.



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## **10.0 REPORT**

- 10.1 Record mix design and each prepared sample ID on batch worksheet.
  - 10.1.1 Batch Number (TEST unique control number). Weight of each mix constituent
  - 10.1.2 Moisture content of base soil
  - 10.1.3 Date of mix preparation, number and size of each sample cast from the batch.
  - 10.1.4 Additional amount of water (if needed) to achieve target slump and Final Slump value.
  - 10.1.5 Report viscosity in seconds from step 7.8 (if requested).





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|            |           |
|------------|-----------|
| Tested By  | EB        |
| Date       | 12/01/15  |
| Checked By | <i>EB</i> |

|              |                                  |             |           |
|--------------|----------------------------------|-------------|-----------|
| Client Pr. # | 34507-023                        | Lab. PR. #  | 1511-01-1 |
| Pr. Name     | Seneca Falls PDI                 | S. Type     | Bulk      |
| Sample ID    | 20967/Composite (TP-15-02/03/04) | Depth/Elev. | -         |
| Location     | -                                | Add. Info   | -         |

**ASTM D 422/AASHTO T 88**

**Standard Test Method for Particle-Size Analysis of Soils (with Double Separation per ASTM D6913 and Hydrometer Analysis)**

| <i>As-Received Moisture Content (Total Sample)</i>             |        |                              |        | <i>Moisture Content of FINER PORTION</i> |               |         |      |
|----------------------------------------------------------------|--------|------------------------------|--------|------------------------------------------|---------------|---------|------|
| Mass of Wet Sample & Tare, g                                   | 1363.0 | Mass of Wet Sample & Tare, g | 1193.1 | 1st Subsample                            | 2nd Subsample | 1054.40 |      |
| Mass of Dry Sample & Tare, g                                   | 1214.8 | Mass of Dry Sample & Tare, g | 1075.5 |                                          |               | 955.30  |      |
| Mass of Tare, g                                                | 158.2  | Mass of Tare, g              | 304.0  |                                          |               | 298.30  |      |
| Moisture Content, %                                            | 14.0   | Moisture Content, %          | 15.2   |                                          |               | 15.1    |      |
| Mass of Total Sample before separation on 3/8" sieve & Tare, g |        |                              |        | 1st Subsample                            | 2nd Subsample | 101.20  |      |
| Mass of Tare, g                                                |        |                              |        |                                          |               | 0.0     |      |
| Total Mass of Dry Sample, g                                    |        |                              |        |                                          |               | 87.94   |      |
|                                                                |        |                              |        |                                          |               | 90.1    | 84.0 |

**SIEVE ANALYSIS**

| COARSER PORTION OF SAMPLE (RETAINED ON 3/8" SIEVE) |                  |        |            |            | 2nd Subsample of FINER PORTION OF SAMPLE (PASSING #4 SIEVE:Hydrometer Backsieve) |                             |       |                      |  |
|----------------------------------------------------|------------------|--------|------------|------------|----------------------------------------------------------------------------------|-----------------------------|-------|----------------------|--|
| Mass of Tare, g                                    |                  | 0.00   |            | % PASSING  |                                                                                  |                             |       |                      |  |
| Sieve Size                                         | Sample & Tare, g |        | % RETAINED | (of Total) | Sieve Size                                                                       | Cumulative Mass retained, g |       | % PASSING (of Total) |  |
| 12"                                                | COBBLES          |        | 0          | 100        | #10                                                                              | MEDIUM                      | 2.92  | 81                   |  |
| 3"                                                 | COARSE GRAVEL    | 0.0    | 0          | 100        | #20                                                                              | SAND                        | 6.55  | 78                   |  |
| 2.5"                                               |                  |        |            |            | #40                                                                              | FINE SAND                   | 9.84  | 75                   |  |
| 2"                                                 |                  | 93.0   | 0          | 100        | #60                                                                              |                             | 17.32 | 67                   |  |
| 1.5"                                               |                  | 694.1  | 1          | 99         | #100                                                                             |                             | 39.03 | 47                   |  |
| 1"                                                 | FINE GRAVEL      | 1981.3 | 3          | 97         | #200                                                                             | FINES                       | 63.85 | 23                   |  |
| .75"                                               |                  | 3521.4 | 6          | 94         | Remarks                                                                          |                             |       |                      |  |
| .5"                                                |                  | 5418.3 | 9          | 91         |                                                                                  |                             |       |                      |  |
| .375"                                              |                  | 6291.4 | 10         | 90         |                                                                                  |                             |       |                      |  |
| #4                                                 | COARSE SAND      | 70.9   | 7          | 84         |                                                                                  |                             |       |                      |  |
| #4 <First Subsample of Finer Portion<3/8"          |                  |        |            |            |                                                                                  |                             |       |                      |  |

**#4 <First Subsample of Finer Portion<3/8"**

**HYDROMETER ANALYSIS**

|                                   |          |
|-----------------------------------|----------|
| Length of Dispersion Period       | 1 Minute |
| Mechanical Dispersion Device ID # | 61       |
| Amount of Dispersing Agent (ml)   | 125.0    |
| Specific Gravity (assumed)        | 2.650    |
| Specific Gravity (tested)         |          |
| Starting time                     | 10:42    |

**PARTICLE-SIZE ANALYSIS**

|                  |    |                  |     |
|------------------|----|------------------|-----|
| % COBBLES        | 0  | % MEDIUM SAND    | 7   |
| % COARSE GRAVEL  | 6  | % FINE SAND      | 52  |
| % FINE GRAVEL    | 10 | % FINES          | 23  |
| % COARSE SAND    | 3  | % TOTAL SAMPLE   | 100 |
| % CLAY(<0.005mm) | 8  | % CLAY(<0.002mm) | 5   |

| Date     | Time  | Testing time (min) | Reading | Temp (°C) | K       | Composite Correction | Actual Reading | Effective Depth (cm) | a    | Particle Diam. (mm) | Percent Passing |
|----------|-------|--------------------|---------|-----------|---------|----------------------|----------------|----------------------|------|---------------------|-----------------|
| 12/02/15 | 10:44 | 2                  | 23.0    | 17.6      | 0.01399 | 8.0                  | 15.0           | 13.9                 | 1.00 | 0.0369              | 14.3            |
| 12/02/15 | 10:47 | 5                  | 21.0    | 17.6      | 0.01399 | 8.0                  | 13.0           | 14.2                 | 1.00 | 0.0236              | 12.4            |
| 12/02/15 | 10:57 | 15                 | 19.0    | 17.6      | 0.01399 | 8.0                  | 11.0           | 14.6                 | 1.00 | 0.0138              | 10.5            |
| 12/02/15 | 11:12 | 30                 | 18.0    | 17.6      | 0.01399 | 8.0                  | 10.0           | 14.7                 | 1.00 | 0.0098              | 9.5             |
| 12/02/15 | 11:42 | 60                 | 17.0    | 17.6      | 0.01399 | 8.0                  | 9.0            | 14.9                 | 1.00 | 0.0070              | 8.6             |
| 12/02/15 | 14:52 | 250                | 15.0    | 17.6      | 0.01399 | 8.0                  | 7.0            | 15.2                 | 1.00 | 0.0035              | 6.7             |
| 12/03/15 | 10:42 | 1440               | 13.0    | 17.6      | 0.01399 | 8.0                  | 5.0            | 15.6                 | 1.00 | 0.0015              | 4.8             |

Hydrometer 152H ID # 305527  
Sieve Shaker ID # 555

Oven ID # 15/496/610  
Balance ID# 139/142/700



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Tested By **EB**

Date **12/01/15**

Checked By **EB**

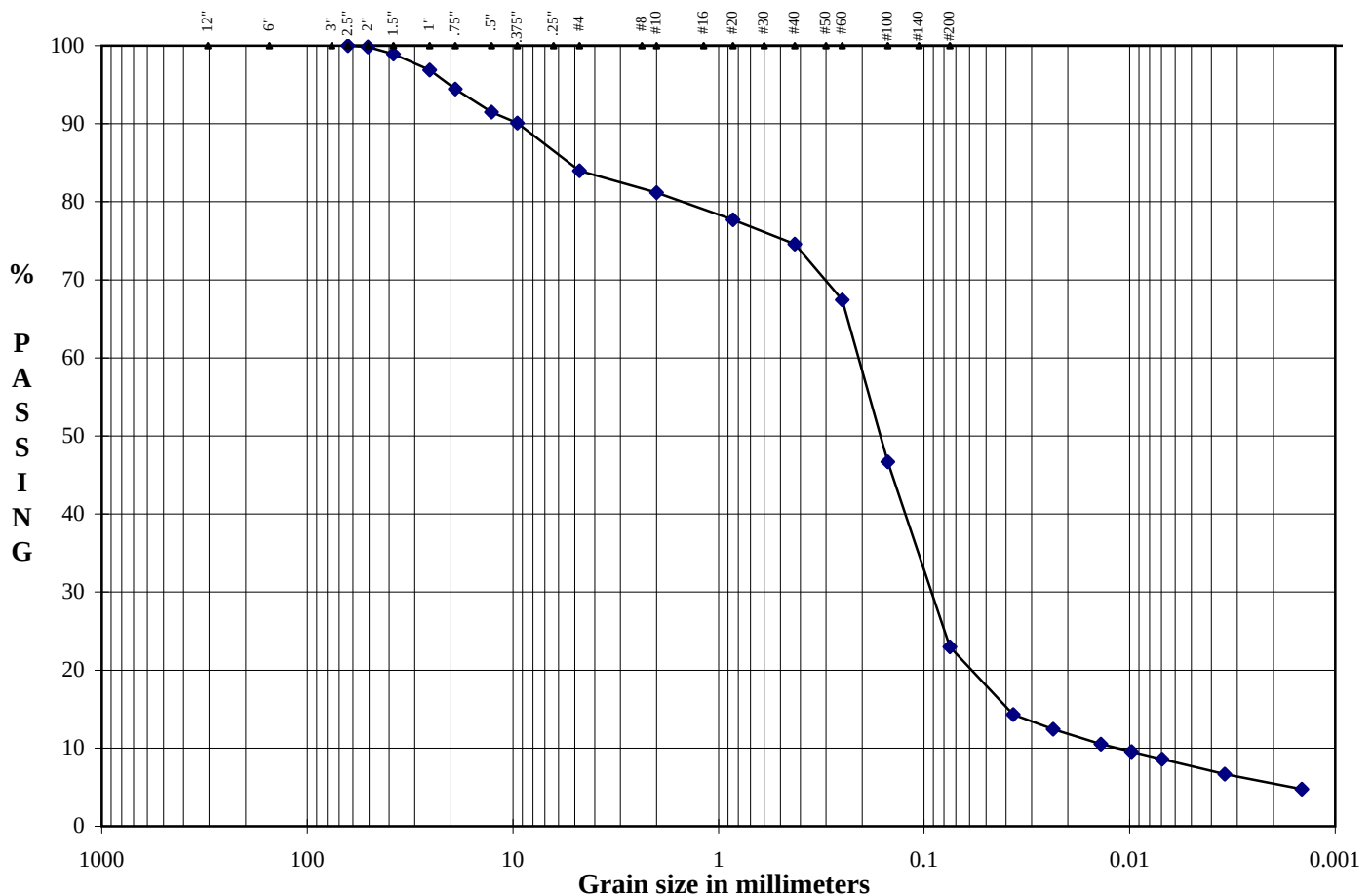
|              |                                  |
|--------------|----------------------------------|
| Client Pr. # | 34507-023                        |
| Pr. Name     | Seneca Falls PDI                 |
| Sample ID    | 20967/Composite (TP-15-02/03/04) |
| Location     | -                                |

|             |           |
|-------------|-----------|
| Lab. PR. #  | 1511-01-1 |
| S. Type     | Bulk      |
| Depth/Elev. | -         |
| Add. Info   | -         |

**ASTM D 422/AASHTO T 88**

**Standard Test Method for Particle-Size Analysis of Soils (with Double Separation per ASTM D6913 and Hydrometer Analysis)**

**Particle-Size Analysis**



| Boulders | Cobbles | Coarse | Fine | Coarse | Medium | Fine | Silt or Clay |
|----------|---------|--------|------|--------|--------|------|--------------|
|          |         | Gravel |      | Sand   |        |      | Fines        |

DESCRIPTION

NA

|                 |    |    |
|-----------------|----|----|
| D <sub>10</sub> | NA | mm |
| D <sub>30</sub> | NA | mm |
| D <sub>60</sub> | NA | mm |
| Cu              | NA |    |
| Cc              | NA |    |

USCS (ASTM D2487; D2488)

NA



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Date

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|              |                                  |             |           |
|--------------|----------------------------------|-------------|-----------|
| Client Pr. # | 34507-023                        | Lab. PR. #  | 1511-01-1 |
| Pr. Name     | Seneca Falls PDI                 | S. Type     | Bulk      |
| Sample ID    | 20967/Composite (TP-15-02/03/04) | Depth/Elev. | -         |
| Location     | -                                | Add. Info   | -         |

### ASTM D 2216; MOISTURE CONTENT DETERMINATION

| Sample ID             | Sample Depth, ft | Mass of Wet Sample & Tare, g | Mass of Dry Sample & Tare, g | Mass of Tare, g | Moisture Content, % | Comments    |
|-----------------------|------------------|------------------------------|------------------------------|-----------------|---------------------|-------------|
| 20967/Composite TP-15 | -                | 1193.10                      | 1075.50                      | 304.00          | 15.2                | <3/8" Sieve |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |
|                       |                  |                              |                              |                 |                     |             |

REMARKS

Balance ID Number

556/139/566

Oven ID Number

496/610



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Tested By

RI

Date

12/01/15

Checked By

*LB*

|              |                                  |             |           |
|--------------|----------------------------------|-------------|-----------|
| Client Pr. # | 34507-023                        | Lab. PR. #  | 1511-01-1 |
| Pr. Name     | Seneca Falls PDI                 | S. Type     | Bulk      |
| Sample ID    | 20967/Composite (TP-15-02/03/04) | Depth/Elev. | -         |
| Location     | -                                | Add. Info   | -         |

**ASTM D 698  
Standard Test Method for Laboratory Compaction Characteristics of Soil Using  
Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600kN-m/m<sup>3</sup>))**

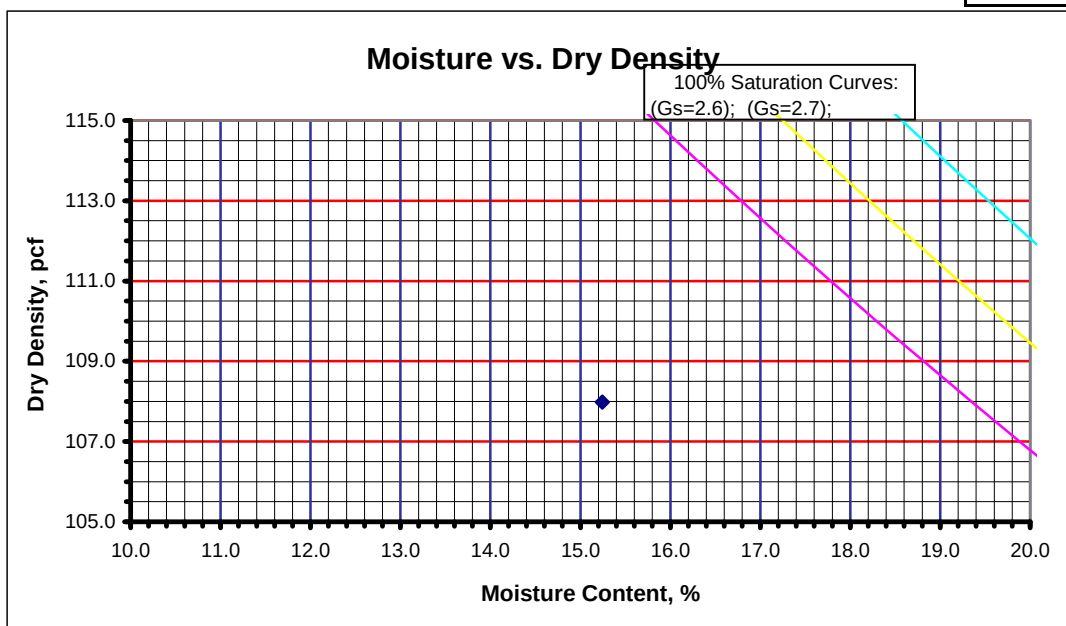
**DETERMINATION OF TEST PROCEDURE**

|                                         | wet     | dry     |                              | <b>MOISTURE CONTENT</b> |                 |
|-----------------------------------------|---------|---------|------------------------------|-------------------------|-----------------|
|                                         |         |         |                              | Coarse + Fine Fraction  | Coarse Fraction |
| Mass of Soil before sieving, g          | 72455.0 | 63542.5 | Mass of Wet Sample & Tare, g | 1363.0                  | 6291.4          |
| Mass of Mat. Retained on No. 4 sieve, g |         |         | Mass of Dry Sample & Tare, g | 1214.8                  | 6291.4          |
| Mass of Mat. Retained on 3/8" sieve, g  | 6291.4  | 6291.4  | Mass of Tare, g              | 158.2                   | 0.0             |
| Mass of Mat. Retained on 3/4" sieve, g  |         |         | Moisture Content, %          | 14.0                    | 0.0             |
| Material Retained on No. 4 Sieve, %     |         |         | Procedure                    | B                       |                 |
| Material Retained on 3/8" Sieve, %      | 9.9     |         |                              |                         |                 |
| Material Retained on 3/4" Sieve, %      |         |         |                              |                         |                 |
| Total, % (oversized)                    | 9.9     |         |                              |                         |                 |

**TEST DATA**

| Points                       | 1      | 2 | 3 | 4 | 5 |                                 |        |
|------------------------------|--------|---|---|---|---|---------------------------------|--------|
| Mass of Mold and Soil, g     | 6091.0 |   |   |   |   | Mold ID Number                  | 314    |
| Mass of Wet Sample & Tare, g | 1193.1 |   |   |   |   | Mass of Mold, g                 | 4211.3 |
| Mass of Dry Sample & Tare, g | 1075.5 |   |   |   |   | Volume of Mold, ft <sup>3</sup> | 0.0333 |
| Mass of Tare, g              | 304.0  |   |   |   |   | Hammer ID Number                | 318    |
| Moisture Content, %          | 15.2   |   |   |   |   | Number of Blows per layer       | 25     |
|                              |        |   |   |   |   | Number of Layers                | 3      |

|                  |       |  |  |  |  |                                                  |
|------------------|-------|--|--|--|--|--------------------------------------------------|
| Wet Density, pcf | 124.4 |  |  |  |  | Method A: Material retained on No. 4 Sieve ≤ 25% |
| Dry Density, pcf | 108.0 |  |  |  |  | Method B: Material retained on 3/8" Sieve ≤ 25%  |
|                  |       |  |  |  |  | Method C: Material retained on 3/4" Sieve ≤ 25%  |



**REMARKS**

One Point Proctor was performed on material passing 3/8" sieve @ as-received moisture content.

**DESCRIPTION**

NA

USCS (ASTM D2487; D2488)

NA

AASHTO M145

NA

NA

NA

Maximum Dry Density, pcf  
Optimum Moisture Content, %

|  |
|--|
|  |
|  |

Corrected Maximum Dry Density, pcf  
Corrected Optimum Moisture Content, %

|  |
|--|
|  |
|  |

[illegible]

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Date

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|              |                                      |             |                     |
|--------------|--------------------------------------|-------------|---------------------|
| Client Pr. # | 34507-023                            | Lab. PR. #  | 1511-01-1           |
| Pr. Name     | Seneca Falls PDI                     | S. Type     | Mold                |
| Sample ID    | 20967/Composite (TP-15-02/03/04)-1-1 | Depth/Elev. | -                   |
| Subsample    | 2                                    | Add. Info   | Curing Age: 28 Days |

**ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders**

**METHOD** **B**

**SAMPLE DATA**

|                          |         |
|--------------------------|---------|
| Initial Height, in       | 5.709   |
| Initial Diameter, in     | 2.989   |
| Height-to-Diameter Ratio | 1.91    |
| Area, in <sup>2</sup>    | 7.02    |
| Volume, in <sup>3</sup>  | 40.06   |
| Mass of Sample, g        | 1284.10 |
| Wet Density, pcf         | 122.1   |
| Dry Density, pcf         | 97.2    |
| Machine Speed, in/min    | 0.050   |
| Strain rate, % / min     | 0.88    |

**WATER CONTENT DETERMINATION**

|                                |         |
|--------------------------------|---------|
| Mass of Wet Sample and Tare, g | 1577.80 |
| Mass of Dry Sample and Tare, g | 1316.50 |
| Mass of Tare, g                | 295.30  |
| Moisture, %                    | 25.6    |

*Note 1: Water content was obtained after shear from partial sample.*

**TEST DATA**

|                         |     |
|-------------------------|-----|
| Load Cell ID #          | 11  |
| Compression Device ID # | 10  |
| Balance ID #            | 1/7 |

|                      |          |
|----------------------|----------|
| Digital Caliper ID # | 16       |
| Readout Device ID #  | 10       |
| Oven ID #            | 12/13/14 |

|                                                      |          |
|------------------------------------------------------|----------|
| Maximum Load at Failure, lbf                         | 63       |
| Specimen Cross-sectional Area, in <sup>2</sup>       | 7.02     |
| Compressive Strength at Failure, psi                 | 9        |
| Conversion Factor for Height to Diameter Ratio       | 1.00     |
| <b>Reported Compressive Strength at Failure, psi</b> | <b>9</b> |

Failure Code **4**

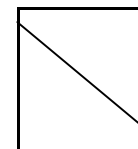
*Note 2: \* - A conversion factor based on H/D=1.15 (C.F.=.908 as 100% and add. correction per ASTM C42)*

**DESCRIPTION**

USCS (ASTM D2487: D2488)

**REMARKS**

**Failure Sketch**



Failure Type:

Shear



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Date

12/24/15

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40

|              |                                      |
|--------------|--------------------------------------|
| Client Pr. # | 34507-023                            |
| Pr. Name     | Seneca Falls PDI                     |
| Sample ID    | 20967/Composite (TP-15-02/03/04)-2-1 |
| Subsample    | 3                                    |

|             |                     |
|-------------|---------------------|
| Lab. PR. #  | 1511-01-1           |
| S. Type     | Mold                |
| Depth/Elev. | -                   |
| Add. Info   | Curing Age: 14 Days |

**ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)**

| Initial Sample Data (Before Test) |                 |                 |        |                 |
|-----------------------------------|-----------------|-----------------|--------|-----------------|
| Height                            | 2.969           | in              | 7.54   | cm              |
| Diameter                          | 2.999           | in              | 7.62   | cm              |
| Area                              | 7.06            | in <sup>2</sup> | 45.57  | cm <sup>2</sup> |
| Volume                            | 343.68          | cm <sup>3</sup> | 0.0121 | ft <sup>3</sup> |
| Mass                              | 674.30          | g               | 1.49   | lb              |
| Specific Gravity                  | 2.700 (Assumed) |                 |        |                 |
| Dry Density                       | 98.2            | pcf             |        |                 |
| <b>Moisture Content</b>           |                 |                 |        |                 |
| Mass of wet sample & tare         | 674.30          | g               |        |                 |
| Mass of dry sample & tare         | 540.80          | g               |        |                 |
| Mass of tare                      | 0.00            | g               |        |                 |
| % Moisture                        | 24.7            |                 |        |                 |

| Test Data                      |          |     |  |                      |
|--------------------------------|----------|-----|--|----------------------|
| Speed                          | 10       |     |  |                      |
| Board Number                   | 5        |     |  |                      |
| Cell Number                    | 4        |     |  |                      |
| Flow Pump Number               | 2A       |     |  |                      |
| Flow Pump Rate                 | 2.24E-04 |     |  | cm <sup>3</sup> /sec |
| B - Value                      | 0.95     |     |  |                      |
| Cell Pressure                  | 97.0     | psi |  |                      |
| Back Pressure                  | 90.0     | psi |  |                      |
| Confining (Effective) Pressure | 7.0      | psi |  |                      |
| Max Head                       | 57.68    | cm  |  |                      |
| Min Head                       | 56.98    | cm  |  |                      |
| Maximum Gradient               | 7.63     |     |  |                      |
| Minimum Gradient               | 7.54     |     |  |                      |

| Final Data (After Test)    |        |                 |                 |                 |    |
|----------------------------|--------|-----------------|-----------------|-----------------|----|
| Average Height of Sample   |        | 2.975           | in              | 7.56            | cm |
| Average Diameter of Sample |        | 3.001           | in              | 7.62            | cm |
| Area                       | 7.07   | in <sup>2</sup> | 45.63           | cm <sup>2</sup> |    |
| Volume                     | 344.83 | cm <sup>3</sup> | 0.0122          | ft <sup>3</sup> |    |
| Mass                       | 680.40 | g               | 1.50            | lb              |    |
| <b>Moisture Content</b>    |        |                 |                 |                 |    |
| Mass of wet sample & tare  | 754.10 |                 | g               |                 |    |
| Mass of dry sample & tare  | 615.00 |                 | g               |                 |    |
| Mass of tare               | 74.20  |                 | g               |                 |    |
| % Moisture                 | 25.7   |                 |                 |                 |    |
| Dry Density                |        | 97.9            | pcf             |                 |    |
| Vol. of Voids              |        | 144.39          | cm <sup>3</sup> |                 |    |
| Vol. of Solids             |        | 200.44          | cm <sup>3</sup> |                 |    |
| Void Ratio                 |        | 0.72            |                 |                 |    |
| Saturation                 |        | 96.4            | %               |                 |    |

| TIME FUNCTION |      |     | $\Delta t$<br>(sec) | READING<br>(psi) | Head<br>(cm) | Gradient | Temp.<br>$T_x(^{\circ}C)$ | PERMEABILITY (cm/sec) |       |                 |
|---------------|------|-----|---------------------|------------------|--------------|----------|---------------------------|-----------------------|-------|-----------------|
| DATE          | HOUR | MIN |                     |                  |              |          |                           | @ $T_x$               | $R_T$ | @ $20^{\circ}C$ |
| 12/24/15      | 7    | 0   | -                   | 0.82             | 57.68        | 7.63     | 20.1                      | -                     | -     | -               |
| 12/24/15      | 7    | 10  | 600                 | 0.81             | 56.98        | 7.54     | 20.1                      | 6.47E-07              | 0.998 | 6.46E-07        |
| 12/24/15      | 7    | 20  | 600                 | 0.82             | 57.68        | 7.63     | 20.1                      | 6.47E-07              | 0.998 | 6.46E-07        |
| 12/24/15      | 7    | 30  | 600                 | 0.81             | 56.98        | 7.54     | 20.1                      | 6.47E-07              | 0.998 | 6.46E-07        |
| 12/24/15      | 7    | 40  | 600                 | 0.82             | 57.68        | 7.63     | 20.1                      | 6.47E-07              | 0.998 | 6.46E-07        |
| 12/24/15      | 7    | 50  | 600                 | 0.82             | 57.68        | 7.63     | 20.1                      | 6.43E-07              | 0.998 | 6.42E-07        |
| 12/24/15      | 8    | 0   | 600                 | 0.82             | 57.68        | 7.63     | 20.1                      | 6.43E-07              | 0.998 | 6.42E-07        |

Note: Deaired Water Used for Permeability Test.

DESCRIPTION

|    |  |
|----|--|
| NA |  |
|----|--|

USCS

(ASTM D2487;2488)

NA

REMARKS

\_\_\_\_\_

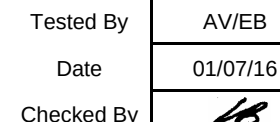
Reported Average Hydraulic Conductivity\*

6.4E-07 cm/sec

|                  |     |
|------------------|-----|
| Flow pump ID #   | 244 |
| Thermometer ID # | 377 |
| Syringe ID #     | 245 |

|              |       |
|--------------|-------|
| Balance ID # | 1/6/7 |
| Oven ID #    | 14/15 |

|                                       |     |
|---------------------------------------|-----|
| Differential Pressure Transducer ID # | 262 |
| Board Pressure Transducer ID #        | 216 |
| Pore Pressure Transducer ID #         | 28  |



|                  |     |                                          |       |                                       |        |
|------------------|-----|------------------------------------------|-------|---------------------------------------|--------|
|                  |     | Reported Average Hydraulic Conductivity* |       | 5.2E-07                               | cm/sec |
| Flow pump ID #   | 244 | Balance ID #                             | 1/6/7 | Differential Pressure Transducer ID # | 263    |
| Thermometer ID # | 377 | Oven ID #                                | 14/15 | Board Pressure Transducer ID #        | 215    |
| Syringe ID #     | 246 |                                          |       | Pore Pressure Transducer ID #         | 28     |



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12/23/15

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|              |                                      |             |                     |
|--------------|--------------------------------------|-------------|---------------------|
| Client Pr. # | 34507-023                            | Lab. PR. #  | 1511-01-1           |
| Pr. Name     | Seneca Falls PDI                     | S. Type     | Mold                |
| Sample ID    | 20967/Composite (TP-15-02/03/04)-2-1 | Depth/Elev. | -                   |
| Subsample    | 1                                    | Add. Info   | Curing Age: 14 Days |

**ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders**

**METHOD** **B**

**SAMPLE DATA**

|                          |         |
|--------------------------|---------|
| Initial Height, in       | 5.751   |
| Initial Diameter, in     | 3.009   |
| Height-to-Diameter Ratio | 1.91    |
| Area, in <sup>2</sup>    | 7.11    |
| Volume, in <sup>3</sup>  | 40.90   |
| Mass of Sample, g        | 1309.20 |
| Wet Density, pcf         | 122.0   |
| Dry Density, pcf         | 97.1    |
| Machine Speed, in/min    | 0.050   |
| Strain rate, % / min     | 0.87    |

**WATER CONTENT DETERMINATION**

|                                |         |
|--------------------------------|---------|
| Mass of Wet Sample and Tare, g | 1516.00 |
| Mass of Dry Sample and Tare, g | 1249.50 |
| Mass of Tare, g                | 208.10  |
| Moisture, %                    | 25.6    |

*Note 1: Water content was obtained after shear from partial sample.*

**TEST DATA**

|                         |     |
|-------------------------|-----|
| Load Cell ID #          | 11  |
| Compression Device ID # | 10  |
| Balance ID #            | 1/7 |

|                      |          |
|----------------------|----------|
| Digital Caliper ID # | 16       |
| Readout Device ID #  | 10       |
| Oven ID #            | 12/13/14 |

|                                                      |           |
|------------------------------------------------------|-----------|
| Maximum Load at Failure, lbf                         | 160       |
| Specimen Cross-sectional Area, in <sup>2</sup>       | 7.11      |
| Compressive Strength at Failure, psi                 | 23        |
| Conversion Factor for Height to Diameter Ratio       | 1.00      |
| <b>Reported Compressive Strength at Failure, psi</b> | <b>23</b> |

Failure Code **3**

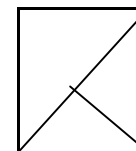
*Note 2: \* - A conversion factor based on H/D=1.15 (C.F.=.908 as 100% and add. correction per ASTM C42)*

**DESCRIPTION**

USCS (ASTM D2487: D2488)

**REMARKS**

**Failure Sketch**



Failure Type:

Cone and Shear



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|              |                                      |             |                     |
|--------------|--------------------------------------|-------------|---------------------|
| Client Pr. # | 34507-023                            | Lab. PR. #  | 1511-01-1           |
| Pr. Name     | Seneca Falls PDI                     | S. Type     | Mold                |
| Sample ID    | 20967/Composite (TP-15-02/03/04)-2-1 | Depth/Elev. | -                   |
| Subsample    | 2                                    | Add. Info   | Curing Age: 28 Days |

**ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders**

**METHOD** **B**

**SAMPLE DATA**

|                          |         |
|--------------------------|---------|
| Initial Height, in       | 5.721   |
| Initial Diameter, in     | 3.007   |
| Height-to-Diameter Ratio | 1.90    |
| Area, in <sup>2</sup>    | 7.10    |
| Volume, in <sup>3</sup>  | 40.63   |
| Mass of Sample, g        | 1297.30 |
| Wet Density, pcf         | 121.6   |
| Dry Density, pcf         | 96.6    |
| Machine Speed, in/min    | 0.050   |
| Strain rate, % / min     | 0.87    |

**WATER CONTENT DETERMINATION**

|                                |         |
|--------------------------------|---------|
| Mass of Wet Sample and Tare, g | 1592.50 |
| Mass of Dry Sample and Tare, g | 1326.60 |
| Mass of Tare, g                | 297.10  |
| Moisture, %                    | 25.8    |

*Note 1: Water content was obtained after shear from partial sample.*

**TEST DATA**

|                         |     |
|-------------------------|-----|
| Load Cell ID #          | 11  |
| Compression Device ID # | 10  |
| Balance ID #            | 1/7 |

|                      |          |
|----------------------|----------|
| Digital Caliper ID # | 16       |
| Readout Device ID #  | 10       |
| Oven ID #            | 12/13/14 |

|                                                      |           |
|------------------------------------------------------|-----------|
| Maximum Load at Failure, lbf                         | 249       |
| Specimen Cross-sectional Area, in <sup>2</sup>       | 7.10      |
| Compressive Strength at Failure, psi                 | 35        |
| Conversion Factor for Height to Diameter Ratio       | 1.00      |
| <b>Reported Compressive Strength at Failure, psi</b> | <b>35</b> |

Failure Code **3**

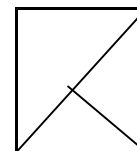
*Note 2: \* - A conversion factor based on H/D=1.15 (C.F.=.908 as 100% and add. correction per ASTM C42)*

**DESCRIPTION**

USCS (ASTM D2487: D2488)

**REMARKS**

**Failure Sketch**



Failure Type:

Cone and Shear



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|              |                                      |
|--------------|--------------------------------------|
| Client Pr. # | 34507-023                            |
| Pr. Name     | Seneca Falls PDI                     |
| Sample ID    | 20967/Composite (TP-15-02/03/04)-3-1 |
| Subsample    | 3                                    |

|             |                     |
|-------------|---------------------|
| Lab. PR. #  | 1511-01-1           |
| S. Type     | Mold                |
| Depth/Elev. | -                   |
| Add. Info   | Curing Age: 14 Days |

**ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)**

| Initial Sample Data (Before Test) |                 |                 |        |                 |
|-----------------------------------|-----------------|-----------------|--------|-----------------|
| Height                            | 2.926           | in              | 7.43   | cm              |
| Diameter                          | 3.002           | in              | 7.63   | cm              |
| Area                              | 7.08            | in <sup>2</sup> | 45.66  | cm <sup>2</sup> |
| Volume                            | 339.38          | cm <sup>3</sup> | 0.0120 | ft <sup>3</sup> |
| Mass                              | 659.60          | g               | 1.45   | lb              |
| Specific Gravity                  | 2.700 (Assumed) |                 |        |                 |
| Dry Density                       | 97.4            | pcf             |        |                 |
|                                   |                 |                 |        |                 |
| Moisture Content                  |                 |                 |        |                 |
| Mass of wet sample & tare         | 659.60          | g               |        |                 |
| Mass of dry sample & tare         | 529.50          | g               |        |                 |
| Mass of tare                      | 0.00            | g               |        |                 |
| % Moisture                        | 24.6            |                 |        |                 |

| Test Data                      |          |                      |  |
|--------------------------------|----------|----------------------|--|
| Speed                          | 10       |                      |  |
| Board Number                   | 6        |                      |  |
| Cell Number                    | 6        |                      |  |
| Flow Pump Number               | 2B       |                      |  |
| Flow Pump Rate                 | 2.24E-04 | cm <sup>3</sup> /sec |  |
| B - Value                      | 0.95     |                      |  |
| Cell Pressure                  | 97.0     | psi                  |  |
| Back Pressure                  | 90.0     | psi                  |  |
| Confining (Effective) Pressure | 7.0      | psi                  |  |
| Max Head                       | 97.77    | cm                   |  |
| Min Head                       | 97.07    | cm                   |  |
| Maximum Gradient               | 13.14    |                      |  |
| Minimum Gradient               | 13.04    |                      |  |

| Final Data (After Test)    |        |                 |                 |                 |    |
|----------------------------|--------|-----------------|-----------------|-----------------|----|
| Average Height of Sample   |        | 2.930           | in              | 7.44            | cm |
| Average Diameter of Sample |        | 2.998           | in              | 7.61            | cm |
| Area                       | 7.06   | in <sup>2</sup> | 45.54           | cm <sup>2</sup> |    |
| Volume                     | 338.94 | cm <sup>3</sup> | 0.0120          | ft <sup>3</sup> |    |
| Mass                       | 670.30 | g               | 1.48            | lb              |    |
|                            |        |                 |                 |                 |    |
| Moisture Content           |        |                 |                 |                 |    |
| Mass of wet sample & tare  |        | 753.80          | g               |                 |    |
| Mass of dry sample & tare  |        | 613.50          | g               |                 |    |
| Mass of tare               |        | 84.00           | g               |                 |    |
| % Moisture                 |        | 26.5            |                 |                 |    |
|                            |        |                 |                 |                 |    |
| Dry Density                |        | 97.6            | pcf             |                 |    |
| Vol. of Voids              |        | 142.68          | cm <sup>3</sup> |                 |    |
| Vol. of Solids             |        | 196.26          | cm <sup>3</sup> |                 |    |
| Void Ratio                 |        | 0.73            |                 |                 |    |
| Saturation                 |        | 98.4            | %               |                 |    |

| TIME FUNCTION |      |     | $\Delta t$<br>(sec) | READING<br>(psi) | Head<br>(cm) | Gradient | Temp.<br>$T_x(^{\circ}\text{C})$ | PERMEABILITY (cm/sec) |       |                        |
|---------------|------|-----|---------------------|------------------|--------------|----------|----------------------------------|-----------------------|-------|------------------------|
| DATE          | HOUR | MIN |                     |                  |              |          |                                  | @ $T_x$               | $R_T$ | @ $20^{\circ}\text{C}$ |
| 12/24/15      | 7    | 0   | -                   | 1.39             | 97.77        | 13.14    | 20.1                             | -                     | -     | -                      |
| 12/24/15      | 7    | 10  | 600                 | 1.38             | 97.07        | 13.04    | 20.1                             | 3.76E-07              | 0.998 | 3.75E-07               |
| 12/24/15      | 7    | 20  | 600                 | 1.39             | 97.77        | 13.14    | 20.1                             | 3.76E-07              | 0.998 | 3.75E-07               |
| 12/24/15      | 7    | 30  | 600                 | 1.38             | 97.07        | 13.04    | 20.1                             | 3.76E-07              | 0.998 | 3.75E-07               |
| 12/24/15      | 7    | 40  | 600                 | 1.39             | 97.77        | 13.14    | 20.1                             | 3.76E-07              | 0.998 | 3.75E-07               |
| 12/24/15      | 7    | 50  | 600                 | 1.38             | 97.07        | 13.04    | 20.1                             | 3.76E-07              | 0.998 | 3.75E-07               |
| 12/24/15      | 8    | 0   | 600                 | 1.39             | 97.77        | 13.14    | 20.1                             | 3.76E-07              | 0.998 | 3.75E-07               |

Note: Deaired Water Used for Permeability Test.

DESCRIPTION

|    |  |
|----|--|
| NA |  |
|----|--|

USCS

(ASTM D2487;2488)

NA

REMARKS

\_\_\_\_\_

Reported Average Hydraulic Conductivity\*

3.7E-07 cm/sec

|                  |     |
|------------------|-----|
| Flow pump ID #   | 244 |
| Thermometer ID # | 377 |
| Syringe ID #     | 246 |

|              |       |
|--------------|-------|
| Balance ID # | 1/6/7 |
| Oven ID #    | 14/15 |

|                                       |     |
|---------------------------------------|-----|
| Differential Pressure Transducer ID # | 263 |
| Board Pressure Transducer ID #        | 216 |
| Pore Pressure Transducer ID #         | 28  |



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|              |                                      |
|--------------|--------------------------------------|
| Client Pr. # | 34507-023                            |
| Pr. Name     | Seneca Falls PDI                     |
| Sample ID    | 20967/Composite (TP-15-02/03/04)-3-1 |
| Subsample    | 4                                    |

|             |                     |
|-------------|---------------------|
| Lab. PR. #  | 1511-01-1           |
| S. Type     | Mold                |
| Depth/Elev. | -                   |
| Add. Info   | Curing Age: 28 Days |

**ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)**

| Initial Sample Data (Before Test) |        |                 |        | Test Data                      |                  |          |                      | Final Data (After Test)    |        |                 |        |                 |                |        |                 |
|-----------------------------------|--------|-----------------|--------|--------------------------------|------------------|----------|----------------------|----------------------------|--------|-----------------|--------|-----------------|----------------|--------|-----------------|
| Height                            | 2.899  | in              | 7.36   | cm                             | Speed            | 10       |                      | Average Height of Sample   |        | 2.898           | in     | 7.36            | cm             |        |                 |
| Diameter                          | 3.013  | in              | 7.65   | cm                             | Board Number     | 8        |                      | Average Diameter of Sample |        | 3.014           | in     | 7.66            | cm             |        |                 |
| Area                              | 7.13   | in <sup>2</sup> | 46.00  | cm <sup>2</sup>                | Cell Number      | 4        |                      | Area                       | 7.13   | in <sup>2</sup> | 46.03  | cm <sup>2</sup> |                |        |                 |
| Volume                            | 338.72 | cm <sup>3</sup> | 0.0120 | ft <sup>3</sup>                | Flow Pump Number | 2A       |                      | Volume                     | 338.83 | cm <sup>3</sup> | 0.0120 | ft <sup>3</sup> |                |        |                 |
| Mass                              | 652.20 | g               | 1.44   | lb                             | Flow Pump Rate   | 2.24E-04 | cm <sup>3</sup> /sec | Mass                       | 665.70 | g               | 1.47   | lb              | Dry Density    | 97.1   | pcf             |
| Specific Gravity                  | 2.700  | (Assumed)       |        |                                | B - Value        | 0.95     |                      |                            |        |                 |        |                 | Vol. of Voids  | 143.54 | cm <sup>3</sup> |
| Dry Density                       | 97.0   | pcf             |        |                                | Cell Pressure    | 97.0     | psi                  |                            |        |                 |        |                 | Vol. of Solids | 195.29 | cm <sup>3</sup> |
| Moisture Content                  |        |                 |        | Back Pressure                  | 90.0             | psi      |                      | Moisture Content           |        |                 |        |                 |                |        |                 |
|                                   |        |                 |        | Confining (Effective) Pressure | 7.0              | psi      |                      |                            |        |                 |        |                 |                |        |                 |
|                                   |        |                 |        | Max Head                       | 129.43           | cm       |                      |                            |        |                 |        |                 |                |        |                 |
|                                   |        |                 |        | Min Head                       | 128.72           | cm       |                      |                            |        |                 |        |                 |                |        |                 |
|                                   |        |                 |        | Maximum Gradient               | 17.58            |          |                      |                            |        |                 |        |                 |                |        |                 |
| Mass of wet sample & tare         | 652.20 | g               |        | Minimum Gradient               | 17.49            |          |                      | Mass of wet sample & tare  | 749.40 | g               |        |                 | Void Ratio     | 0.74   |                 |
| Mass of dry sample & tare         | 526.80 | g               |        |                                |                  |          |                      | Mass of dry sample & tare  | 611.10 | g               |        |                 | Saturation     | 96.4   | %               |
| Mass of tare                      | 0.00   | g               |        |                                |                  |          |                      | Mass of tare               | 84.30  | g               |        |                 |                |        |                 |
| % Moisture                        | 23.8   |                 |        |                                |                  |          |                      | % Moisture                 | 26.3   |                 |        |                 |                |        |                 |

| TIME FUNCTION |      |     | Δ t<br>(sec) | READING<br>(psi) | Head<br>(cm) | Gradient | Temp.<br>T <sub>x</sub> ( °C ) | PERMEABILITY (cm/sec) |                |          | <div>Note: Deaired Water Used for Permeability Test.</div> <div>DESCRIPTION</div> <div><div>NA</div><div>USCS<br/>(ASTM D2487;2488)</div><div>NA</div></div> <div>REMARKS</div> |
|---------------|------|-----|--------------|------------------|--------------|----------|--------------------------------|-----------------------|----------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DATE          | HOUR | MIN |              |                  |              |          |                                | @ T <sub>x</sub>      | R <sub>T</sub> | @ 20 °C  |                                                                                                                                                                                 |
| 01/07/16      | 9    | 30  | -            | 1.84             | 129.43       | 17.58    | 16.8                           | -                     | -              | -        |                                                                                                                                                                                 |
| 01/07/16      | 9    | 40  | 600          | 1.83             | 128.72       | 17.49    | 16.8                           | 2.78E-07              | 1.084          | 3.01E-07 |                                                                                                                                                                                 |
| 01/07/16      | 9    | 50  | 600          | 1.84             | 129.43       | 17.58    | 16.8                           | 2.78E-07              | 1.084          | 3.01E-07 |                                                                                                                                                                                 |
| 01/07/16      | 10   | 0   | 600          | 1.83             | 128.72       | 17.49    | 16.8                           | 2.78E-07              | 1.084          | 3.01E-07 |                                                                                                                                                                                 |
| 01/07/16      | 10   | 10  | 600          | 1.84             | 129.43       | 17.58    | 16.8                           | 2.78E-07              | 1.084          | 3.01E-07 |                                                                                                                                                                                 |
| 01/07/16      | 10   | 20  | 600          | 1.84             | 129.43       | 17.58    | 16.8                           | 2.77E-07              | 1.084          | 3.00E-07 |                                                                                                                                                                                 |
| 01/07/16      | 10   | 30  | 600          | 1.84             | 129.43       | 17.58    | 16.8                           | 2.77E-07              | 1.084          | 3.00E-07 |                                                                                                                                                                                 |

|                  |     |                                          |       |                                       |        |
|------------------|-----|------------------------------------------|-------|---------------------------------------|--------|
|                  |     | Reported Average Hydraulic Conductivity* |       | 3.0E-07                               | cm/sec |
| Flow pump ID #   | 244 | Balance ID #                             | 1/6/7 | Differential Pressure Transducer ID # | 262    |
| Thermometer ID # | 377 | Oven ID #                                | 14/15 | Board Pressure Transducer ID #        | 215    |
| Syringe ID #     | 245 |                                          |       | Pore Pressure Transducer ID #         | 28     |



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Date

12/23/15

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|              |                                      |             |                     |
|--------------|--------------------------------------|-------------|---------------------|
| Client Pr. # | 34507-023                            | Lab. PR. #  | 1511-01-1           |
| Pr. Name     | Seneca Falls PDI                     | S. Type     | Mold                |
| Sample ID    | 20967/Composite (TP-15-02/03/04)-3-1 | Depth/Elev. | -                   |
| Subsample    | 1                                    | Add. Info   | Curing Age: 14 Days |

**ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders**

**METHOD** **B**

**SAMPLE DATA**

|                          |         |
|--------------------------|---------|
| Initial Height, in       | 5.728   |
| Initial Diameter, in     | 3.006   |
| Height-to-Diameter Ratio | 1.91    |
| Area, in <sup>2</sup>    | 7.10    |
| Volume, in <sup>3</sup>  | 40.65   |
| Mass of Sample, g        | 1293.50 |
| Wet Density, pcf         | 121.2   |
| Dry Density, pcf         | 96.7    |
| Machine Speed, in/min    | 0.050   |
| Strain rate, % / min     | 0.87    |

**WATER CONTENT DETERMINATION**

|                                |         |
|--------------------------------|---------|
| Mass of Wet Sample and Tare, g | 1498.20 |
| Mass of Dry Sample and Tare, g | 1236.90 |
| Mass of Tare, g                | 205.80  |
| Moisture, %                    | 25.3    |

*Note 1: Water content was obtained after shear from partial sample.*

**TEST DATA**

|                         |     |
|-------------------------|-----|
| Load Cell ID #          | 11  |
| Compression Device ID # | 10  |
| Balance ID #            | 1/7 |

|                      |          |
|----------------------|----------|
| Digital Caliper ID # | 16       |
| Readout Device ID #  | 10       |
| Oven ID #            | 12/13/14 |

|                                                      |           |
|------------------------------------------------------|-----------|
| Maximum Load at Failure, lbf                         | 282       |
| Specimen Cross-sectional Area, in <sup>2</sup>       | 7.10      |
| Compressive Strength at Failure, psi                 | 40        |
| Conversion Factor for Height to Diameter Ratio       | 1.00      |
| <b>Reported Compressive Strength at Failure, psi</b> | <b>40</b> |

Failure Code **3**

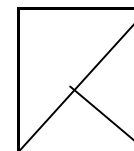
*Note 2: \* - A conversion factor based on H/D=1.15 (C.F.=.908 as 100% and add. correction per ASTM C42)*

**DESCRIPTION**

USCS (ASTM D2487: D2488)

**REMARKS**

**Failure Sketch**



Failure Type:

Cone and Shear





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Tested By

AV/RI

Date

01/06/16

Checked By

*IB*

|              |                                      |             |                     |
|--------------|--------------------------------------|-------------|---------------------|
| Client Pr. # | 34507-023                            | Lab. PR. #  | 1511-01-1           |
| Pr. Name     | Seneca Falls PDI                     | S. Type     | Mold                |
| Sample ID    | 20967/Composite (TP-15-02/03/04)-3-1 | Depth/Elev. | -                   |
| Subsample    | 2                                    | Add. Info   | Curing Age: 28 Days |

**ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders**

**METHOD** **B**

**SAMPLE DATA**

|                          |         |
|--------------------------|---------|
| Initial Height, in       | 5.719   |
| Initial Diameter, in     | 3.007   |
| Height-to-Diameter Ratio | 1.90    |
| Area, in <sup>2</sup>    | 7.10    |
| Volume, in <sup>3</sup>  | 40.61   |
| Mass of Sample, g        | 1294.30 |
| Wet Density, pcf         | 121.4   |
| Dry Density, pcf         | 97.0    |
| Machine Speed, in/min    | 0.050   |
| Strain rate, % / min     | 0.87    |

**WATER CONTENT DETERMINATION**

|                                |         |
|--------------------------------|---------|
| Mass of Wet Sample and Tare, g | 1588.50 |
| Mass of Dry Sample and Tare, g | 1329.10 |
| Mass of Tare, g                | 296.40  |
| Moisture, %                    | 25.1    |

*Note 1: Water content was obtained after shear from partial sample.*

**TEST DATA**

|                         |     |
|-------------------------|-----|
| Load Cell ID #          | 11  |
| Compression Device ID # | 10  |
| Balance ID #            | 1/7 |

|                      |          |
|----------------------|----------|
| Digital Caliper ID # | 16       |
| Readout Device ID #  | 10       |
| Oven ID #            | 12/13/14 |

|                                                      |           |
|------------------------------------------------------|-----------|
| Maximum Load at Failure, lbf                         | 472       |
| Specimen Cross-sectional Area, in <sup>2</sup>       | 7.10      |
| Compressive Strength at Failure, psi                 | 66        |
| Conversion Factor for Height to Diameter Ratio       | 1.00      |
| <b>Reported Compressive Strength at Failure, psi</b> | <b>66</b> |

Failure Code **3**

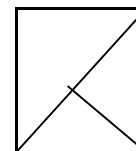
*Note 2: \* - A conversion factor based on H/D=1.15 (C.F.=.908 as 100% and add. correction per ASTM C42)*

**DESCRIPTION**

USCS (ASTM D2487: D2488)

**REMARKS**

**Failure Sketch**



Failure Type:

Cone and Shear



**TIMELY  
ENGINEERING  
SOIL  
TESTS, LLC**

1874 Forge Street Tucker, GA 30084

Phone: 770-938-8233

Fax: 770-923-8973

Web: [www.test-llc.com](http://www.test-llc.com)



Tested By

AV/RI

Date

02/08/16

Checked By

*18*

|              |                                      |             |                    |
|--------------|--------------------------------------|-------------|--------------------|
| Client Pr. # | 34507-023                            | Lab. PR. #  | 1511-01-1          |
| Pr. Name     | Seneca Falls PDI                     | S. Type     | Mold               |
| Sample ID    | 20967/Composite (TP-15-02/03/04)-2-1 | Depth/Elev. | -                  |
| Subsample    | 6                                    | Add. Info   | Curing Age: 61 Day |

**ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders**

**METHOD** **B**

**SAMPLE DATA**

|                          |         |
|--------------------------|---------|
| Initial Height, in       | 5.729   |
| Initial Diameter, in     | 3.007   |
| Height-to-Diameter Ratio | 1.91    |
| Area, in <sup>2</sup>    | 7.10    |
| Volume, in <sup>3</sup>  | 40.69   |
| Mass of Sample, g        | 1299.10 |
| Wet Density, pcf         | 121.6   |
| Dry Density, pcf         | 97.1    |
| Machine Speed, in/min    | 0.050   |
| Strain rate, % / min     | 0.87    |

**WATER CONTENT DETERMINATION**

|                                |         |
|--------------------------------|---------|
| Mass of Wet Sample and Tare, g | 1603.80 |
| Mass of Dry Sample and Tare, g | 1343.10 |
| Mass of Tare, g                | 307.00  |
| Moisture, %                    | 25.2    |

*Note 1: Water content was obtained after shear from partial sample.*

**TEST DATA**

|                         |     |
|-------------------------|-----|
| Load Cell ID #          | 11  |
| Compression Device ID # | 10  |
| Balance ID #            | 1/7 |

|                      |          |
|----------------------|----------|
| Digital Caliper ID # | 16       |
| Readout Device ID #  | 10       |
| Oven ID #            | 12/13/14 |

|                                                      |           |
|------------------------------------------------------|-----------|
| Maximum Load at Failure, lbf                         | 309       |
| Specimen Cross-sectional Area, in <sup>2</sup>       | 7.10      |
| Compressive Strength at Failure, psi                 | 44        |
| Conversion Factor for Height to Diameter Ratio       | 1.00      |
| <b>Reported Compressive Strength at Failure, psi</b> | <b>44</b> |

Failure Code **3**

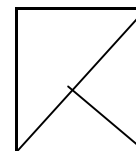
*Note 2: \* - A conversion factor based on H/D=1.15 (C.F.=.908 as 100% and add. correction per ASTM C42)*

**DESCRIPTION**

USCS (ASTM D2487: D2488)

**REMARKS**

**Failure Sketch**



Failure Type:

Cone and Shear



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Tested By

AV/RI

Date

02/08/16

Checked By

*18*

|              |                                      |             |                    |
|--------------|--------------------------------------|-------------|--------------------|
| Client Pr. # | 34507-023                            | Lab. PR. #  | 1511-01-1          |
| Pr. Name     | Seneca Falls PDI                     | S. Type     | Mold               |
| Sample ID    | 20967/Composite (TP-15-02/03/04)-3-1 | Depth/Elev. | -                  |
| Subsample    | 6                                    | Add. Info   | Curing Age: 61 Day |

**ASTM D 1633: Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders**

**METHOD** **B**

**SAMPLE DATA**

|                          |         |
|--------------------------|---------|
| Initial Height, in       | 5.775   |
| Initial Diameter, in     | 3.003   |
| Height-to-Diameter Ratio | 1.92    |
| Area, in <sup>2</sup>    | 7.08    |
| Volume, in <sup>3</sup>  | 40.90   |
| Mass of Sample, g        | 1300.70 |
| Wet Density, pcf         | 121.1   |
| Dry Density, pcf         | 97.1    |
| Machine Speed, in/min    | 0.050   |
| Strain rate, % / min     | 0.87    |

**WATER CONTENT DETERMINATION**

|                                |         |
|--------------------------------|---------|
| Mass of Wet Sample and Tare, g | 1594.30 |
| Mass of Dry Sample and Tare, g | 1337.50 |
| Mass of Tare, g                | 297.20  |
| Moisture, %                    | 24.7    |

*Note 1: Water content was obtained after shear from partial sample.*

**TEST DATA**

|                         |     |
|-------------------------|-----|
| Load Cell ID #          | 11  |
| Compression Device ID # | 10  |
| Balance ID #            | 1/7 |

|                      |          |
|----------------------|----------|
| Digital Caliper ID # | 16       |
| Readout Device ID #  | 10       |
| Oven ID #            | 12/13/14 |

|                                                      |           |
|------------------------------------------------------|-----------|
| Maximum Load at Failure, lbf                         | 567       |
| Specimen Cross-sectional Area, in <sup>2</sup>       | 7.08      |
| Compressive Strength at Failure, psi                 | 80        |
| Conversion Factor for Height to Diameter Ratio       | 1.00      |
| <b>Reported Compressive Strength at Failure, psi</b> | <b>80</b> |

Failure Code **3**

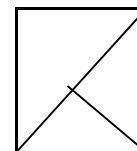
*Note 2: \* - A conversion factor based on H/D=1.15 (C.F.=.908 as 100% and add. correction per ASTM C42)*

**DESCRIPTION**

USCS (ASTM D2487: D2488)

**REMARKS**

**Failure Sketch**



Failure Type:

Cone and Shear



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**S**OIL  
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Fax: 770-923-8973

Web: [www.test-llc.com](http://www.test-llc.com)



## SUMMARY of TESTING

T.E.S.T. Project Number: 1511-01

Project Name: Seneca Falls PDI

| Sample Identification                                                                                      |                               |                      |              |              | Slump<br>inch | Admix<br>Cement<br>I/II<br>% | Curing<br>Age,<br>days | UCS,<br>psi | Moisture<br>Content*,<br>% | Grain<br>Size Distribution |                       |                    | Additional Tests |            |   | Unit Weight*           |                        | Hydraul.<br>Conduct.<br>cm/sec |
|------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------|--------------|--------------|---------------|------------------------------|------------------------|-------------|----------------------------|----------------------------|-----------------------|--------------------|------------------|------------|---|------------------------|------------------------|--------------------------------|
| T.E.S.T.<br>Sample<br>No.                                                                                  | Client<br>Base Material<br>ID | Mix<br>Design<br>No. | Batch<br>No. | Spec.<br>No. |               |                              |                        |             |                            | % Finer<br>3/8" Sieve      | % Finer<br>#200 Sieve | % Finer<br>0.005mm | Grout<br>Visc.s  | Swell<br>% |   | Wet<br>Density,<br>pcf | Dry<br>Density,<br>pcf |                                |
|                                                                                                            |                               |                      |              |              |               |                              |                        |             |                            |                            |                       |                    |                  |            |   |                        |                        |                                |
| 1511-01-1                                                                                                  |                               |                      |              |              |               |                              |                        |             |                            |                            |                       |                    |                  |            |   |                        |                        |                                |
| * = Parameter for Material Passing 3/8" Sieve                                                              |                               |                      |              |              |               |                              |                        |             |                            |                            |                       |                    |                  |            |   |                        |                        |                                |
| ** = Parameter for One Point Standard Proctor (Material Passing 3/8" Sieve @ as-received Moisture Content) |                               |                      |              |              |               |                              |                        |             |                            |                            |                       |                    |                  |            |   |                        |                        |                                |
| 20967                                                                                                      | TP-15                         | -                    | -            | -            | -             | -                            | -                      | -           | 15.2*                      | 90                         | 23                    | 8                  | -                | -          | - | 124.4**                | 108**                  | -                              |
| 20967                                                                                                      | TP-15                         | 1                    | 1            | 1            | 3.75          | 6                            | -                      | -           | -                          | -                          | -                     | -                  | 33               | -          | - | -                      | -                      | -                              |
| 20967                                                                                                      | TP-15                         | 1                    | 1            | 2            | -             | 6                            | 28                     | 9           | 25.6                       | -                          | -                     | -                  | -                | -          | - | 122.1                  | 97.2                   | -                              |
| 20967                                                                                                      | TP-15                         | 1                    | 1            | 3            | -             | 6                            | -                      | -           | -                          | -                          | -                     | -                  | -                | -          | - | -                      | -                      | -                              |
| 20967                                                                                                      | TP-15                         | 1                    | 1            | 4            | -             | 6                            | 28                     | -           | 25.2                       | -                          | -                     | -                  | -                | -          | - | 122.6                  | 97.9                   | 9.0E-07                        |
| 20967                                                                                                      | TP-15                         | 1                    | 1            | 5            | -             | 6                            | -                      | -           | -                          | -                          | -                     | -                  | -                | -          | - | -                      | -                      | -                              |
| 20967                                                                                                      | TP-15                         | 1                    | 1            | 6            | -             | 6                            | -                      | -           | -                          | -                          | -                     | -                  | -                | 15.7       | - | -                      | -                      | -                              |
| 20967                                                                                                      | TP-15                         | 2                    | 1            | 1            | 4             | 9                            | 14                     | 23          | 25.6                       | -                          | -                     | -                  | 34               | -          | - | 122.0                  | 97.1                   | -                              |
| 20967                                                                                                      | TP-15                         | 2                    | 1            | 2            | -             | 9                            | 28                     | 35          | 25.8                       | -                          | -                     | -                  | -                | -          | - | 121.6                  | 96.6                   | -                              |
| 20967                                                                                                      | TP-15                         | 2                    | 1            | 3            | -             | 9                            | 14                     | -           | 24.7                       | -                          | -                     | -                  | -                | -          | - | 122.5                  | 98.2                   | 6.4E-07                        |
| 20967                                                                                                      | TP-15                         | 2                    | 1            | 4            | -             | 9                            | 28                     | -           | 24.4                       | -                          | -                     | -                  | -                | -          | - | 122.5                  | 98.5                   | 5.2E-07                        |
| 20967                                                                                                      | TP-15                         | 2                    | 1            | 5            | -             | 9                            | -                      | -           | -                          | -                          | -                     | -                  | -                | 18.5       | - | -                      | -                      | -                              |
| 20967                                                                                                      | TP-15                         | 2                    | 1            | 6            | -             | 9                            | 61                     | 44          | 25.2                       | -                          | -                     | -                  | -                | -          | - | 121.6                  | 97.1                   | -                              |
| 20967                                                                                                      | TP-15                         | 3                    | 1            | 1            | 4.25          | 12                           | 14                     | 40          | 25.3                       | -                          | -                     | -                  | 36               | -          | - | 121.2                  | 96.7                   | -                              |
| 20967                                                                                                      | TP-15                         | 3                    | 1            | 2            | -             | 12                           | 28                     | 66          | 25.1                       | -                          | -                     | -                  | -                | -          | - | 121.4                  | 97.0                   | -                              |
| 20967                                                                                                      | TP-15                         | 3                    | 1            | 3            | -             | 12                           | 14                     | -           | 24.6                       | -                          | -                     | -                  | -                | -          | - | 121.4                  | 97.4                   | 3.7E-07                        |
| 20967                                                                                                      | TP-15                         | 3                    | 1            | 4            | -             | 12                           | 28                     | -           | 23.8                       | -                          | -                     | -                  | -                | -          | - | 120.1                  | 97.0                   | 3.0E-07                        |
| 20967                                                                                                      | TP-15                         | 3                    | 1            | 5            | -             | 12                           | 28                     | -           | -                          | -                          | -                     | -                  | -                | 21.2       | - | -                      | -                      | -                              |
| 20967                                                                                                      | TP-15                         | 3                    | 1            | 6            | -             | 12                           | 61                     | 80          | 24.7                       | -                          | -                     | -                  | -                | -          | - | 121.1                  | 97.1                   | -                              |

## **APPENDIX D**

### **Citizen Participation Plan**

**CITIZEN PARTICIPATION PLAN**  
**SENECA FALLS FORMER MGP SITE, NYSDEC SITE # 8-50-010**  
**SENECA FALLS, NEW YORK**

by Haley & Aldrich of New York  
Rochester, New York

for New York State Electric and Gas Corporation (NYSEG)  
Binghamton, New York

File No. 34507-027  
August 2018



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## 1. Introduction

New York State Electric & Gas Corporation (NYSEG) is preparing to implement a Remedial Action involving the excavation and in-situ solidification (ISS) of coal tar impacted soils and sediment associated with the Seneca Falls Former Manufactured Gas Plant (MGP) Site (the Site) located in Seneca Falls, Seneca County, New York. This Citizen Participation Plan (CPP) will detail citizen participation activities that will be implemented for this remedial action.

The proposed Remedial Action will involve excavation, ISS, and capping of coal tar impacted soil, sediment, and debris. The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected the remedy for the Site, as established in the Record of Decision (ROD) (NYSDEC, 2015). The Remedial Action will be conducted per the ROD, the Administrative Order on Consent (Index No. D0-0002-9309 [NYSDEC, 1994]) between NYSDOH and NYSEG, and in accordance with DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) and 6 NYCRR Part 375 Environmental Remediation Programs. The Order on Consent requires that work conducted by NYSEG at the Site be performed under the oversight of NYSDOH and NYSDOH.



## **2. Remedial Action Objectives**

The primary objectives of the remedial action, as required by the ROD, include:

### **2.1 GROUNDWATER**

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.
- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

### **2.2 SOIL**

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure to contaminants volatilizing from contaminants in soil.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.

### **2.3 SEDIMENT**

- Prevent direct contact with contaminated sediments.
- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
- Restore sediments to pre-release/background conditions to the extent feasible.

### **2.4 SOIL VAPOR**

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

### **3. Interested/Affected Public**

NYSDEC maintains a database to facilitate distribution of information to help keep the community informed about and involved in the remedial program for the Site. The database includes adjacent property owners; local, regional, and state officials; local media; civic, environmental, and other organizations. Names can be added to the database by contacting the individuals listed in Section 5.0 (Additional Information), or by completing an “interested party mailer” that is included with NYSEG mailings for this Site. Fact sheets and meeting notices that update the public on the progress of the remedial program will be distributed to the public via mail and public notices.

#### **4. Description of Citizen Participation Activities**

To facilitate the Remedial Action Design process, NYSEG in cooperation with NYSDEC and NYSDOH, will inform the public and local officials of planned remedial activities. Public participation will include at least the following:

- A fact sheet prepared by the NYSDEC describing the planned remedial activities will be distribution to the parties identified in Section 3.0.
- A public availability session will be held by NYSDEC, in conjunction with NYSDOH and NYSEG, prior to the Remedial Action to describe the planned activities at the Site.
- A phone number for the public to call with questions or concerns that may arise during the project will be posted at the Site.

Notice of the public availability session will be provided by either NYSDEC or NYSEG via mailing list and notices through the local media.

## 5. Additional Information

For additional information about this project you may contact the following individuals:

**NYSEG:** Mr. Jeremy Wolf, Manager Programs/Projects  
1300 Scottsville Road  
Rochester, New York 14624  
Phone: (585) 724-8548  
Cellular Phone: (585) 500-8392  
E-mail: [Jeremy.Wolf@rge.com](mailto:Jeremy.Wolf@rge.com)

**NYSDEC:** Mr. Douglas MacNeal: Project Manager  
NYSDEC  
625 Broadway  
Albany, New York 12233-7014  
Phone: (518) 402-9662  
E-mail: [douglas.macneal@dec.ny.gov](mailto:douglas.macneal@dec.ny.gov)

**NYSDOH:** Steven Karpinski: Public Health Specialist  
NYSDOH  
547 River Street  
Troy, New York 12180-2216  
Phone: (518) 402-7880  
E-mail: [bee@health.state.ny.us](mailto:bee@health.state.ny.us)

## 6. Document Repositories

Document repositories have been established to provide the public with convenient access to important project-related documents and information. The repositories listed below include reports, data, and other relevant information developed during the course of the remedial program at the Seneca Falls Former MGP Site.

### **Seneca Falls Library**

47 Cayuga Street

Seneca Falls, New York 13148

[www.senecafallslibrary.org](http://www.senecafallslibrary.org)

(315) 568-8265

Hours: M-F 10-8; Sat 10-5; Sun 2-5 (Closed June thru August)

### **New York State Department of Environmental Conservation**

Central Office, 625 Broadway 11th Floor

Albany, New York 12233-7014

Attn: Mr. Douglas MacNeal

(518) 402-9662

(By appointment only)

## References

1. New York State Department of Environmental Conservation, 1994. Administrative Order on Consent Index No. D0-0002-9309.
2. New York State Department of Environmental Conservation, 2006. "6 NYCRR Part 375 Environmental Remediation Programs," dated December 2006.
3. New York State Department of Environmental Conservation, 2010. "DER-10 Technical Guidance for Site Investigation and Remediation," dated May 2010.
4. New York State Department of Environmental Conservation, 2015. "Record of Decision, Seneca Falls Former MGP Site, Site No. 8-50-010, Seneca Falls, New York," dated March 2015.

M:\34507\_Seneca\_Falls\974 Design\Remedial Design\Final 100% Submission to NYSDEC\Appendix D - CPP\2018-0810-NYSEG\_Seneca Falls\_Citizen Participation Plan\_F.docx

## **APPENDIX E**

### **Community Air Monitoring Plan**

**COMMUNITY AIR MONITORING PLAN**  
**SENECA FALLS FORMER MGP SITE, NYSDEC SITE # 8-50-010**  
**SENECA FALLS, NEW YORK**

by Haley & Aldrich of New York  
Rochester, New York

for New York State Electric and Gas Corporation (NYSEG)  
Binghamton, New York

File No. 34507-027  
May 2018





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# 1. Introduction

This Community Air Monitoring Plan (CAMP) was prepared for work associated with the Seneca Falls Former Manufactured Gas Plant (MGP) Site (the Site) and supplements the Remedial Design (RD) (Haley & Aldrich, Inc., 2017). Per Appendix 1A of the DER-10 Technical Guidance for Site Investigation and Remediation (New York State Department of Environmental Conservation [NYSDEC], 2010), “a Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of the site when certain activities are in progress at contaminated sites”.

The purpose of this CAMP is to describe the monitoring activities that will be conducted by the Remediation Engineer to monitor for potential airborne releases of constituents of concern during the implementation of remedial activities. This CAMP specifies the air emission action levels, air monitoring procedures, monitoring schedule, and data collection and reporting to be performed during the implementation of remedial activities. While the Remediation Engineer is responsible for providing labor, materials, and equipment necessary to implement the CAMP, the Remediation Contractor is responsible for ensuring corrective measures associated with the community air monitoring program (including the control of dust, vapors, and odors) are successfully implemented.

## 1.1 SITE LOCATION AND DESCRIPTION

The footprint of the Site is located at 187 Fall Street, Seneca Falls, Seneca County, New York. The Site is located adjacent to the Seneca River and Canal, which flows east towards Cayuga Lake. The Seneca River and Canal is classified as Class C surface water in the vicinity of the Site. The Site consists of an approximately 1.2-acre parcel currently owned by New York State Electric & Gas Corporation (NYSEG) and located in a mixed residential/commercial area. The Site is bordered by Fall Street to the north, residential properties (181-183 and 185 Fall Street) to the east, a Sunoco gasoline filling station (193 Fall Street) to the west, and the Seneca River and Canal to the south. NYSEG currently owns 185 Fall Street, which abuts the Site to the east.

The parcel located at 187 Fall Street is physically defined by Upland and Lowland Areas separated by a steep slope running east-west, located in the approximate center of the parcel. The Upland Area of the parcel consists of a building floor slab and a paved vehicle parking lot located immediately west of the floor slab. The Upland Area is generally flat with an elevation of approximately 456 feet (ft) above mean sea level, bordered to the south by the steep slope and the Lowland Area of the Site. The steep slope and Lowland Area are heavily vegetated. The Lowland Area of the Site gently slopes south to the Seneca River and Canal, with elevations from approximately 430 ft to 433 ft above sea level. Surface drainage (at a macro scale) appears to be to the south toward the Seneca River and Canal. There is a catch basin present on the Upland Area of the Site that drains northerly to a storm sewer line beneath Fall Street.

## 1.2 SUMMARY OF REMEDIAL ACTIVITIES

The remedial activities to be performed at the Site include:

- Excavation of on-site subsurface structures such as building foundations, the upper portion of the buried former gas holder, and buried piping, which would otherwise interfere with in-situ solidification (ISS) of impacted soils.

- ISS of the on-site impacted materials covering an area of approximately half an acre to depths from six feet to 23 feet below grade.
- A demarcation layer, clean soil cover, and gravel parking lot constructed following ISS.
- Excavation and off-site disposal of off-site soil which exceeds Residential Use soil cleanup objectives (SCOs). The excavation will be backfilled with soils meeting the clean fill requirements.
- Vegetated clean soil caps in two portions of the Lowland Area.
- Dredging of sediment with MGP impacts in the Seneca River and Canal adjacent to the Site. The sediments will be replaced with backfill which meets NYSDEC's chemical and gradation requirements and will restore the benthic habitat.
- Monitored natural attenuation of groundwater.
- Imposition of institutional controls in the form of environmental easements.
- Development of a Site Management Plan (SMP) to identify, maintain, and monitor the institutional and engineering controls at the Site.

### 1.3 POTENTIAL AIR EMISSIONS RELATED TO REMEDIAL ACTIVITIES

As defined in the New York State Department of Health (NYSDOH) Generic CAMP (included as Appendix E1), intrusive remedial activities to be performed at the Site have the potential to generate localized impacts to air quality. Remedial components that have the potential to generate air emissions include, but may not be limited to, the following:

- Installation of excavation support systems;
- Excavation of Upland Area soils;
- ISS of Upland Area soils;
- Preparation for dredging sediment (e.g., installation of access road, platforms, silt curtains);
- Dredging of impacted sediment;
- Material handling; and
- Other ancillary activities (e.g., clearing/grubbing, site grading).

### 1.4 EMISSIONS AND CONTROL MEASURES

Air emissions control and fugitive dust suppression measures will be implemented by the Remediation Contractor concurrently with the activities identified above (as needed) to limit the potential for organic vapor and dust emissions from the Site. Air emissions associated with intrusive activities (e.g., excavation, ISS) and certain non-intrusive activities (e.g., loading of trucks, restoration), will be controlled as described below. The following vapor and dust control measures may be used during these activities, depending upon specific circumstances, visual observations, and air monitoring results:

- Vapor suppression foam;
- Use of a water spray;
- Polyethylene sheeting (e.g., for covering stockpiles);
- Temporary clean soil cover of open excavations;
- Reducing exposed excavation surface areas; and
- Reducing vehicle speeds on haul roads.

The Remediation Contractor is required to mobilize vapor-suppressant foam (including application equipment) and polyethylene sheeting to the Site prior to initiating intrusive activities. The Remediation Contractor shall maintain an adequate supply of such materials for the duration of intrusive activities.

## 2. Community Air Monitoring

As indicated above, the Remediation Engineer will be responsible for conducting community air monitoring at the Site. The Remediation Engineer and the Remedial Contractor will be responsible for work zone air monitoring in the breathing zone of the on-Site work area, if required, for purposes of worker protection. Details of work zone air monitoring will be provided in the respective Health and Safety Plans (HASPs) of the Remediation Engineer and Remediation Contractor.

The constituents of concern at the Site are volatile organic compounds (VOCs) and particulates. VOCs will be monitored using a photo-ionization detector (PID) with a 10.2 eV lamp. Particulates will be monitored using a particulate air monitor equipped with a micro-processor to record real-time measurements of airborne particulate concentrations in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ).

The daily data will be submitted weekly in an electronic format to the following:

- NYSDEC Project Manager;
- NYSDOH; and
- NYSEG Project Manager.

### 2.1 VOC MONITORING, RESPONSE LEVELS, AND ACTIONS

VOCs will be monitored at the upwind and downwind perimeter of the Site on a continuous basis or as otherwise specified. Upwind concentrations will be measured to establish Site-specific background concentrations. In the event of minimal wind or frequent changes in wind direction, multiple locations will be monitored (i.e., three monitoring locations surrounding the work area).

Monitoring instrumentation will include a real-time PID monitor for VOCs equipped with a 10.2-eV lamp, which will be calibrated daily with a 100-parts-per-million (ppm) isobutylene air standard. The Vapor Emission Response Plan (Appendix E2) describes the action levels for perimeter VOC air monitoring and the associated responses to each level.

### 2.2 PARTICULATE MONITORING, RESPONSE LEVELS, AND ACTIONS

Particulate concentrations will be monitored at the upwind and downwind perimeter of the Site on a continuous basis or as otherwise specified. Upwind concentrations will be measured to establish Site-specific background concentrations. In the event of minimal wind or frequent changes in wind direction, multiple locations will be monitored (i.e., three monitoring locations surrounding the work area).

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. Each particulate monitor will be calibrated daily with a filtered air sample.

The table below describes the action levels for perimeter particulate air monitoring and the associated responses to each level.

| Action Level                                                                                                                        | Response                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Downwind particulate concentrations 100 ug/m <sup>3</sup> greater than upwind particulate monitor sustained over 15-minute average. | Dust suppression techniques are employed.                                                                                     |
| Downwind particulate concentrations 150 ug/m <sup>3</sup> greater than upwind particulate monitor sustained over 15-minute average. | Work halted and dust suppression techniques evaluated. Work continues once dust suppression techniques are proven successful. |

If corrective measures do not decrease dust concentrations below the 150 ug/m<sup>3</sup> action level, the NYSDEC Project Manager will be notified and work may not resume.

### 2.3 METEOROLOGICAL MONITORING

Meteorological monitoring will be conducted continuously at the Site using a portable meteorological monitoring system. The meteorological monitoring system will be installed at a location near the Site project trailer that allows the system to be secure and easily accessible. At a minimum, the meteorological monitoring system will monitor wind speed, wind direction, relative humidity, and ambient temperature. The meteorological monitoring system will be equipped with electronic data-logging capabilities. A digital meteorological monitoring system will be used to collect the meteorological data.

### 2.4 DATA MANAGEMENT

The air monitoring equipment shall have the ability to record real-time air monitoring data, which will be continuously logged by each of the instruments during the course of daily operations. Each instrument will have a visible light and telemetry/pager system to indicate when an action level has been exceeded. Data from the air monitoring instruments will be downloaded daily and saved electronically to a dedicated computer located on-site. Fifteen-minute average readings will be recorded during working hours along with the date, time, sampling location, wind direction, and weather conditions. The data will be maintained to allow for future interpretation of the logged data.

The equipment shall be checked by the Remediation Engineer periodically throughout the work day for appropriate function. Site conditions, weather conditions, work activities, implemented engineering controls and/or corrective actions will be recorded on field logs. Copies of field logs will be maintained on-Site and available for review daily.

## References

1. New York State Department of Environmental Conservation, 2010. "DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 1A Generic Community Air Monitoring Plan" dated May 2010.

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## **APPENDIX E1**

### **NYSDOH Generic CAMP**



## Appendix 1A

### New York State Department of Health Generic Community Air Monitoring Plan

#### Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

#### Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

**Continuous monitoring** will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

**Periodic monitoring** for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

### VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.
4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

### Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{mcg}/\text{m}^3$ ) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the

work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed  $150 \text{ mcg/m}^3$  above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than  $150 \text{ mcg/m}^3$  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  $150 \text{ mcg/m}^3$  of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

## **Appendix 1B**

### **Fugitive Dust and Particulate Monitoring**

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.
3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM<sub>10</sub>) with the following minimum performance standards:
  - (a) Objects to be measured: Dust, mists or aerosols;
  - (b) Measurement Ranges: 0.001 to 400 mg/m<sup>3</sup> (1 to 400,000 :ug/m<sup>3</sup>);
  - (c) Precision (2-sigma) at constant temperature: +/- 10 :g/m<sup>3</sup> for one second averaging; and +/- 1.5 g/m<sup>3</sup> for sixty second averaging;
  - (d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
  - (e) Resolution: 0.1% of reading or 1g/m<sup>3</sup>, whichever is larger;
  - (f) Particle Size Range of Maximum Response: 0.1-10;
  - (g) Total Number of Data Points in Memory: 10,000;
  - (h) Logged Data: Each data point with average concentration, time/date and data point number
  - (i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
  - (j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
  - (k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
  - (l) Operating Temperature: -10 to 50° C (14 to 122° F);
  - (m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.
4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.
5. The action level will be established at 150 ug/m<sup>3</sup> (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m<sup>3</sup>, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m<sup>3</sup> above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see Paragraph 7). Should the action level of 150 ug/m<sup>3</sup> continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM<sub>10</sub> at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

- (a) Applying water on haul roads;
- (b) Wetting equipment and excavation faces;
- (c) Spraying water on buckets during excavation and dumping;
- (d) Hauling materials in properly tarped or watertight containers;
- (e) Restricting vehicle speeds to 10 mph;
- (f) Covering excavated areas and material after excavation activity ceases; and
- (g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m<sup>3</sup> action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

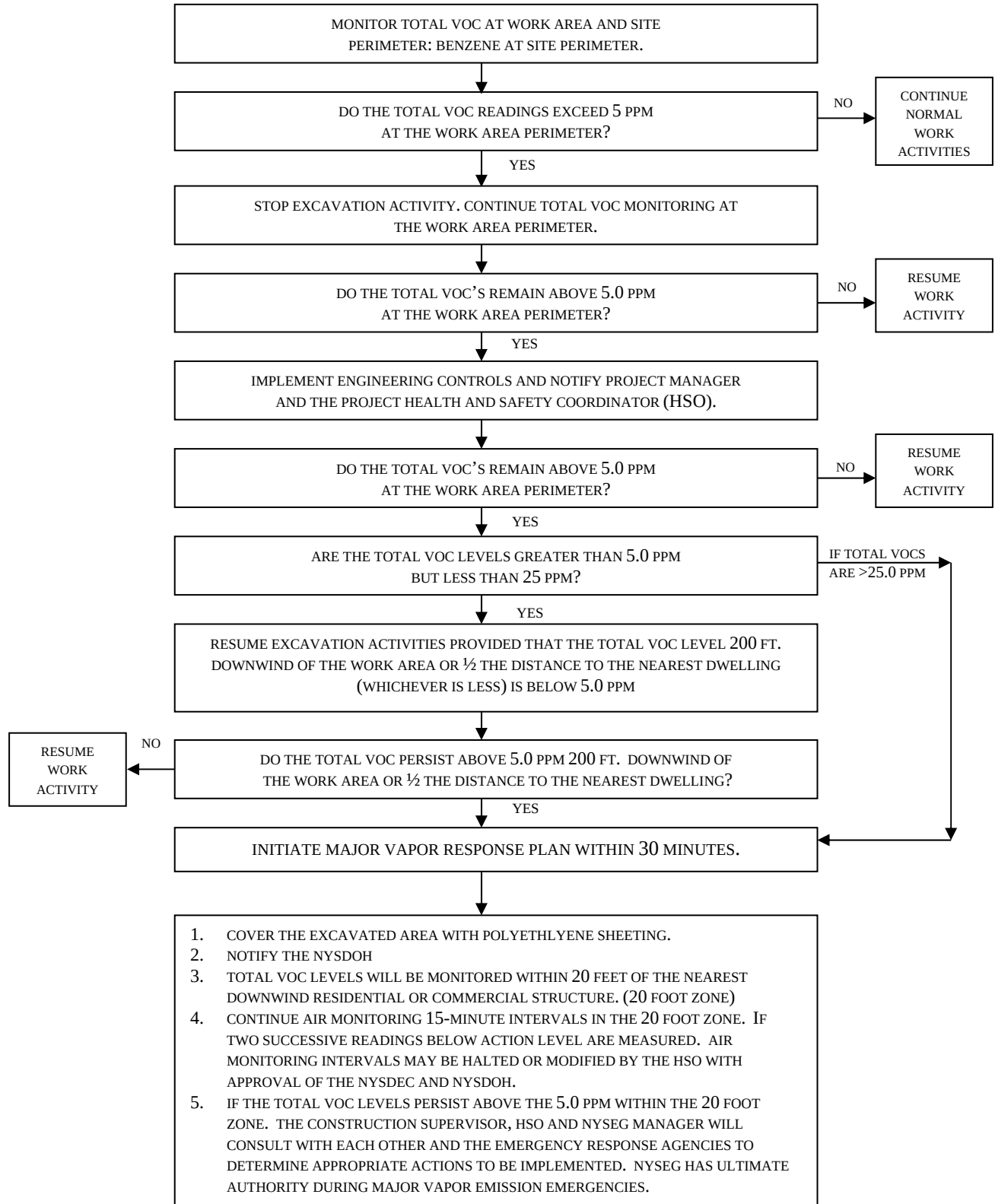
8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

## **APPENDIX E2**

### **Vapor Emission Response Plan**

## ATTACHMENT II

### VAPOR EMISSION RESPONSE PLAN



## **APPENDIX F**

### **Remedial Action Monitoring Plan**



**REPORT ON  
REMEDIAL ACTION MONITORING PLAN  
SENECA FALLS FORMER MGP SITE, NYSDEC SITE # 8-50-010  
SENECA FALLS, NEW YORK**

by Haley & Aldrich of New York  
Rochester, New York

for New York State Electric and Gas Corporation (NYSEG)  
Binghamton, New York

File No. 34507-027  
August 2018



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# 1. Introduction

This Remedial Action Monitoring Plan (RAMP) was prepared for work associated with the Seneca Falls Former Manufactured Gas Plant (MGP) Site (the Site) and supplements the Remedial Design (RD; Haley & Aldrich, Inc., 2017).

The purpose of this RAMP is to describe the monitoring activities that will be conducted by the Remediation Engineer during the remedial action. Imported backfill, remedial waste, and soil remaining at the Site may be sampled under this RAMP. Surface water, noise, and vibrations will be monitored under this RAMP. Perimeter air monitoring is covered in the Community Air Monitoring Plan (CAMP, Appendix D to the RD). This RAMP specifies the procedures, monitoring frequency, data collection and reporting, action levels, and corrective actions to be implemented during construction.

## 1.1 SITE LOCATION AND DESCRIPTION

The footprint of the Site is located at 187 Fall Street, Seneca Falls, Seneca County, New York. The Site is located adjacent to the Seneca River and Canal, which flows east towards Cayuga Lake. The Seneca River and Canal is classified as Class C surface water in the vicinity of the Site. The Site consists of an approximately 1.2-acre parcel currently owned by New York State Electric & Gas Corporation (NYSEG) and located in a mixed residential/commercial area. The Site is bordered by Fall Street to the north, residential properties (181-183 and 185 Fall Street) to the east, a Sunoco gasoline filling station (193 Fall Street) to the west, and the Seneca River and Canal to the south. NYSEG currently owns 185 Fall Street, which abuts the Site to the east.

The parcel located at 187 Fall Street is physically defined by Upland and Lowland Areas separated by a steep slope running east-west, located in the approximate center of the parcel. The Upland Area of the parcel consists of a building floor slab and a paved vehicle parking lot located immediately west of the floor slab. The Upland Area is generally flat with an elevation of approximately 456 feet (ft) above mean sea level, bordered to the south by the steep slope and the Lowland Area of the Site. The steep slope and Lowland Area are heavily vegetated. The Lowland Area of the Site gently slopes south to the Seneca River and Canal, with elevations from approximately 430 ft to 433 ft above sea level. Surface drainage (at a macro scale) appears to be to the south toward the Seneca River and Canal. There is a catch basin present on the Upland Area of the Site that drains northerly to a storm sewer line beneath Fall Street.

## 1.2 SUMMARY OF REMEDIAL ACTIVITIES

The remedial activities to be performed at the Site include:

- Excavation of on-site subsurface structures such as building foundations, the upper portion of the buried former gas holder, and buried piping, which would otherwise interfere with in-situ solidification (ISS) of impacted soils.
- ISS of the on-site impacted materials covering an area of approximately half an acre to depths from six feet to 23 feet below grade.
- A demarcation layer, clean soil cover, and gravel parking lot constructed following ISS.
- Excavation and off-site disposal of off-site soil which exceed Residential Use soil cleanup objectives (SCOs). The excavation will be backfilled with soils meeting the clean fill requirements.

- Vegetated soil cover in two portions of the Lowland Area.
- Dredging of sediment with MGP impacts in the Seneca River and Canal adjacent to the Site. The sediments will be replaced with backfill which meets NYSDEC's chemical and gradation requirements and will restore the benthic habitat.
- Monitored natural attenuation of groundwater.
- Imposition of institutional controls in the form of environmental easements.
- Development of a Site Management Plan (SMP) to identify, maintain, and monitor the institutional and engineering controls at the Site.

## **2. Remedial Action Sampling**

This section provides the sampling requirements for characterizing imported fill for use on-site, documenting conditions of soil left in place, ISS performance assessment, and characterizing waste for off-site disposal. Quality assurance/quality control requirements are provided in the Quality Assurance Project Plan (QAPP; Appendix H to the RD).

The horizontal and vertical limits of MGP-related impacts were previously identified during the pre-design investigation, and the limits of remediation were defined in the ROD (NYSDEC, 2015). Therefore, confirmatory sampling following excavation is not anticipated during the remedial implementation. However, documentation soil samples will be collected at the 185 Fall Street excavation. Confirmatory sediment sampling will not be necessary as dredging will remove sediment to bedrock.

Field sampling procedures, sample identification nomenclature, and chain-of-custody procedures are provided in the QAPP.

### **2.1 IMPORTED FILL**

Imported fill material will be sampled to confirm compliance with DER-10 requirements prior to being imported to the Site.

Fill must meet commercial site use requirements for the Lowland Area soil cover and the ISS cover. Fill must meet restricted residential site use requirements for backfill of the 185 Fall Street off-site residential excavation. Seneca River and Canal sediments will be replaced with backfill which meets NYSDEC chemical and gradation backfill requirements and will restore the benthic habitat. NYSDEC chemical requirements from DER-10 are provided in Technical Specification 31 23 23.13 – Backfill. Sample collection frequency and analytical methods are provided in the QAPP.

### **2.2 DOCUMENTATION SAMPLES**

Soil samples will be collected at the 185 Fall Street excavation to document concentrations of Site constituents remaining at the off-site residential property. Sidewall samples will be collected every 30 linear feet. Bottom samples will be collected at a frequency of one per 900 square feet. Soil samples will be analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), and cyanide. Analytical methods, sample handling procedures, and quality assurance sampling requirements are detailed in the QAPP.

### **2.3 ISS PERFORMANCE SAMPLES**

ISS samples will be collected by the Remediation Contractor at locations and depths selected by the Remediation Engineer. Core samples of freshly mixed grout/soil will be collected at a frequency of one per 500 cubic yards (cy) or a minimum of one per day. The Remediation Contractor will conduct field and laboratory testing, including sample preparation, as described in Technical Specification 31 32 13 – In-Situ Stabilization. Sample preparation and analyses are also provided in the QAPP.

One set of duplicate samples per five sets of quality control tests performed will be provided to the Remediation Engineer for quality assurance testing. Quality assurance testing conducted by the Remediation Engineer shall be as follows:

| Test Procedure                             | Frequency                                                                                      | Criteria                                                 |
|--------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Grout Density by Mud Balance (API 13B-1)   | 1 per 500 cubic yards of solidification, minimum 1 per day and if batch plant operator changes | 11-11.5 lbs/gal <sup>1</sup>                             |
| Slump (ASTM C143)                          | 1 per mix cell                                                                                 | 2 – 6 inches                                             |
| Mix Homogeneity/<br>Completeness of Mixing | 1 per mix cell                                                                                 | Visual                                                   |
| Coring                                     | 1 per 5,000 square feet of ISS treatment area                                                  | No visual NAPL or non-mechanical breaks (See 3.06.C.1.d) |

## 2.4 WASTE FOR OFF-SITE DISPOSAL

### 2.4.1 Solid Waste

Solid waste characterization was conducted by the Design Engineer during the Pre-Design Investigation (Haley & Aldrich, 2015). If additional waste characterization is required, the Remediation Engineer will collect samples as needed. Note that additional data may be needed to satisfy the requirements of the off-site waste disposal facility, which has not yet been selected. Preliminary analytical methods are provided in the QAPP.

### 2.4.2 Waste Water

Waste water treatment and disposal requirements are provided in Technical Specification 02 70 00 – Construction Water Treatment System. A preliminary list of analytical methods, based on State Pollutant Discharge Elimination System (SPDES) Construction Permit effluent requirements, is provided in the QAPP.

The first “batch” of treated water will be containerized and sampled to assess treatment efficacy and to confirm compliance with the applicable discharge/disposal requirements. Subsequent samples will be collected approximately once per week from the treatment system effluent. Discharge flow will be monitored daily using a flow meter to ensure quantity limits are not exceeded.

### **3. Remedial Action Monitoring**

#### **3.1 SURFACE WATER**

Turbidity monitoring will be conducted to protect surface water quality in the Seneca River and Canal downstream from the work area during dredge activities. Control equipment will be installed in the Seneca River and Canal, per Technical Specification 35 11 00 – Signaling and Control Equipment for Waterways. Regular inspection and maintenance of control equipment and turbidity monitoring will be the responsibility of the Remediation Contractor.

Turbidity will be monitored at upstream and downstream locations from the work area three times daily during active sediment removal. Monitoring will be conducted prior to the start of work, at midday, and at the end of the day. Turbidity will also be measured as needed when a high-intensity storm occurs between the routine monitoring events.

The turbidity standard will be the background level (as measured upstream of the dredge area) plus 100 Nephelometric Turbidity Units (NTUs). This will allow for high background turbidity in the event of a storm or increased Canal traffic. If turbidity levels exceed 100 NTUs over background, active construction will stop so that controls can be inspected and repaired and replaced, if necessary.

#### **3.2 NOISE**

Per the Town of Seneca Falls Code 300-26 A(3), “noises emanating from temporary construction and maintenance activities between 7:00 a.m. and 6:00 p.m.” are exempt from noise level regulations. As such, noise monitoring is not expected to be required during the work. For reference, the noise performance standard at an industrial zone property adjacent to a residentially zoned property is 75 decibels, as measured at the property line. Note that residential properties are located immediately east and north of the Site, across Fall Street.

#### **3.3 VIBRATION**

Vibrations due to construction will be monitored for compliance with Town of Seneca Falls Code 300-26 Part E. Vibration monitoring will be conducted by the Remediation Contractor per Technical Specification 01 40 00 – Quality Requirements.

Maximum permitted impact and steady-state vibration displacement is listed in Table I (see next page). These performance standards apply when measured at or beyond the property line. A seismograph will be used to measure vibrations at the 185 Fall Street residential structure. A pre-construction baseline survey will be conducted to assess background vibrations.

**Table I – Maximum Vibration Displacement, Town of Seneca Falls Code 300-26 E(2)**

| Frequency <sup>1</sup> (cycles/second) | Vibration Displacement (in) |                           |
|----------------------------------------|-----------------------------|---------------------------|
|                                        | Impact <sup>2</sup>         | Steady-State <sup>3</sup> |
| Under 10                               | 0.0010                      | 0.0005                    |
| 10-19                                  | 0.0008                      | 0.0004                    |
| 20-29                                  | 0.0006                      | 0.0003                    |
| 30-39                                  | 0.0004                      | 0.0002                    |
| Over 39                                | 0.0002                      | 0.0001                    |

1. Frequency = The number of oscillations per second of a vibration.

2. Impact Vibrations = Earthborne oscillations occurring in discrete pulses at or less than 100 per minute.

3. Steady-state Vibrations = Continuous earthborne oscillations; discrete pulses that occur more than 100 times per minute.

The 185 Fall Street residential structure will also be monitored for settlement. Settlement monitoring requirements are provided in Technical Specification 01 40 00 – Quality Requirements. Settlement monitoring during the work will include surveying of six marked points on the building exterior.

The Remediation Contractor is responsible for installation, maintenance, and monitoring of the vibration and settlement monitoring equipment. Monitoring frequency and reporting requirements are provided in Technical Specification 01 40 00 – Quality Requirements.

### **3.4 STORM WATER**

Storm water will be diverted from open excavations and bulked with construction waste water for off-site disposal or discharge. Refer to Section 2.3 for disposal requirements. Erosion and sedimentation control requirements are provided on the Design Drawings. The Remediation Contractor will prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) per the contract requirements. SWPPP inspections and monitoring will be conducted by the Remediation Contractor in concert with the Remediation Engineer.



## References

1. New York State Department of Environmental Conservation, 2010. "DER-10 Technical Guidance for Site Investigation and Remediation," dated May 2010.
2. Town of Seneca Falls, New York Code, Chapter 300: Zoning, Article V: Supplementary Regulations, 300-26 Performance Standards, Part E, adopted 1 October 2013.

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## **APPENDIX G**

### **Contingency Plan**

**CONTINGENCY PLAN**  
**SENECA FALLS FORMER MGP SITE, NYSDEC SITE # 8-50-010**  
**SENECA FALLS, NEW YORK**

by Haley & Aldrich of New York  
Rochester, New York

for New York State Electric and Gas Corporation (NYSEG)  
Binghamton, New York

File No. 34507-027  
August 2018



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# 1. Introduction

This construction Contingency Plan has been developed for personnel to follow during the performance of the remedial action at the New York State Electric & Gas Corporation (NYSEG) Seneca Falls Former Manufactured Gas Plant (MGP) site (the Site), in Seneca Falls, Seneca County, New York. The focus of the work is to mitigate the impacts of MGP by-products associated with the Site. The remedial action will consist of mobilization, removal of buried structures, in-situ stabilization (ISS) of contaminated Site soils, excavation of contaminated off-site soils, capping of Site soils, dredging of contaminated sediment, material handling, staging, loading, restoration, equipment decontamination, and demobilization. Soils contain contaminants that may be considered Resource Conservation and Recovery Act (RCRA) non-hazardous waste. This Contingency Plan provides procedures and guidelines that will be implemented in the event of a spill, release, fire, explosion, or other emergency. The Contingency Plan includes information necessary to prevent or minimize hazards to human health and the environment.

This Contingency Plan was prepared in accordance with United States Environmental Protection Agency (USEPA) and Occupational Health and Safety Administration (OSHA) guidance documents. This Contingency Plan supplements the Health and Safety Plan (HASP), which will be prepared separately for the stated field activities. Reasonable precautions will be taken by the Remediation Contractor and its subcontractors to prevent an emergency. However, if an emergency occurs, this Contingency Plan will be carried out immediately and will govern the procedures to be followed. Subcontractors will be provided with copies of this Contingency Plan and will be required to follow the Plan.

## 1.1 PRE-PLANNING

Planning is essential to handle emergencies effectively. Decisive action is imperative when an emergency arises. Procedures shall be in place to immediately respond to an emergency. Site personnel shall be knowledgeable of their roles and responsibilities. Supplies and equipment shall be on hand and in good working order to address the emergency. Delays can create life-threatening situations.

Prior to the start of the work, the emergency coordinator (EC) will meet with outside response agencies (fire, police, and medical) to coordinate response efforts. During the initial meeting, response personnel will be briefed on the scope of work at the Site, various response situations, Site access control measures, and types of incidents for which response may be required. Each response agency will be kept informed as Site activities and conditions change during field activities.

## **2. Known Contaminants of Concern**

Based on previous Site activities and Site history, the contaminants of concern are MGP related chemicals and are anticipated to be encountered. These include volatile organic compounds (VOCs), specifically BTEX (benzene, toluene, ethylbenzene and xylenes), and polycyclic aromatic hydrocarbons (PAHs).

### **3. Planned Field Activities**

The planned field activities for the Site include the following:

- Site preparation (installation of support facilities);
- Construction of decontamination pad;
- Construction of staging areas;
- Dredging of sediment;
- Capping of select Site soils;
- Installation of shoring/stabilization system;
- Removal of below grade structures (e.g., foundations and piping);
- ISS of Site soils;
- Excavation of off-site soils;
- Material handling and dewatering activities;
- Water disposal;
- Loading and off-site disposal of soils;
- Site restoration;
- Equipment decontamination; and
- Demobilization.

#### **4. Responsibilities and Designation of Emergency Coordinator**

The EC or an alternate is responsible for implementing this Contingency Plan during an emergency. The EC will also act as the site Health and Safety Officer (HSO) to maintain continuity in the lines of authority during an emergency. The Site HSO/EC will report to the project Field Construction Manager (FCM), who will report to the NYSEG project manager daily. An alternative EC, who will act in the absence of the project HSO/EC, will be designated in case of the primary EC's absence. Site employees must be familiar with the procedures in this plan and are responsible for implementing the plan should the EC or the alternate be unavailable.

A list of off-site emergency personnel is provided at the back of this plan. The EC/HSO will either notify off-site personnel or designate someone to do so. The first responders consist of police, fire, medical, and possibly the New York State Department of Environmental Conservation (NYSDEC) personnel. They will be alerted as to the type of emergencies that may arise and the types of hazards at the Site.



## 5. Emergency Telephone Numbers

Emergency telephone numbers are provided below and will be kept by field personnel while on-site. These telephone numbers should be posted next to the closest telephone. Emergency response departments will be contacted by a single call to 911.

| Agency                                          | Emergency Telephone Number | Non-emergency Telephone Number |
|-------------------------------------------------|----------------------------|--------------------------------|
| Seneca Falls Volunteer Fire Department          | 911                        | (315) 568-2796                 |
| Emergency Medical Services                      | 911                        | Not Applicable                 |
| Seneca Falls Police Department                  | 911                        | (315) 568-4850                 |
| Seneca County Sheriff                           | 911                        | (315) 220-3250                 |
| Seneca County Emergency Management              | Not Applicable             | (315) 539-1756                 |
| Geneva General Hospital                         | Not Applicable             | (315) 787-4000                 |
| National Response Center                        | Not Applicable             | (800) 424-8802                 |
| NYSDEC Spill Hotline                            | (800) 457-7362             | (800) 457-7362                 |
| INFOTRAC (Emergency Technical Information)      | (800) 468-1263             | (800) 535-5053                 |
| Canal Corp., Maintenance and Operations         | Not Applicable             | 518-449-6055                   |
| Canal Corp., Lyons Section                      | Not Applicable             | 315-946-6195                   |
| NYSEG Project Manager (Jeremy Wolf)             | (585) 500-8392             | (585) 500-8392                 |
| Remediation Engineer Field Construction Manager | TBD                        | TBD                            |
| Remedial Contractor Project Manager             | TBD                        | TBD                            |

## 6. Communications

Communications will be by voice when possible. As a backup, visual signals will be used. Hand signals will be as follows:

**Hand gripping throat:**

**Grip partner's wrist or place hands around waist:**

**Hand on top of head:**

**Thumbs up:**

**Thumbs down:**

**Can't breathe.**

**Leave work area immediately.**

**Need assistance.**

**OK. I'm all right.**

**No. Negative.**

Alternatively, hand-held radios may be used, if they are available and are intrinsically safe. In an emergency, and if necessary, a compressed air horn will be used to notify workers that an emergency exists. The signals shall be as follows:

**One long blast:**

**Two short blasts:**

**Evacuate the area by nearest exit.**

**Evacuate by normal exit procedures.**

The EC/HSO will notify emergency personnel or designate an alternate to do so. A portable telephone will be used for this purpose. The portable telephone will be in the clean zone. Emergency telephone numbers are included in Section 5.

## 7. Evacuation

If the air horn is sounded, employees will evacuate the area. Emergency evacuation routes and assembly areas will be designated at the Site prior to initiating field activities. As field activities progress, it will be necessary to modify the evacuation routes and assembly areas, in accordance with Site conditions and layout. Evacuation routes must be clear of obstructions. Evacuation maps will be drawn on Site layout maps to outline evacuation routes. Evacuation routes, assembly areas, and modifications will be clearly communicated to construction personnel during daily safety tailgate meetings.

The EC will be responsible for directing evacuees to the assembly areas. Personnel will be accounted for at this time and missing persons will be reported to the project superintendent.

### 7.1 SAFE DISTANCES AND REFUGE

The following minimum safe distances have been established. Depending upon the nature of the incident, the EC may increase these distances. Arrangements will be made with the local police and fire departments to evacuate nearby neighbors. **Decisions regarding the need for and distances of evacuation will be made in conjunction with the fire and police departments and NYSDEC:**

|                             |                                                                                     |
|-----------------------------|-------------------------------------------------------------------------------------|
| Minor Spills:               | Not established.                                                                    |
| Major Spills:               | Evacuate non-essential personnel to clean zone or 1,000 feet, whichever is greater. |
| Minor Fire:                 | Evacuate non-essential personnel to clean zone.                                     |
| Fire involving a container: | Evacuate personnel 1/2 mile in all directions.                                      |
| Explosion:                  | Evacuate personnel 1/2 mile in all directions.                                      |

### 7.2 DRILLS

The EC will coordinate and oversee an evacuation drill/exercise during the early phases of the work. The EC will also coordinate a lessons-learned session following the drill to evaluate and ensure preparedness of persons and organizations involved.

## **8. Emergency Response Procedures**

In the event of a release, the Contingency Plan shall be immediately activated. The equipment to respond to an emergency will be on Site and readily accessible. This equipment is described in the sections that follow. In addition to this Contingency Plan, responses to releases are subject to controls designated in the Site HASP.

### **8.1 MINOR SPILLS**

For purposes of the Contingency Plan, minor spills are those that consist of five gallons or less. Minor spills will be remediated by removing spill debris and underlying or surrounding contaminated soil. Minor spills that occur in other areas will need to be collected using absorbent material such as absorbent pads and/or speedi-dri. If a container is leaking, the container will be placed in an overpack drum. Additional emergency measures will not be implemented unless needed. The Remediation Contractor will have empty drums, speedi-dri, miscellaneous hand tools, fire extinguishers, absorbent pads, and booms to deal with minor spills that occur on Site.

### **8.2 MAJOR SPILLS**

For purposes of this Contingency Plan, major spills are defined as those that involve greater than 5 gallons of material. In the event of a major spill, communication and notification procedures will be implemented. The response will depend on the nature of the release. Attempts will be made to control the release by diking and draining the area. An absorbent pad, speedi-dri, or soil will be used to absorb the release. The removed material will be placed into appropriate drums and sealed to prevent hazards. Employees should note that absorbents solidify the liquid, but do not remove the fire or exposure hazards. Solvents will volatilize from the absorbent and can ignite. Therefore, a fire extinguisher will be brought to the area of the release by the emergency response team until the material is secured inside a drum. If the release is of sufficient magnitude and cannot be controlled by diking, damming, absorbing, or other method, the fire department, NYSDEC, and the National Response Center shall be notified.

The Seneca Falls Fire Department is capable of Hazardous Materials responses.

### **8.3 SPILLS TO A WATERWAY**

The Seneca River and Canal borders the Site to the South. In the event of a spill to the Seneca River and Canal, communication and notification procedures will be implemented. Response actions will be detailed in the Stormwater Pollution Prevention Plan (SWPPP), to be prepared by the selected Remediation Contractor. Response actions may include containing a spill with booms, skimming, or pumping spilled material. The response will depend on the nature of the release. The fire department, NYSDEC, the National Response Center, and the Canal Corporation shall be notified, if appropriate.

Surface water control equipment, including containment booms and silt curtains, will be installed prior to construction to mitigate construction impacts to the Seneca River and Canal. Control equipment and maintenance requirements are provided in Technical Specification 35 11 00 – Signaling and Control Equipment for Waterways. Regular inspection and maintenance of control equipment will be the responsibility of the Remediation Contractor.

#### **8.4 FIRE**

A fire extinguisher will be used to control minor fires where a container is not involved. Extinguishing methods may include CO2 or dry chemical. A water spray can also be used (not a direct hose stream). Foam, water spray, or fog can be used on larger spills. If the fire cannot be extinguished immediately or a container is involved, the area must be evacuated immediately, and the fire department notified from a safe location.

#### **8.5 EXPLOSION**

In the event of an explosion, the area shall immediately be evacuated, and the fire department notified. Re-entry will not be permitted without an “all clear” from the fire department. The cause of the explosion should be assessed and corrected prior to reentry.

#### **8.6 MEDICAL**

Medical emergencies are addressed in the HASP. Appropriate first aid will be administered, and if necessary, the injured individual will be sent to the designated medical facility. An ambulance will be summoned, if needed. The cause of the accident will be determined and corrected, prior to continuing operations. A first aid kit will be maintained in the office trailer.

When possible, injured personnel will be decontaminated or partially decontaminated in accordance with the HASP. Based upon the anticipated toxicity of the contaminants, personnel decontamination procedures may be eliminated in a life-threatening situation. Emergency medical personnel will be notified as to the lack of decontamination. Emergency medical personnel will wash with soap and potable water after handling the victim. Appropriate documentation should be completed in accordance with the HASP.

## **9. Severe Weather Conditions**

When a hurricane, flood, freeze-up, or other severe weather-related threat is detected, Site personnel will immediately be notified. Each Severe Weather Alert will require last-minute preventative measures to minimize potential damage to facilities and equipment as well as the potential migration and transport of Site-related contaminants off-Site. For example, steps such as checking drains, removing electrical material from open yards, protecting soil piles and excavations, and managing sheet flow of water must be evaluated depending on weather conditions.

## **APPENDIX H**

### **Quality Assurance Project Plan**

**QUALITY ASSURANCE PROJECT PLAN  
SENECA FALLS FORMER MGP SITE, NYSDEC SITE # 8-50-010  
SENECA FALLS, NEW YORK**

by Haley & Aldrich of New York  
Rochester, New York

For New York State Electric and Gas Corporation (NYSEG)  
Binghamton, New York

File No. 34507-027  
August 2018





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**Appendix H1 – Sample Identification Naming Convention**

**Appendix H2 – Sample Chain of Custody Form**

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| II        | QA/QC Summary                                                 |

## List of Acronyms

|        |                                                                                       |
|--------|---------------------------------------------------------------------------------------|
| ASTM   | American Society for Testing of Materials                                             |
| CLP    | Contract Laboratory Program                                                           |
| cy     | cubic yards                                                                           |
| DQI    | Data Quality Indicators                                                               |
| DQO    | Data Quality Objective                                                                |
| ELAP   | Environmental Laboratory Approval Program                                             |
| FCM    | Field Construction Manager                                                            |
| IDL    | Instrument Detection Limit                                                            |
| ISS    | In-situ Solidification                                                                |
| LCS    | Lab Control Sample                                                                    |
| LCSD   | Lab Control Sample Duplicate                                                          |
| LOD    | Limits of Detection                                                                   |
| LOQ    | Limits of Quantitation                                                                |
| mg/kg  | milligram per kilogram                                                                |
| mg/L   | milligram per liter                                                                   |
| MGP    | Manufactured Gas Plant                                                                |
| MS     | Matrix Spike                                                                          |
| MSD    | Matrix Spike Duplicate                                                                |
| 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                                             |
| PARCCS | precision, accuracy, representativeness, comparability, completeness, and sensitivity |
| PCB    | Polychlorinated Biphenyl                                                              |
| psi    | pounds per square inch                                                                |
| QAPP   | Quality Assurance Project Plan                                                        |
| QA/QC  | Quality Assurance/Quality Control                                                     |
| QC     | Quality Control                                                                       |
| RD     | Remedial Design                                                                       |
| RPD    | Relative Duplicate Precision                                                          |
| RSD    | Relative Standard Deviation                                                           |
| SCO    | Soil Cleanup Objective                                                                |
| Site   | Seneca Falls Former Manufactured Gas Plant (MGP) Site                                 |
| SOP    | Standard Operating Procedure                                                          |
| SVOCs  | Semi-Volatile Organic Compounds                                                       |
| TAL    | Target Analyte List                                                                   |
| TCL    | Target Compound List                                                                  |
| TCLP   | Toxicity Characteristic Leachate Procedure                                            |
| TSS    | Total Suspended Solids                                                                |
| UCS    | Unconfined Compressive Strength                                                       |
| USEPA  | United States Environmental Protection Agency                                         |
| VOCs   | Volatile Organic Compounds                                                            |
| µg/kg  | microgram per kilogram                                                                |
| µg/L   | microgram per liter                                                                   |

# 1. Introduction

## 1.1 PURPOSE AND OBJECTIVE

This Quality Assurance Project Plan (QAPP) provides a description of the sampling and laboratory procedures/protocols to be used in support of the remedial design (RD) associated with the Seneca Falls Former Manufactured Gas Plant (MGP) site (the Site) located in Seneca Falls, Seneca County, New York. The fundamental purpose of the QAPP is to ensure that quality analytical data will be generated to support the project in a manner consistent with the Data Quality Objectives (DQOs) as specified herein. This QAPP is designed to be used in conjunction with the New York State Department of Environmental Conservation (NYSDEC) approved RD with regards to specific project objectives and field sampling activities. To the extent that discrepancies exist between this QAPP and the RD, the RD shall control. This QAPP has been prepared in accordance with DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, May 2010).

Site investigation work has been completed for this Site; therefore, sampling is limited to determining acceptability of soil for use as backfill, performance sampling of in-situ solidification (ISS) treated soils, and proper disposal of waste material. Sampling includes the following:

- ISS quality assurance performance sampling;
- Documentation soil samples;
- Waste characterization for excavated soil and sediment disposal, if required;
- Sampling of imported fill material, as needed, to confirm compliance with DER-10; and
- Waste characterization for wastewater discharge.

## 1.2 PROJECT PERSONNEL

The general responsibilities of key project personnel are listed below:

- Remediation Engineer Project Manager – will have responsibility for overall office project management and administration and coordination with the New York State Electric & Gas Corporation (NYSEG) and will serve as the overall QA/QC officer for the Site.
- Field Construction Manager (FCM) – will have responsibility for overall field project management and coordination with NYSEG, and will coordinate the initiation and implementation of the design tasks, including the field sampling.
- Remediation Engineer Field Sampling Technician(s) – These individuals and roles will share the responsibility of implementing and coordinating the field and office project activities.

## 1.3 SITE DESCRIPTION AND LOCATION

Information including site description, location, history, previous investigations, and current conditions are summarized in the RD.

## 2. Sample Collection

### 2.1 FIELD SAMPLING PROCEDURES

#### 2.1.1 ISS Quality Assurance Performance Samples

ISS samples will be collected by the Remediation Contractor at locations and depths selected by the Remediation Engineer. Samples of freshly mixed grout/soil will be collected at a frequency of one per 500 cubic yards (cy) solidified or a minimum of one per day. The Remediation Contractor will conduct field and laboratory testing as described in Technical Specification 31 32 13 – In-Situ Solidification. Remediation Contractor sampling and testing is not included in this QAPP.

One set of samples per five sets of quality control tests performed will be provided to the Remediation Engineer for quality assurance testing. These samples will be prepared by the Remediation Contractor as outlined in the Technical Specification 31 32 13.

ISS performance samples will be analyzed for the parameters listed below.

- Unconfined Compressive Strength (UCS) – American Society for Testing of Materials (ASTM) D1633
- Permeability (with 10 pounds per square inch [psi] confining [effective] stress) – ASTM D5084

ISS core samples will also be collected at a frequency of one for every 5,000 square feet of treatment area by the Remediation Contractor and observed by the Remediation Engineer and NYSDEC, whom should be provided at least 48 hours' notice prior to commencing any coring work. The first coring shall be collected when the ISS treatment area is no more than 25% complete. Core borehole locations shall be biased towards areas of greatest contamination and shall be placed where individual treatment columns or cells overlap, to the extent possible.

Core samples and related equipment will be visually inspected for the following criteria:

- Visible non-aqueous phase liquids (NAPL)
- Non-mechanical cracking within the core
- Percent of core sample recovered

In addition, indirect indications of incompletely mixed NAPL, such as NAPL coatings on drilling tools or equipment, will be noted if observed. Documentation shall include the following:

- Surveyed location of the boring location
- Photographs of each boring showing all cores collected and referenced sample interval
- Field coring logs including type of drilling method used

#### 2.1.2 Soil Samples

Soil samples will be collected using disposable trowels or decontaminated hand tools and placed in pre-cleaned sample containers provided by the laboratory performing the analysis. Samples will be stored at 4° C until delivered to and analyzed by the laboratory.

#### 2.1.2.1 Documentation Samples

Soil samples will be collected at the 195 Fall Street excavation to document soil conditions remaining following remediation. Samples will be discrete grab samples at the limits of excavation. Samples will be collected from the excavation sidewall at a frequency of one per every 30 linear feet. Samples will be collected from the excavation bottom at a frequency of one per every 900 square feet. The documentation soil samples will be analyzed for the chemical constituents listed below.

- Benzene, Toluene, Ethylbenzene, Total Xylene (BTEX) – USEPA SW-846 Method 8260
- Polycyclic Aromatic Hydrocarbons (PAHs) – USEPA SW-846 Method 8270C
- Cyanide – USEPA SW-846 Method 9010

#### 2.1.2.2 Soil/Sediment Samples for Waste Characterization

Samples will be collected from soil and sediment to determine the appropriate waste handling requirements. Samples will be collected at a rate of approximately one sample per 500 ton; however, this will be confirmed based on the requirements of the contracted waste facility.

Except for samples intended for analysis of volatile organic compounds (VOCs), soil samples will be composites of discrete samples collected from about three to five locations chosen to be representative of the area being sampled. The discrete samples will be mixed using a new, clean disposable Ziploc bag for each sample to form a homogenized composite sample that will be used to fill the sample containers.

Only discrete grab samples should be collected for VOC analysis to prevent loss during sampling procedures.

The soil samples collected for waste characterization will be analyzed for the chemical constituents listed below, as required by NYSEG or the contracted waste facility. This list will be compared to the requirements of the contracted waste facility once determined.

- Target compound list (TCL) VOCs – United States Environmental Protection Agency (USEPA) SW-846 Method 8260
- Toxicity Characteristic Leachate Procedure (TCLP) VOCs – USEPA SW-846 Method 1311/8260
- Target analyte list (TAL) Semi-volatile Organic Compounds (SVOCs) – USEPA SW-846 Method 8270C
- TCLP SVOCs – USEPA SW-846 Method 1311/8270
- TAL Metals – USEPA SW-846 Method 6010B
- TCLP Metals – USEPA SW-846 Method 1311/6000/7000 Series
- Mercury – USEPA SW-846 Method 7471B
- TCLP Mercury – USEPA SW-846 Method 7470A/7471A
- Polychlorinated biphenyls (PCBs) – USEPA SW-846 Method 8082
- Reactive Sulfide – USEPA SW-846 Chapter 7.3.3.2
- Cyanide – USEPA SW-846 Method 9010
- Reactive Cyanide – USEPA SW-846 Chapter 7.3.3.2
- Flashpoint – American Society for Testing of Materials (ASTM) D93
- pH – USEPA SW-846 Method 9045
- Corrosivity – USEPA SW-846 Section 7

- Paint Filter Test – USEPA SW-846 Method 9095
- Percent Solids
- Other analyses to be determined, as required by NYSEG or the contracted waste facility

#### 2.1.2.3 *Soil Samples for Imported Soil*

Soil will be required as backfill to implement the RD. Any source proposed for use as backfill will be shown to not exceed the allowable constituent levels for imported fill or soil per Section 5.4 of DER-10. Backfill will be imported to the Site from an approved source. Soil samples for backfill approval will be collected at a frequency of one per 500 tons and analyzed for the following DER-10 constituents:

- TCL VOCs – USEPA SW-846 Method 8260
- TAL SVOCs – USEPA SW-846 Method 8270C
- TAL Metals – USEPA SW-846 Method 6010B
- Mercury – USEPA SW-846 Method 7471B
- Cyanide – USEPA SW-846 Method 9010
- Hexavalent Chromium – USEPA SW-846 Method 7196A
- TAL Pesticides/PCBs – USEPA SW-846 Method 8151/8081/8082
- Particle size to #200 sieve – ASTM D422

Imported soil that will be used for back fill in excavation areas or for the soil cap shall meet the chemical test requirements of 6 NYCRR Part 375-6.7(d) and use the lower of the protection of groundwater or the protection of public health soil cleanup objectives (SCOs), for the identified use of the parcel where soil is being placed (e.g., Residential Use for 185 Fall St. and Commercial Use for 187 and 193 Fall St.) as set forth in 6 NYCRR Table 375-6.8(b).

Imported materials with a gradation of 10% or less by weight passing the number 80 sieve as determined by ASTM D422 can be imported without chemical sampling and analysis consistent with DER-10 Paragraph 5.4(e)(5).

#### 2.1.3 **Wastewater Sampling**

Wastewater samples will be transferred directly into pre-cleaned sample collection containers supplied by the laboratory performing the analyses. All necessary preservatives will be added to the sample containers at the laboratory prior to being shipped to the Site (see Section 3.5). Samples will be stored at 4°C until delivered to and analyzed by the laboratory.

Samples of wastewater will be analyzed before being discharged to the Seneca River and Canal. Water samples collected for waste characterization and/or discharge will be analyzed for the following anticipated chemical constituents; however, this list will be compared to the requirements of the designated disposal facility and/or permit, once the disposal method has been determined.

- VOCs – USEPA SW-846 Method 8260
- SVOCs – USEPA SW-846 Method 8270
- Metals – USEPA SW-846 Method 6000/7000 Series
- Total Cyanide – USEPA SW-846 Method 9012
- pH – USEPA SW-846 Method 9040/9045
- Total Suspended Solids (TSS) – Method SM 2540D

## 2.2 SMALL EQUIPMENT DECONTAMINATION

Cross contamination will be minimized by using vendor-decontaminated, dedicated, disposable equipment to the extent practical. To the extent practicable, only new, disposable equipment will be used for the sampling detailed in this QAPP.

To avoid cross contamination, sampling equipment (defined as any piece of equipment which may contact a sample) will be decontaminated per the following procedures.

Small equipment decontamination for non-disposable equipment such as soil trowels, mixing bowls, and scoops will be conducted using the following procedures:

- Alconox (or equivalent) and potable water wash to remove visible contamination;
- Potable water rinse;
- 10% reagent grade nitric acid solution rinse, if the equipment is being used for the collection of samples for metals analyses; and
- Distilled/deionized water rinse.

Tap water may be used from any treated municipal water system; the use of an untreated potable water supply is not an acceptable substitute.

Equipment should be allowed to dry prior to use. Steam cleaning or high pressure hot water cleaning may be used in the initial removal of gross, visible contamination.

Field equipment rinseate blanks will be generated and analyzed to monitor the effectiveness of field decontamination procedures.



### **3. Sample Custody, Identification and Tracking**

#### **3.1 SAMPLE IDENTIFICATION**

Each sample collected during the project will have a unique identification number. This number, date of collection, and type of analysis will be placed on each sample container after the sample is collected. See Appendix H1 for sample identification naming convention for soil and water samples. A site map will be used throughout the project to denote the area or point that a soil disposal sample represents.

#### **3.2 CHAIN-OF-CUSTODY**

A chain-of-custody will accompany all samples from the point of sampling to delivery of the samples to the laboratory. The chain-of-custody will be a record of the location where the sample was collected, the date and time collected, the number of containers collected, the type(s) of analyses requested, special remarks or requests, and the signature of each custodian of the samples. The complete chain-of-custody will be included in all hard copies of reports. See Appendix H2 for an example sample chain-of-custody form.

Upon sample receipt, laboratory personnel will be responsible for sample custody. The laboratory sample custodian will verify sample integrity and compare the cooler contents against the field chain-of-custody. If a sample container is broken or leaking it will be noted on the chain-of-custody form and project personnel will be immediately notified. If the sample custodian observes any labeling or descriptive errors, project personnel will be contacted immediately to resolve discrepancies. After discrepancies (if any) are resolved, the laboratory will acknowledge receipt of the samples (i.e., by signing and dating the chain-of-custody) and the completed chain-of-custody will be included in all hard copies of reports and become a permanent part of the project records.

#### **3.3 HOLDING TIMES AND SAMPLE TRANSPORT**

Holding times will be calculated from the time the sample is collected to the subsequent extraction, if necessary, or analysis. Once sample containers are filled, they will be immediately placed in a cooler on ice or synthetic ice packs to maintain the samples at 4°C. Upon shipment, the completed chain-of-custody forms will be signed and placed in a sealed Ziploc bag in the cooler. The completed shipping cooler will be closed for transport with shipping tape. Samples will be delivered to the laboratory by same day courier or overnight delivery in sealed coolers with ice.

ISS performance samples will not be stored or shipped on ice to maintain an ambient temperature of 15°C ± 5°C.

#### **3.4 LABORATORY SAMPLE RECEIPT AND TRACKING**

Upon receipt at the laboratory, a laboratory representative will inspect the samples for integrity and check the shipment against the chain-of-custody. Discrepancies will be addressed at this point and documented on the chain-of-custody form. Discrepancies will be reported to the Laboratory Project Manager who will contact project personnel.

When the shipment and the chain-of-custody agree, the custodian will assign each sample a unique laboratory number. This number is affixed to each sample bottle. The custodian will then enter the sample and analysis information into the laboratory computer system.

#### **3.4.1 Laboratory Sample Custody**

The laboratory must satisfy the sample chain-of-custody requirements by implementing the following procedures for laboratory/sample security:

- Samples are stored in a secure area;
- Access to the laboratory is through a monitored area;
- Visitors sign a visitor's log and are escorted while in the laboratory;
- Only the designated sample custodians have keys to sample storage area(s); and
- Transfers of samples in and out of storage are documented.

#### **3.4.2 Sample Storage, Security, and Disposal**

While in the laboratory, the samples and aliquots that require storage at  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  will be maintained in a locked refrigerator unless they are being used for analysis. The laboratory is responsible for sample storage and security such that:

- Samples and extracts are stored for 60 days after the final analytical data report has been submitted. The samples, extracts, and digestants are then disposed by the laboratory in accordance with laboratory standard operating procedures (SOPs) and applicable regulations.
- Samples are not stored with standards or sample extracts.

### **3.5 SAMPLE CONTAINERS AND PRESERVATIVES**

Table I identifies the sample preparation and analytical methods, matrices, holding times, containers, and preservatives for the chemical analyses to be performed as part of this work. The Remediation Engineer shall prepare an updated table as part of their scope of work once the contracted analytical laboratory is selected and the required analysis for each media is finalized on the basis of applicable permits and the selected disposal facilities. Sample bottle requirements and preservation are discussed in more detail below.

#### **3.5.1 Sample Containers**

Sample bottles will be provided by the analytical laboratory and will conform to the requirements of the USEPA Specifications and Guidance for Contaminant-Free Sample Containers. Aqueous samples for analysis of VOCs will be collected in 40-mL vials with Teflon septa.

#### **3.5.2 Sample Preservation**

Samples will be preserved as summarized on Table I. When chemical preservation is required, preservatives will be added to the sample bottles by the laboratory prior to sample collection. Sample preservation is checked by the laboratory upon sample receipt. If it appears that the level of preservation is not adequate, laboratory preservation preparation and addition will be modified.

## 4. Data Quality Objectives and Criteria

DQOs are statements, expressed in either qualitative or quantitative terms, which address the appropriate level of data quality for a project. The quality of data generated must be suitable to support the decisions used to achieve the overall goals as delineated in the RD. The general project DQOs are summarized in this section, with detailed information given throughout this QAPP and associated sections of the RD. The overall DQOs of the project are:

- To ensure that samples collected are representative of the sample population;
- To provide detection limits for the selected analytical methods, which are below the established cleanup objectives or regulatory limits;
- To measure and document precision and accuracy using procedures established by the laboratories, the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) and USEPA approved analytical methods; and
- To ensure that a NYSDOH ELAP and NYSDOH ELAP Contract Laboratory Program (CLP) certified laboratory will conduct all soil/residue and wastewater analyses.

### 4.1 LABORATORY SELECTION

The laboratory chosen for the project will be certified, and maintain certification, under the NYSDOH ELAP and the NYSDOH ELAP CLP for analyses of solid and hazardous waste. Only analytical laboratories that have experience in MGP projects or similar projects will be considered for use.

### 4.2 DATA QUALITY CRITERIA

Quality control (QC) procedures are employed during chemical analysis to support and document the attainment of established method quality objectives. Whether these QC procedures support an assessment of general batch control or matrix-specific application, documentation includes calculating Data Quality Indicators (DQIs) to verify data usability and contract compliance. DQIs were formerly referred to as the parameters of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS). Acceptance criteria for PARCCS are developed during project-specific scoping sessions during the DQO development process. The basis for assessing each of these elements of data quality is discussed in the following subsections.

#### 4.2.1 Precision

Precision is the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. Precision is usually expressed as standard deviation, variance, percent difference, or range, in either absolute or relative terms. Precision data indicate how consistent and reproducible the field sampling or analytical procedures have been. Field duplicate precision is evaluated by calculating an RPD using the following equation:

$$RPD = |(D1-D2)/(1/2(D1+D2))| \times 100$$

Where:

D1 = original sample concentration  
D2 = duplicate sample concentration

If more than two field duplicate samples are collected from adjacent locations and analyzed, they are referred to as co-located field replicates. If two or more aliquots of the same sample are prepared and analyzed by the laboratory, these are referred to as laboratory replicates. Precision of replicate samples is evaluated by calculating the relative standard deviation (RSD) using the following equation:

$$\%RSD = \frac{\sqrt{\frac{\sum_{i=1}^n |D_i - \bar{D}|^2}{n}}}{\bar{D}}$$

Where:

Di = the individual sample concentrations  
D = the mean of n values  
n = the total number of values

Possible causes of poor precision include sample heterogeneity, improper sample collection or handling, inconsistent sample preparation, and poor instrument stability.

#### 4.2.2 Accuracy

Accuracy is the degree of agreement of a measurement, or average of measurements, with an accepted reference or "true" value, and is a measure of bias in the system. Accuracy of measurement data will be assessed and controlled using lab control samples (LCSs) and lab control sample duplicates (LCSDs), surrogate spikes, and site-specific matrix spike (MS) and matrix spike duplicates (MSDs).

Results for LCS and surrogate spikes will be the primary indicators of accuracy. These results will be used to control accuracy within acceptable limits for definitive-level data. Field-designated MS/MSD samples will be employed for applicable methods to identify matrix-associated analytical influences or interferences that may affect the accuracy of the analytical data. As spiked samples are analyzed, spike recoveries will be calculated and compared to pre-established acceptance limits.

Accuracy/bias is:

$$\text{MS \% recovery} = \frac{\text{concentration of sample plus spike} - \text{concentration of unspiked sample}}{\text{value of spike added}} \times 100$$

$$\text{LCS target/surrogate \% recovery} = \frac{\text{measured concentration}}{\text{true (expected) concentration}} \times 100$$

Trip blanks, field blanks, and equipment blanks monitor accuracy/bias by detecting any concentrations of analytes in water that was originally contaminant-free and comparing that to the field sample results.

#### 4.2.3 Completeness

Completeness is a measure of the amount of adequate data obtained from the actual performance of measurement procedures compared to the amount expected to be obtained from error-free performance of the same measurement procedures under normal conditions. Completeness measures the extent to which the database resulting from a measurement effort fulfills objectives for the amount of data required. Completeness is defined as the valid data percentage of the total tests requested.

$$\text{Completeness (\%)} = \frac{\text{number of valid analyses per analyte in a matrix}}{\text{number of requested analyses per analyte for that matrix}} \times 100$$

Complete project data involves both satisfactory performance and documentation of field and laboratory procedures. Valid analyses are defined as those where the sample arrives at the laboratory intact, properly preserved, in sufficient quantity to perform the requested analyses, and accompanied by a completed chain-of-custody. Furthermore, the sample must be analyzed within the specified holding time and in such a manner that analytical QC acceptance criteria are met, with the following exception. Data qualified as estimated because of data validation are considered valid and counted towards completeness if still usable for the intended use of the data. Such data require evaluation to determine suitability for decision-making purposes. Rejected data are not valid data. Completeness for the entire project also involves completeness of field and laboratory documentation, whether all samples and analyses specified in the project-specific QAPP have been processed, and whether the procedures specified in the applicable laboratory SOPs have been followed.

The completeness goal for a project is 90 percent. The completeness goal is for the entire duration of the project (e.g., there is not a goal of 90 percent completeness per sampling round). The completeness goal for the analytical laboratory portion for each project is 95 percent. Site-specific completeness goals may be necessary to support various environmental cleanup or No Further Action decisions. Failure to achieve the project completeness goal may necessitate re-sampling and reanalysis, or re-evaluation of DQOs.

Critical samples are samples that are used as the sole or primary source for making environmental decisions. These samples require a high level of data quality and completeness. Critical samples will have a completeness goal of 100 percent for each analyte of concern in each matrix, and the completeness goal will be evaluated based on each sampling round. Should recollection efforts be necessary to attain completeness objectives, appropriate Project Managers and regulatory parties will assess budgetary, site access, schedule, or other constraints, and their impact to the decision-making process.

#### 4.2.4 Representativeness

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition.

The characteristics of representativeness are usually not quantifiable. Subjective factors to be considered in evaluating how representative a set of measurement data is of a property being measured include:

- Degree of homogeneity of the property or environmental matrices across a site;
- Consistency in applying field procedures;
- Degree of homogeneity of the property within a sample collected from one location at a site; and
- Available information on which a sampling plan is based.

To maximize representativeness of the data, sampling techniques, sample size, and sample locations are carefully chosen to yield samples representative of the location and time of sampling, and to produce samples that are collectively representative of the site.

#### 4.2.5 Comparability

Comparability is the degree to which one data set can be compared to another data set measuring the same property. Comparability is assured using established and approved sample collection techniques and analytical methods, consistency in the basis of analysis (volume, etc.), consistency in reporting units, and analysis of standard reference materials.

Data comparability will be achieved by using standard units of measure, e.g., milligrams per liter (mg/L) for metals and other inorganics in water samples and micrograms per liter ( $\mu\text{g/L}$ ) for organics in water. The use of approved or standard methods to collect and analyze samples (in this case ASTM and USEPA Methods), along with instruments calibrated against National Institute for Standards and Technology traceable standards will also help maintain comparability.

Comparability also depends on the other data quality characteristics. Only when data are judged to be representative of the environmental conditions, and when precision and accuracy are known, may data sets be compared with confidence.

#### 4.2.6 Sensitivity

Sensitivity is the ability of an analytical method or instrument to discriminate between measurement responses representing different concentrations. This capability is established during the planning phase to meet project-specific objectives. It is important to be able to detect the target analytes at the levels of interest. Sensitivity requirements include the establishment of various limits such as calibration requirements, instrument detection limits (IDLs), limits of detection (LODs), limits of quantitation (LOQs), and project quantitation limits. The IDLs, LODs, and LOQs are based on an interference-free matrix (i.e., reagent water), which do not consider matrix effects and may not be achievable for all environmental samples.

Once the laboratory that will be providing analytical services is contracted, it will be confirmed that the lab will be able to meet the sensitivity required to meet the sampling objectives. The Remediation Engineer will generate summary tables showing the required target analytes by media and sample type, the applicable regulatory comparison criteria, and the selected laboratory LOQs. The following LOQs will be required:

- The LOQs for the soil waste characterization sampling will be required to meet the regulatory TCLP limits as well as any requirements of the contracted waste disposal facility.
- The LOQs for soil samples for imported fill material and documentation samples will be required to meet the chemical test requirements of 6 NYCRR Part 375-6.7(d) and use the lower of the protection of groundwater or the protection of public health SCOs, for the identified use of the parcel where soil is being placed or remains (e.g., Residential Use for 185 Fall St. and Commercial Use for 187 and 193 Fall St.) as set forth in 6 NYCRR Table 375-6.8(b).
- The LOQs for characterization of wastewater will be required to meet the limits of the final discharge permit, and/or the contracted waste disposal facility once identified.

#### 4.2.7 Application of Data Qualifiers

If corrective actions are not performed or are not effective, the laboratory will apply an initial appropriate flag to the sample result to advise the data user of the uncertainty in the result. The data validator will apply the final qualifier based on consideration of all data and project objectives.

### 4.3 FIELD QUALITY CONTROL

#### 4.3.1 Field Duplicate Samples

Field duplicate samples are used to assess the variability of a matrix at a specific sampling point and to assess the reproducibility of the sampling method. Each duplicate sample will be analyzed for the same parameters as the original sample.

Soil duplicate samples are collected from a single location and device (e.g., soil trowel). Soil duplicates for VOC analysis are collected first, without homogenization. If other parameters are being analyzed, the remaining soil is homogenized (e.g., by mixing in a clean stainless-steel bowl) and prior to generating the sample and duplicate.

The default field duplicate precision (RPD) objective is  $\leq 50\%$  percent RPD for all matrices where the sample concentration is at least two times the reporting limit. Where the analyte is detected in both samples, but the concentration is less than 2 times the reporting limit, precision is assessed by the absolute difference, which should be less than the reporting limit. The RPD is not calculable when the analyte is not detected in one or both analyses. A more detailed discussion of the calculation is provided in Section 4.2.1 (Precision), above.

Field duplicates will be collected for soil samples from soil to remain on site (imported fill and documentation samples) at a frequency of one per 10 samples. Field duplicates will not be collected for the waste characterization samples. A summary of Quality Assurance/Quality Control (QA/QC) samples is provided in Table II.

#### 4.3.2 Equipment Rinseate and Trip Blank Samples

Field equipment rinseate and trip blanks are used to assess sampling accuracy. Field equipment rinseate and trip blanks will be collected as appropriate for each sampling effort. Field equipment rinseate blanks will be collected by passing ASTM Type II pure water, lab supplied deionized water, or equivalent over and/or through the respective field equipment utilized during each sampling effort. One rinseate blank will be collected for each type of field equipment used. Equipment rinseate blanks will be prepared and analyzed for each target parameter for which environmental media have been collected.

Equipment blank samples will be collected at a frequency of 1 per 20 field samples collected during a sampling event. Equipment blank samples will not be collected for samples collected using pre-cleaned and/or disposable sampling equipment. Equipment blank samples will be analyzed to evaluate contamination from ambient conditions and/or sample container contamination.

For samples to be analyzed off-site, the laboratory will provide trip blank samples, consisting of analyte-free water poured into sample vials, for each water sampling event. Trip blank samples will be handled in a manner consistent with field samples, but will not be opened, and will be shipped back to the

laboratory with the field samples. Trip blank samples will provide a measure of potential cross contamination during shipment and handling. One trip blank sample will be included in each shipping cooler containing samples for VOC analysis.

A summary of QA/QC samples is provided in Table II.

#### 4.4 LABORATORY QUALITY CONTROL

Each laboratory will be NYSDOH Certified for the analyses they will perform. Each analyst must complete a start-up proficiency procedure to demonstrate their capability to perform accurate and precise analyses on each type of instrument they operate. In addition, each laboratory must accurately analyze samples provided by NYSDOH on a semi-annual basis to maintain certification. The laboratories have internal quality control officers that review all methodologies and implement corrective action, including reanalyzing samples, which do not pass established laboratory quality control criteria.

Laboratory quality control procedures are specified in the analytical methods. These specifications include the type of laboratory quality control check required, compounds and concentrations to be used, and laboratory quality control acceptance criteria.

Laboratory quality control checks will include (where specified by method):

- Calibration Standards
- Methods Blanks
- Duplicates
- Surrogate Spikes
- Internal Standards
- Laboratory Duplicates
- Calibration Check Standards
- Laboratory Control Samples

##### 4.4.1 MS/MSD Samples

Analytical accuracy will be assessed through the use of known Laboratory Control Samples (LCS) and project-specific matrix spike sample analyses.

LCS analyses will be performed with each analytical batch of project samples to determine the accuracy of the analytical system. MS/MSD analyses will be performed with each batch of twenty (20) project samples to assess the accuracy of identifying and quantifying analytes within the sample matrices. Additional sample volume (3X) will be collected at sample locations selected for MS/MSD analyses so quantitation limits can be met.

These results will be used to control accuracy within acceptable limits for definitive-level data. Field-designated MS/MSD samples will be employed for applicable methods to identify matrix-associated analytical influences or interferences that may affect the accuracy of the analytical data. As spiked samples are analyzed, spike recoveries will be calculated and compared to pre-established acceptance limits. A more detailed discussion of the calculation is provided in Section 4.2.2 (Accuracy), above.

A summary of QA/QC samples is provided in Table II.



## **5. Calibration Procedures**

Each analysis will be performed in accordance with NYSDOH ELAP sanctioned methods or equivalent USEPA analytical procedures. Each procedure specifies the method of frequency of calibration necessary to perform accurate and precise analyses. Each analytical instrument verifies the minimum detection limit at least every six months as prescribed by the NYSDOH ELAP. The calibration of the instruments is verified at the beginning and end of each auto sampler run.

## **6. Data Review, Validation, and Reporting**

### **6.1 LABORATORY DATA COLLECTION**

A significant portion of the analyses performed requires the use of automated laboratory instrumentation. Raw data collected from the instruments detectors will be converted to standard units of milligram per kilogram (mg/kg) (or microgram per kilogram [ $\mu\text{g/kg}$ ]) for solid matrices and milligram per liter (mg/L) (or microgram per liter [ $\mu\text{g/L}$ ]) for water. All raw data will be stored in electronic form and in laboratory notebooks in case the analysis needs to be recreated. Raw data for all analyses will be archived for a minimum of four years.

### **6.2 DATA REVIEW**

All analytical data will be verified for precision and accuracy utilizing the laboratory's in-house Quality Assurance/Quality Control programs. In addition, all data packages will be reviewed by NYSEG and the Remediation Engineer to ensure that all data deliverables have been properly provided.

### **6.3 FULL DATA VALIDATION**

The full third-party data validation process consists of a formal systematic review of analytical results and quality control documentation with regards to the parameters analyzed for the imported fill. The samples for waste characterization will not undergo data validation. Based on this review, a third-party data validator will make judgments and express concerns on the quality and limitations of the specific data and the validity of the data package. The data validator will prepare documentation of his or her review using the standard USEPA Inorganics Regional Assessment and Organics Regional Assessment forms to summarize deficiencies and general laboratory performance. These forms are accompanied by appropriate supplementary documentation, which identifies specific problems.

### **6.4 REPORTING**

Final reports for analytical data will be reviewed and accepted by NYSEG prior to submission to NYSDEC. Reports for analyses performed under the ELAP protocol will contain results sheets for the sample analyzed. These reports must include at a minimum:

- NYSEG Sample ID number;
- Laboratory sample ID number;
- Sample collection date;
- Extraction or digestion date (if applicable);
- Date Analyzed;
- Analytical method;
- Analytical results (with units clearly identified);
- Results of laboratory blank and field blanks;
- Results of spikes, matrix spikes, and duplicates;
- Surrogate recoveries (if applicable);
- Complete chain-of-custody forms; and
- Field log sheets (if available).

For the waste characterization samples, Category A data packages will be sufficient. Samples undergoing data validation (imported soil) will require the submittal of full Category B packages.

## **7. Preventative Maintenance**

### **7.1 FIELD INSTRUMENTS AND EQUIPMENT**

Equipment instruments, tools, gauges, and other items requiring preventative maintenance will be serviced in accordance with the manufacturer's specified recommendations or written procedures developed by the operators. All field equipment service will be conducted by qualified personnel. Prior to any field sampling, each piece of field equipment will be inspected to ensure that it is operational. If the equipment is not operational, it must be repaired prior to use. All equipment which required charging or batteries will be fully charged or have fresh batteries at the start of the project. An equipment repair/maintenance log will be kept for each field instrument. Any non-operational/non-repairable field equipment will be replaced.

### **7.2 LABORATORY INSTRUMENTS AND EQUIPMENT**

Each laboratory has an instrument/equipment maintenance program, which includes procedures for daily, weekly, monthly, or annual routine maintenance. In addition, maintenance is performed if the accuracy and/or precision of the instrument are in question.

#### **7.2.1 Instrument Maintenance**

Preventative maintenance of laboratory instruments will be conducted in accordance with the manufacturer's guidelines or written procedures developed by the operators. All instrument service will be performed by qualified personnel. To minimize potential downtime, the laboratory will maintain a sufficient supply of critical spare parts for its instruments and, where practical, maintain a service contract for rapid instrument repair. Wherever possible, the laboratory will retain backup instrumentation. An instrument repair/maintenance log will be maintained for each instrument.

#### **7.2.2 Equipment Monitoring**

Daily, the operation of the laboratory equipment (i.e., balances, ovens, refrigerators, water purification systems, etc.) will be checked and documented. Any discrepancies will be immediately reported to the appropriate laboratory personnel for resolution.

## References

1. New York State Department of Environmental Conservation, 2010. "DER-10 Technical Guidance for Site Investigation and Remediation," dated May 2010.
2. United States Environmental Protection Agency, 1992. "Specifications and Guidance for Contaminant- Free Sample Containers," dated December 1992.
3. United States Environmental Protection Agency, 1986. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 EPA," EPA Office of Solid Waste, 3rd Edition and promulgated updates, 1986

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## TABLES

| MATRIX/ANALYSIS                                                                  | Analytical Method       | Typical Sample Bottles |          |        |        | Preservation <sup>1</sup> | Holding Time in Days <sup>2</sup> |                  |
|----------------------------------------------------------------------------------|-------------------------|------------------------|----------|--------|--------|---------------------------|-----------------------------------|------------------|
|                                                                                  |                         | Material               | Size     | Qty    | Source |                           | Extraction                        | After Extraction |
| ISS Performance Samples                                                          |                         |                        |          |        |        |                           |                                   |                  |
| Unconfined Compressive Strength (UCS)                                            | ASTM D1633              | To Be Determined       |          |        |        |                           |                                   |                  |
| Permeability (with 10 pounds per square inch [psi] confining [effective] stress) | ASTM D5084              | To Be Determined       |          |        |        |                           |                                   |                  |
| Soil Waste Characterization Samples                                              |                         |                        |          |        |        |                           |                                   |                  |
| TCL Volatile Organic Compounds                                                   | SW846 8260C             | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | NA                                | 14 days          |
| TCLP Volatile Organic Compounds                                                  | SW 846 1311/8260        | G                      | 20 mL    | 1      | Lab    | 4 ° C                     | NA                                | 14               |
| TAL Semivolatile Organic Compounds                                               | SW 846 8270C            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | 14 days                           | 40 days          |
| TCLP Semivolatile Organic Compounds                                              | SW 846 1311/8270        | G                      | 500 mL   | 1      | Lab    | 4 ° C                     | 5                                 | 40               |
| TAL Metals (except mercury)                                                      | SW 846 6010B            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | NA                                | 180 days         |
| TCLP Metals (excluding mercury)                                                  | SW 846/1311/6010B       | G                      | 500 mL   | 1      | Lab    | 4 ° C                     | NA                                | 180              |
| Mercury                                                                          | SW 846 7471A            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | NA                                | 28 days          |
| TCLP Mercury                                                                     | SW 846 1311/7471A       | G                      | 500 mL   | 1      | Lab    | 4 ° C                     | 5                                 | 28               |
| PCBs                                                                             | SW 846 8082             | G                      | 500 mL   | 1      | Lab    | 4 ° C                     | 5                                 | 40               |
| Reactive Sulfide                                                                 | SW 846 Chapter 7.3.3.2  | G                      | 500 mL   | 1      | Lab    | 4 ° C                     | NA                                | 7                |
| Total Cyanide                                                                    | SW 846 9012B            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | NA                                | 14 days          |
| Reactive Cyanide                                                                 | SW 846 Chapter 7.3.3.2  | G                      | 500 mL   | 1      | Lab    | 4 ° C                     | NA                                | 14               |
| Flashpoint                                                                       | ASTM D93                | To Be Determined       |          |        |        |                           |                                   |                  |
| pH                                                                               | SW 846 Method 9045      | P                      | 25 mL    | 1      | Lab    | 4 ° C                     | Analyze Immediately               |                  |
| Corrosivity                                                                      | SW 846 Section 7        | G                      | 500 mL   | 1      | Lab    | 4 ° C                     | NA                                | 2                |
| Paint Filter                                                                     | SW 846 Method 9095B     | G                      | 500 mL   | 1      | Lab    | 4 ° C                     | NA                                | NA               |
| Percent Solids                                                                   |                         | G                      | 500 mL   | 1      | Lab    | 4 ° C                     | NA                                | NA               |
| Documentation Soil Samples                                                       |                         |                        |          |        |        |                           |                                   |                  |
| Benzene, Toulene, Ethylbenzene, and Xylenes (BTEX)                               | SW846 8260C             | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | NA                                | 14 days          |
| Polycyclic Aromatic Hydrocarbons (PAHs)                                          | SW 846 8270C            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | 14 days                           | 40 days          |
| Total Cyanide                                                                    | SW 846 9012B            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | NA                                | 14 days          |
| Samples for Imported Fill or Soil Reuse                                          |                         |                        |          |        |        |                           |                                   |                  |
| TCL Volatile Organic Compounds                                                   | SW846 8260C             | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | NA                                | 14 days          |
| TAL Semivolatile Organic Compounds                                               | SW 846 8270C            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | 14 days                           | 40 days          |
| Total Cyanide                                                                    | SW 846 9012B            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | NA                                | 14 days          |
| Hexavalent Chromium                                                              | SW 846 7196A            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | 30 days                           | 24 hours         |
| TAL Metals (except mercury)                                                      | SW 846 6010B            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | NA                                | 180 days         |
| Mercury                                                                          | SW 846 7471A            | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | NA                                | 28 days          |
| TAL Pesticides                                                                   | SW846 8080/8151         | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | 14 days                           | 40 days          |
| PCBs                                                                             | SW 846 8082             | G                      | 8 oz     | 1      | Lab    | 4 ° C                     | 14 days                           | 40 days          |
| Particle Size to #200 Sieve                                                      | ASTM D422               | To Be Determined       |          |        |        | NA                        | NA                                | NA               |
| Wastewater Sampling                                                              |                         |                        |          |        |        |                           |                                   |                  |
| Benzene, Toulene, Ethylbenzene, and Xylenes (BTEX)                               | SW846 8260C             | G                      | 40 mL    | 2 or 3 | Lab    | HCl to pH>12              | NA                                | 14 days          |
| Semivolatile Organic Compounds                                                   | SW 846 8270C            | G (amber)              | 1,000 mL | 1      | Lab    | 4 ° C                     | 5 days                            | 40 days          |
| Metals (except mercury)                                                          | SW 846 6010B            | P                      | 500 mL   | 1      | Lab    | HNO3 to pH<2              | NA                                | 180 days         |
| Total Cyanide                                                                    | SW 846 9012B            | P                      | 500 mL   | 1      | Lab    | NaOH to pH>12             | NA                                | 14 days          |
| pH                                                                               | SW 846 Method 9040/9045 | P                      | 25 mL    | 1      | Lab    | 4 ° C                     | Analyze Immediately               |                  |
| Total Suspended Solids (TSS)                                                     | Method SM 2540D         | P                      | 500 mL   | 1      | Lab    | 4 ° C                     | 7 days                            | NA               |

Notes:

1. All samples for chemical analysis should be held at 4 degrees C in addition to any chemical preservation required.

2. Holding time calculated from day of collection, unless noted as being from time of extraction. Laboratory holding times (ASP 2005, Exhibit I) are two days shorter to allow for field handling and shipping.

G = Glass

P = Plastic

SS = Stainless Steel

mL = milliliter

SW-846 = Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. USEPA SW-846. Complete through Update IV, March 2009.

TABLE II  
QUALITY ASSURANCE PROJECT PLAN  
QA/QC SAMPLE SUMMARY

| MATRIX/ANALYSIS                                                                  | Analytical Method       | Laboratory | Field Duplicate            | Equipment Blank <sup>1</sup> | Trip Blank                      | MS/MSD <sup>2</sup> |
|----------------------------------------------------------------------------------|-------------------------|------------|----------------------------|------------------------------|---------------------------------|---------------------|
| ISS Performance Samples                                                          |                         |            |                            |                              |                                 |                     |
| Unconfined Compressive Strength (UCS)                                            | ASTM D1633              | TBD        | 0                          | 0                            | 0                               | 0                   |
| Permeability (with 10 pounds per square inch [psi] confining [effective] stress) | ASTM D5084              | TBD        | 0                          | 0                            | 0                               | 0                   |
| Soil Waste Characterization Samples                                              |                         |            |                            |                              |                                 |                     |
| TCL Volatile Organic Compounds                                                   | SW846 8260C             | TBD        | 0                          | 0                            | 1 per shipping container/cooler | 0                   |
| TCLP Volatile Organic Compounds                                                  | SW 846 1311/8260        | TBD        | 0                          | 0                            | 1 per shipping container/cooler | 0                   |
| TAL Semivolatile Organic Compounds                                               | SW 846 8270C            | TBD        | 0                          | 0                            | 0                               | 0                   |
| TCLP Semivolatile Organic Compounds                                              | SW 846 1311/8270        | TBD        | 0                          | 0                            | 0                               | 0                   |
| TAL Metals (except mercury)                                                      | SW 846 6010B            | TBD        | 0                          | 0                            | 0                               | 0                   |
| TCLP Metals (excluding mercury)                                                  | SW 846/1311/6010B       | TBD        | 0                          | 0                            | 0                               | 0                   |
| Mercury                                                                          | SW 846 7471A            | TBD        | 0                          | 0                            | 0                               | 0                   |
| TCLP Mercury                                                                     | SW 846 1311/7471A       | TBD        | 0                          | 0                            | 0                               | 0                   |
| PCBs                                                                             | SW 846 8082             | TBD        | 0                          | 0                            | 0                               | 0                   |
| Reactive Sulfide                                                                 | SW 846 Chapter 7.3.3.2  | TBD        | 0                          | 0                            | 0                               | 0                   |
| Total Cyanide                                                                    | SW 846 9012B            | TBD        | 0                          | 0                            | 0                               | 0                   |
| Reactive Cyanide                                                                 | SW 846 Chapter 7.3.3.2  | TBD        | 0                          | 0                            | 0                               | 0                   |
| Flashpoint                                                                       | ASTM D93                | TBD        | 0                          | 0                            | 0                               | 0                   |
| pH                                                                               | SW 846 Method 9045      | TBD        | 0                          | 0                            | 0                               | 0                   |
| Corrosivity                                                                      | SW 846 Section 7        | TBD        | 0                          | 0                            | 0                               | 0                   |
| Paint Filter                                                                     | SW 846 Method 9095B     | TBD        | 0                          | 0                            | 0                               | 0                   |
| Percent Solids                                                                   |                         | TBD        | 0                          | 0                            | 0                               | 0                   |
| Documentation Soil Samples                                                       |                         |            |                            |                              |                                 |                     |
| Benzene, Toulene, Ethylbenzene, and Xylenes (BTEX)                               | SW846 8260C             | TBD        | 1 per 10 or sampling event | 0                            | 1 per shipping container/cooler | 1 per 20            |
| Polycyclic Aromatic Hydrocarbons (PAHs)                                          | SW 846 8270C            | TBD        | 1 per 10 or sampling event | 0                            | 0                               | 1 per 20            |
| Total Cyanide                                                                    | SW 846 9012B            | TBD        | 1 per 10 or sampling event | 0                            | 0                               | 1 per 20            |
| Samples for Imported Fill or Soil Reuse                                          |                         |            |                            |                              |                                 |                     |
| TCL Volatile Organic Compounds                                                   | SW846 8260C             | TBD        | 1 per 10 or sampling event | 0                            | 1 per shipping container/cooler | 1 per 20            |
| TAL Semivolatile Organic Compounds                                               | SW 846 8270C            | TBD        | 1 per 10 or sampling event | 0                            | 0                               | 1 per 20            |
| TAL Pesticides                                                                   | SW846 8080/8151         | TBD        | 1 per 10 or sampling event | 0                            | 0                               | 1 per 20            |
| PCBs                                                                             | SW 846 8082             | TBD        | 1 per 10 or sampling event | 0                            | 0                               | 1 per 20            |
| Total Cyanide                                                                    | SW 846 9012B            | TBD        | 1 per 10 or sampling event | 0                            | 0                               | 1 per 20            |
| Hexavalent Chromium                                                              | SW 846 7196A            | TBD        | 1 per 10 or sampling event | 0                            | 0                               | 1 per 20            |
| TAL Metals (except mercury)                                                      | SW 846 6010B            | TBD        | 1 per 10 or sampling event | 0                            | 0                               | 1 per 20            |
| Mercury                                                                          | SW 846 7471A            | TBD        | 1 per 10 or sampling event | 0                            | 0                               | 1 per 20            |
| Particle Size to #200 Sieve                                                      | ASTM D422               | TBD        | 0                          | 0                            | 0                               | 0                   |
| Wastewater Sampling                                                              |                         |            |                            |                              |                                 |                     |
| Benzene, Toulene, Ethylbenzene, and Xylenes (BTEX)                               | SW846 8260C             | TBD        | 0                          | 0                            | 1 per shipping container/cooler | 0                   |
| Semivolatile Organic Compounds                                                   | SW 846 8270C            | TBD        | 0                          | 0                            | 0                               | 0                   |
| Metals (except mercury)                                                          | SW 846 6010B            | TBD        | 0                          | 0                            | 0                               | 0                   |
| Total Cyanide                                                                    | SW 846 9012B            | TBD        | 0                          | 0                            | 0                               | 0                   |
| pH                                                                               | SW 846 Method 9040/9045 | TBD        | 0                          | 0                            | 0                               | 0                   |
| Total Suspended Solids (TSS)                                                     | Method SM 2540D         | TBD        | 0                          | 0                            | 0                               | 0                   |

Notes:

1. Field equipment rinsate blank quantity will vary depending on sample collection rate and types of sampling equipment used.  
It is anticipated that only disposable sampling equipment will be used. In this event, no equipment blanks will be collected.

2. MS/MSD - Matrix spike/matrix spike duplicate.



## **APPENDIX H1**

### **Sample Identification Naming Convention**

# SAMPLE IDENTIFICATION

## NAMING CONVENTION FOR SOIL AND WATER SAMPLES

### SYSTEM CODING

|                                   |                         |     |
|-----------------------------------|-------------------------|-----|
| First & Second = Site             | Seneca Falls            | SF  |
| Third & Fourth = Source           | Excavation              | EX  |
|                                   | Stockpile               | SP  |
|                                   | Frac Tank               | FT  |
|                                   | Poly Container          | PC  |
|                                   | Metal Barrel            | MB  |
|                                   | Roll Off Container      | RO  |
|                                   | Waste Wrangler          | WW  |
|                                   | Test Pit                | TP  |
|                                   | Boring                  | BO  |
|                                   | Geoprobe                | GP  |
| Fifth & Sixth = Location          | Sidewall Sample         | SW  |
|                                   | Bottom Sample           | BM  |
|                                   | Waste Soil              | WS  |
|                                   | Wastewater              | WW  |
|                                   | Debris                  | DB  |
|                                   | ISS Grout/Soil Mix      | IS  |
| Seventh & Eighth = Relative Depth | Surface Soil            | 00  |
|                                   | Depth below Ground (ft) | 02  |
|                                   | Not Applicable          | NA  |
| Ninth, Tenth & Eleventh =         | Sample Number           | 005 |

EXAMPLE: Seneca Falls Site; Excavation; Sidewall; 2 ft below ground; and sample number

**SAMPLE IDENTIFICATION: SFEXSW02005**

**FORMER MANUFACTURED GAS PLANT SITE  
OR  
FORMER MANUFACTURED GAS PLANT SITE DISPOSAL AREA**

| Site                                        | Code      |
|---------------------------------------------|-----------|
| Albion Ingersoll Street                     | AI        |
| Auburn Clark Street                         | AC        |
| Auburn Green Street                         | AG        |
| Auburn McMaster Street                      | AM        |
| Binghamton Court Street                     | BC        |
| Binghamton – Johnson City                   | BJ        |
| Binghamton Washington Street                | BW        |
| Clyde Lock Street                           | CL        |
| Corning Chestnut Street                     | CC        |
| Cortland/Homer South Main Street            | CH        |
| Dansville Ossian Street                     | DO        |
| Elmira Madison Avenue                       | EM        |
| Elmira Water Street                         | EW        |
| Geneva Border City                          | GB        |
| Geneva Wadsworth Street                     | GW        |
| Goshen West Main Street                     | GS        |
| Granville North Street                      | GR        |
| Ithaca Cayuga Inlet                         | II        |
| Ithaca Court Street                         | IC        |
| Ithaca First Street                         | IF        |
| Lockport State Road                         | LS        |
| Lockport Transit Street                     | LT        |
| Lyons Water Street                          | LW        |
| Mechanicville Central Avenue                | MC        |
| Mechanicville Coons Crossing                | ME        |
| Mechanicville Willow Glen MGP Disposal Site | MW        |
| Newark Water Street                         | NW        |
| Norwich Birdsall Street                     | NB        |
| Oneonta James Georgeson Avenue (Gas Ave.)   | OG        |
| Owego East Main Street                      | OE        |
| Palmyra Park Drive                          | PP        |
| Penn Yan Jackson Street                     | PJ        |
| Penn Yan Water Street                       | PW        |
| Plattsburgh Bridge Street                   | PB        |
| Plattsburgh Saranac Street                  | PS        |
| <b>Seneca Falls Fall Street</b>             | <b>SF</b> |
| Warsaw Court Street                         | WC        |
| Waterloo East Main Street                   | WE        |
| Waterloo Babbott Street                     | WB        |

## **APPENDIX H2**

### **Sample Chain of Custody Form**

## TAL-4124 (1007)

Client

Drinking Water? Yes ☐ No ☐

THE LEADER IN ENVIRONMENTAL TESTING

**DISTRIBUTION:** WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

## **APPENDIX I**

### **NYSDEC Remedial Design Approval Email**

## Underhill, Scott

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**From:** MacNeal, Douglas (DEC) <douglas.macneal@dec.ny.gov>  
**Sent:** Friday, May 11, 2018 1:04 PM  
**To:** Wolf, Jeremy  
**Cc:** Underhill, Scott; Karpinski, Steven (HEALTH); MacNeal, Douglas (DEC)  
**Subject:** Seneca Falls Former MGP Site 850010

Mr. Wolf:

The New York State Department of Environmental Conservation and the New York State Department of Health have reviewed the Remedial Design for the referenced site, dated December 2017. The Design is approved with the following modifications.

1. The contact address for Steven Karpinski at NYSDOH is incorrect. It should be:  
Steven Karpinski  
Bureau of Environmental Exposure Investigation  
New York State Department of Health  
Empire State Plaza  
Corning Tower, Room 1787  
Albany, New York, 12237
2. The CAMP data should be provided to the State for review on a weekly basis.

This will be the only correspondence you will receive on this matter, no hardcopy will follow unless requested. If you have any questions, you may reach me at this address or at 518-402-9662.

Douglas MacNeal, P.E.  
Senior Engineer  
Remedial Action Bureau C, Section C  
DER